Barge *Bridgeport* Grounding - Agremax Distribution Assessment

22 June 2021

Prepared For:

Dann Ocean Towing and Unified Command including Global Salvage, the Florida Fish and Wildlife Conservation Commission (FWC), Florida Department of Environmental Protection (FDEP), and United States Coast Guard (USCG)

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1.0 Introduction and Overview

This report summarizes sediment and water sampling activities that occurred on 25-28 May 2021 to determine the potential distribution of released Agremax material on the seafloor and nearby shoreline following the grounding of the Barge *Bridgeport*. The sampling effort was commenced in coordination with the Unified Command, including Dann Ocean Towing, Global Salvage, the Florida Fish and Wildlife Conservation Commission (FWC), Florida Department of Environmental Protection (FDEP), and United States Coast Guard (USCG). In addition to conducting sediment and water sampling, the other goal associated with the event was to collect product in any identified accumulation locations.

2.0 Background

The Barge *Bridgeport* grounded approximately 1 nautical mile (nm) south of the entrance channel to the St. Johns River on 23 March 2021. The barge was carrying a cargo of approximately 14,383 tons Agremax (a product consisting of processed coal bottom and fly ash). On 14 May 2021 weather and sea state caused the loss of cargo hatches and free exchange between the cargo hold and the ocean. An estimated up to 9,314 tons of Agremax were initially reported as released; Global and others are working on an improved estimate accounting for Agremax remaining in the barge (possibly up to 4,000 tons) and the water content of the material during shipping and handling.

NOAA provided an updated trajectory for a potential release on 14 May 2021, which concluded that the current conditions could carry any released plume to the southwest towards the shore near Atlantic and Neptune Beaches (Figure 1). The exact location of any accumulation would depend on bathymetry, wave conditions, tidal cycles, wind speed and direction, and current conditions at the time of a release and afterward.

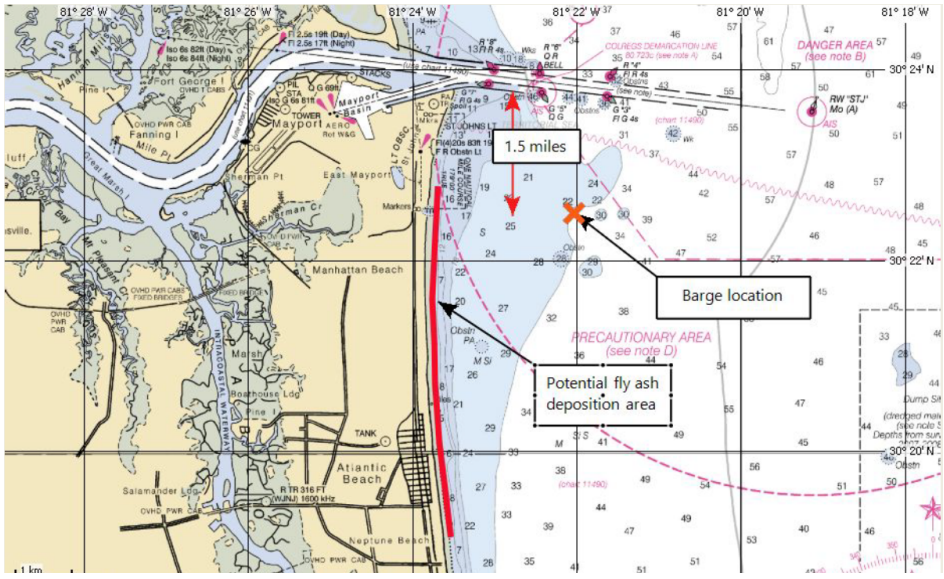

Figure 1. Trajectory information from NOAA for 14 May 2021, showing areas of potential shoreline deposition for a release on that day.

3.0 Sampling Approach and Observations

3.1 Seafloor Assessment

A rectangular gridded pattern was generated (Figure 2) in the waters surrounding the Barge *Bridgeport* using the four closest nautical map grids (as shown on Figure 1) as the outer boundaries for the survey to guide sampling operations. Sampling points were generated in each map grid for a total of 40 sampling points. Sampling locations were denser closer to the grounding location and less dense further from the release site and included three locations in the navigational channel to include the possibility that some of the Agremax accumulated in the deeper channel over time. Proposed sampling point 1-12 was moved to the south edge of the navigational channel and renamed 1-12a. The currents were too strong at the original location for the Ponar to reach the seafloor and deploy correctly. Moving out of the main current allowed a sample to be taken. Four sampling points were added in the field (5-01, 5-02, 5-03, 5-04) once it was identified that the Barge *Bridgeport* was further west than previously identified.

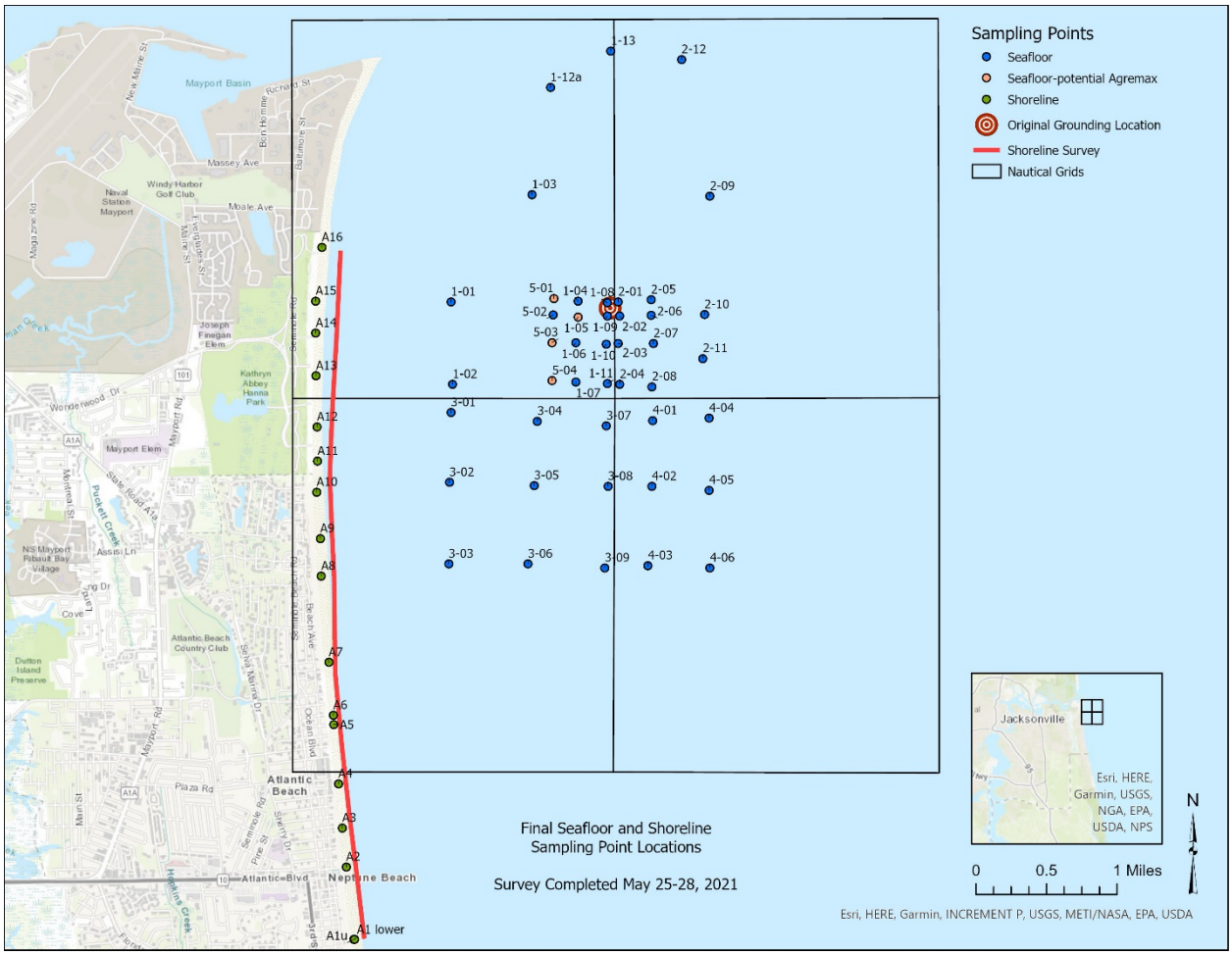

Figure 2. Seafloor and shoreline sampling points.

The additional sampling points were plotted on the west side of the Barge *Bridgeport* to fill a gap in the sampling grid and based on field observations of potential Agremax at sampling point 1-05. GPS was used to navigate to the pre-determined sampling locations, and ESRI Collector was used to document the coordinates of the sampling location, and survey data were collected using ESRI Survey123 and written in a field notebook. Collected data included presence/absence and thickness of potential Agremax in the sediment sample, sediment type, sediment thickness, presence of benthic organisms, and sediment and water quality sample IDs (if collected at that point). Coordinates of all sampling points and field data are included in Appendix A. Photographs of the offshore sampling event are shown in Appendix B.

Sediment sampling was conducted from the T/V *Thomas Dann* and collected utilizing a Standard Ponar grab sampler attached to a davit to bring the samples aboard. A standard Ponar has a maximum "bite" depth of approximately 3.5 inches which was deep enough to estimate the thickness of any Agremax found. Divers were available to investigate areas of potential accumulation on the seafloor.

The Ponar was deployed at all 44 sampling points, collecting an average of 5 cm (2 inches) of material including sand, silty sand, shell sand mix, mud, or sandy mud. The compacted sand bottom likely limited the ability of the Ponar to collect a large sample as the softer sediments (i.e., mud and sandy mud) were almost double the amount collected (Table 1):

Table 1. Summary of the sediment sampling efforts.

Sediment Type	No. of Sampling Points	Average Thickness of Sediment Sample (cm)	Points with Potential Agremax
Sand	24	4	4
Silty sand	10	4	0
Shell sand mix	7	5	0
Mud	2	8	0
Sandy mud	1	10	0

Potential trace amounts of Agremax were observed at four sampling points (1-05, 5-01, 5-03, and 5-04). The material in question was observed as dark gray material that appeared to be swashing in a 1-2 centimeter band just above the surface on the crest of the ripples of the seafloor collected sediment (sand was the sediment type for each of these sampling points). Only sampling point 1-05 appeared to have enough material to collect for analysis. The amount of potential material at the other three sampling stations could be described as barely a trace amount and was not as recognizable as what was observed at 1-05. A sediment sample was collected from sampling point 1-05 directly from the Ponar grab sampler, homogenized with the sediment, and transferred to a labeled sampling jar. A water sample was collected at the same location (1-05) just above the seafloor using a Van Dorn discrete water sampler and transferred to a labeled sampling bottle. Background sediment and water samples were taken on the same day at sample point 4-01 where no potential material was observed.

A diver entered the water on 27 May 2021 at sampling station 1-05 to further investigate the surrounding area. The T/V *Thomas Dann* anchored approximately 115 feet north of the sampling point as to not disturb the bottom sediments. The diver traversed the seafloor from the T/V *Thomas Dann*, directly south approximately 150 feet and conducted a grid pattern search of the seafloor. Live stream

audio and video allowed the RPI biologists on the T/V *Thomas Dann* to communicate with the diver and observe the seafloor as the diver searched the area. Visibility (1-2 feet) limited the ability to search a large area. The same gray material observed in the Ponar appeared in several locations "swashing" on the sand surface. The current was observed at 0.5-1 knots, and the gray material would disperse into the water column when the diver touched it. Accumulation was not great enough to be collected by the diver. The diver video of the seafloor at site 1-05 been provided separately.

3.2 Shoreline Assessment

The shoreline assessment was conducted on 25 May 2021 via a pedestrian shoreline survey on Atlantic and Neptune beaches from Oak Street on the south end to the northern boundary of Kathryn Abbey Hanna Park. This segment of shoreline was identified by an initial NOAA trajectory analysis on 14 May 2021, as areas of potential deposition. Two RPI scientists surveyed the beach for any signs of Agremax deposition using standardized SCAT methods which includes digging pits to investigate. Seventeen pits were dug along the shoreline and no Agremax was observed. Pit locations are included in Figure 2 (e.g., A1u, A1l, A2-A16). Photographs of the shoreline pits are included in Appendix C.

3.3 Turbidity Sampling

While conducting the seafloor assessment on the T/V *Thomas Dann*, RPI biologists were contacted by FDEP on 26 May 2021 in regard to potential turbidity plumes occurring during salvage operations. FDEP requested that a turbidity sample be taken near the Barge *Bridgeport* during salvage operations as well as a background sample. A nephelometer (instant turbidity meter) was not available, but a sample was taken in a turbidity plume 50 yards north of the Barge *Bridgeport* during salvage operations on 26 May 2021. A second turbidity sample was taken at sampling point 4-01 as the background sample. This point is the same sampling point where background sediment and water samples were collected.

3.4 Agremax Sample

During the initial salvage operations, material was offloaded from the Barge *Bridgeport* and placed in a hopper barge that was moored at North Florida Shipyard (NFSY) in Jacksonville, FL. The material was stored dry, allowing for a sample of Agremax to be collected for analysis and compared to the samples collected in the field during this assessment. On 28 May 2021, RPI biologists were not allowed access to NFSY, thus representatives from Global/MER entered the facility and collected an Agremax sample directly from the hopper barge.

4.0 Chemical Analysis of Samples

All sediment and water samples were delivered to AEL Laboratories on 28 May 2021 for analysis of total metals (Method 6010) and mercury (Method SW-846 7471A). Two water samples were analyzed for turbidity (SM 2130B). The results of the metal and mercury analyses are summarized in Table 2. The laboratory report is included as Appendix D. The electronic data deliverable from the laboratory is submitted separately.

Table 2 lists the analytical results for the sediment samples collected 26-27 May 2021 during the survey and the sample of Agremax from the hopper barge collected on 28 May. The metals and mercury in sediment sample 1-05, collected adjacent to the Barge *Bridgeport*, were about equal to or slightly higher than the metals and mercury in the background sediment sample, 4-01s. None of the sediment samples exceeded the EPA Region 4 Marine Sediment Ecological Screening Values (ESV).

Table 2. Analytical results for sediment samples and Agremax from the hopper barge. The EPA Region 4 Marine Sediment Screening Values and Refinement Screening Values (EPA, 2015) are shown in the last two columns. All metals analyzed by Method EPA 6060; Mercury by Method EPA 7471.

	1-05s - Near the Barge		4-01s - Background Location		Hopper 1		EPA R4 Marine Sediment Ecological Screening Value (ESV)	EPA R4 Marine Sediment Refinement Screening Value (RSV)
Analyte	Result (mg/kg)	Qual	Result (mg/kg)	Qual	Result (mg/kg)	Qual		
Aluminum	480	J	240		31000		NA	NA
Antimony	ND	U (analyte not detected, concentration if present is less than 0.65 mg/kg)	ND	U (analyte not detected, concentration if present is less than 0.62 mg/kg)	ND	U (analyte not detected, concentration if present is less than 0.7 mg/kg)	2	25
Arsenic	0.97		0.93		17		7.24	41.6
Barium	6.4		2.1		36		NA	NA
Beryllium	ND	U (analyte not detected, concentration if present is less than 0.13 mg/kg)	ND	U (analyte not detected, concentration if present is less than 0.12 mg/kg)	ND	U (analyte not detected, concentration if present is less than 0.14 mg/kg)	NA	NA
Boron	4.7		2.5		170	I	NA	NA
Cadmium	ND	U (analyte not detected, concentration if present is less than 0.032 mg/kg)	0.031	U (analyte not detected, concentration if present is less than 0.031 mg/kg)	1.2		0.68	4.21
Calcium	51,000	J	42,000		220,000		NA	NA
Chromium	1.3		1.2		21		52.3	160
Cobalt	0.21	I	0.14	I	7.1		NA	NA
Copper	0.36		ND	U (analyte not detected, concentration if present is less than 0.16 mg/kg)	54		18.7	108
Iron	910	J	790		15,000		NA	NA
Lead	0.54		0.61		3.6		30.2	112
Magnesium	770		540		4200		NA	NA
Manganese	16		13		180		NA	NA
Mercury	0.0066		ND	U (analyte not detected, concentration if present is less than 0.0014 mg/kg)	0.35		0.13	0.7

	1-05s - Near the Barge		4-01s - Background Location		Hopper 1		EPA R4 Marine Sediment Ecological Screening Value (ESV)	EPA R4 Marine Sediment Refinement Screening Value (RSV)
Analyte	Result (mg/kg)	Qual	Result (mg/kg)	Qual	Result (mg/kg)	Qual		
Molybdenum	ND	U (analyte not detected, concentration if present is less than 0.26 mg/kg)	ND	U (analyte not detected, concentration if present is less than 0.25 mg/kg)	8.5		NA	NA
Nickel	0.6		0.3	I	30		15.9	42.8
Potassium	0.016	J	0.013		0.56		NA	NA
Selenium	ND	U (analyte not detected, concentration if present is less than 1.3 mg/kg)	ND	U (analyte not detected, concentration if present is less than 1.2 mg/kg)	26		NA	NA
Silver	ND	U (analyte not detected, concentration if present is less than 0.26 mg/kg)	ND	U (analyte not detected, concentration if present is less than 0.25 mg/kg)	ND	U (analyte not detected, concentration if present is less than 0.28 mg/kg)	0.73	1.77
Sodium	3,200	J	2,600		26,000		NA	NA
Strontium	230	J	190		370		NA	NA
Thallium	ND	U,J (analyte not detected, concentration if present is less than an estimated level of 0.26 mg/kg)	ND	U (analyte not detected, concentration if present is less than 0.25 mg/kg)	ND	U (analyte not detected, concentration if present is less than 0.28 mg/kg)	NA	NA
Tin	ND	U (analyte not detected, concentration if present is less than 0.81 mg/kg)	0.78	U (analyte not detected, concentration if present is less than 0.78 mg/kg)	0.88	U (analyte not detected, concentration if present is less than 0.88 mg/kg)	NA	NA
Vanadium	1.7		1		66		NA	NA
Zinc	3.2	I	3	I	32		124	271

Laboratory Qualifier (Qual) Codes:
U = Result was less than the Method Detection Limit (MDL).
I = Result was greater than or equal to the MDL but below the Practical Quantitation Limit (PQL).
J = Estimated result.
Notes:
ND = Not Detected. NA = Not Available
ESV = Ecological screening value below which unacceptable risks to ecological receptors are not expected.
RSV = Refinement screening value above which adverse ecological effects may occur which would be determined based on a site-specific evaluation if applicable.
= Value above the ESV but below the RSV; no values are above an RSV.

Table 3 lists the analytical results for metals and mercury in the water samples collected during the survey. The last two columns show the Florida Marine Water Criteria and the EPA R4 Saltwater Screening Values for Chronic exposures (EPA, 2015). Appendix E shows more detailed listing of these marine water quality levels, including the notes.

All results were the same for the water sample collected adjacent to the Barge *Bridgeport* and the background water sample, with the exception of iron, which was slightly higher in the background water sample. However, most of the results for trace metals in the water samples were below the laboratory's MDL. Highlighted in yellow are the metals where the MDL was above the Florida marine water criteria. Highlighted in green are the metals where the MDL was above the EPA R4 chronic saltwater screening value, but only for those metals that did not have a Florida marine water quality criteria. The laboratory reported that, because of the amount of sodium and other matrix interferences that were detected in the samples, they are not able to lower the MDLs. They are checking with other laboratories to determine if there are capabilities to use pre-treatment methods to reduce the matrix interferences.

Turbidity in the water sample collected in the plume adjacent to the Barge *Bridgeport* at station 1-05 was 1.5 Nepehlometric Turbidity Units (NTU); turbidity in the water sample collected in a background area at station 4-01 was 1.4 NTU. There was essentially no difference in turbidity between the two locations.

In summary, the sediment sample with visual indications of Agremax on the sediment surface adjacent to the Barge *Bridgeport* contained metals that were similar to or slightly higher than a background sediment sample. Both sediment samples contained metals and mercury below the EPA Region 4 Marine Sediment Ecological Screening Values. The MDLs for the metals in the water samples were too high to determine if any of the state marine water quality criteria were exceeded in the water samples.

4.0 References Cited

EPA. 2015. Supplemental Guidance to Ecological Risk Assessment Supplemental Guidance: Region 4, Ecological Risk Assessment. Originally published November 1995. Available at: https://www.epa.gov/sites/production/files/2015-09/documents/r4_era_guidance_document_draft_final_8-25-2015.pdf

Table 3. Analytical results for water samples collected 26-27 May 2021. The Florida Marine Water Criteria and the EPA Region 4 Saltwater Screening Values (EPA, 2015) are shown in the last two columns. All metals analyzed by Method EPA 6060; Mercury by Method EPA 7470.

Location	1-05w - Near the Barge		4-01w - Background Location		Florida Marine Water Criteria (a)	EPA R4 Saltwater Screening Value - Chronic (b)
Analyte	Result (ug/L)	Qual	Result (ug/L)	Qual		
Aluminum	ND	U (analyte not detected, concentration if present is less than 800 ug/L)	830	I	≤ 1,500	1,500
Antimony	ND	U (analyte not detected, concentration if present is less than 28 ug/L)	ND	U (analyte not detected, concentration if present is less than 28 ug/L)	≤ 4,300	4,300
Arsenic	ND	U (analyte not detected, concentration if present is less than 32 ug/L)	ND	U (analyte not detected, concentration if present is less than 32 ug/L)	≤ 50	36
Barium	13	I	14	I	NA	4
Beryllium	ND	U (analyte not detected, concentration if present is less than 8 ug/L) Detection limit is above screening levels.	ND	U (analyte not detected, concentration if present is less than 8 ug/L) Detection limit is above screening levels.	≤ 0.13 annual avg.	0.13
Boron	3,900	(c)	3,100	(c)	NA	1000 (c)
Cadmium	ND	U (analyte not detected, concentration if present is less than 4 ug/L)	4	U (analyte not detected, concentration if present is less than 4 ug/L)	≤ 8.8	8.9
Calcium	380,000		290,000		NA	NA
Chromium	ND	U (analyte not detected, concentration if present is less than 20 ug/L)	ND	U (analyte not detected, concentration if present is less than 20 ug/L)	≤ 50	103 (filtered)
Cobalt	ND	U (analyte not detected, concentration if present is less than 4 ug/L)	ND	U (analyte not detected, concentration if present is less than 4 ug/L)	NA	NA
Copper	ND	U (analyte not detected, concentration if present is less than 40 ug/L) Detection limit is above screening levels.	ND	U (analyte not detected, concentration if present is less than 40 ug/L) Detection limit is above screening levels.	≤ 3.7	3.6
Iron	ND	U (analyte not detected, concentration if present is less than 800 ug/L) Detection limit is above screening levels.	850	I	≤ 300	300
Lead	ND	U (analyte not detected, concentration if present is less than 12 ug/L) Detection limit is above screening levels.	ND	U (analyte not detected, concentration if present is less than 12 ug/L) Detection limit is above screening levels.	≤ 8.5	8.5
Magnesium	1,200,000		930,000		NA	NA

Location	1-05w - Near the Barge		4-01w - Background Location		Florida Marine Water Criteria (a)	EPA R4 Saltwater Screening Value - Chronic (b)
Analyte	Result (ug/L)	Qual	Result (ug/L)	Qual		
Manganese	ND	U (analyte not detected, concentration if present is less than 20 ug/L) Detection limit is above Florida screening level.	23	I	≤ 0.1 (d)	100
Mercury	ND	U (analyte not detected, concentration if present is less than 0.011 ug/L)	ND	U (analyte not detected, concentration if present is less than 0.011 ug/L)	≤ 0.025	0.94
Molybdenum	ND	U (analyte not detected, concentration if present is less than 16 ug/L)	ND	U (analyte not detected, concentration if present is less than 16 ug/L)	NA	NA
Nickel	ND	U (analyte not detected, concentration if present is less than 40 ug/L) Detection limit is above screening levels.	ND	U (analyte not detected, concentration if present is less than 40 ug/L) Detection limit is above screening levels.	≤ 8.3	8.3
Potassium	480,000		350,000		NA	NA
Selenium	ND	U (analyte not detected, concentration if present is less than 160 ug/L) Detection limit is above screening levels.	ND	U (analyte not detected, concentration if present is less than 160 ug/L) Detection limit is above screening levels.	≤ 71	71
Silver	ND	U (analyte not detected, concentration if present is less than 32 ug/L) Detection limit is above screening levels.	ND	U (analyte not detected, concentration if present is less than 32 ug/L) Detection limit is above screening levels.	≤ 2.3	0.1 (filtered)
Sodium	7,800,000		4,800,000		NA	NA
Strontium	7200		5,300		NA	NA
Thallium	ND	U (analyte not detected, concentration if present is less than 40 ug/L) Detection limit is above screening levels.	ND	U (analyte not detected, concentration if present is less than 40 ug/L) Detection limit is above screening levels.	≤ 6.3	6.3
Tin	ND	U (analyte not detected, concentration if present is less than 160 ug/L)	ND	U (analyte not detected, concentration if present is less than 160 ug/L)	NA	NA
Vanadium	ND	U (analyte not detected, concentration if present is less than 8 ug/L)	8	U (analyte not detected, concentration if present is less than 8 ug/L)	NA	NA
Zinc	ND	U (analyte not detected, concentration if present is less than 200 ug/L) Detection limit is above screening levels.	ND	U (analyte not detected, concentration if present is less than 200 ug/L) Detection limit is above screening levels.	≤ 86	82

U = Result was less than the Method Detection Limit (MDL).

I = Result was greater than or equal to the MDL but below the Practical Quantitation Limit (PQL).

Notes:

ND = Not Detected.

(a) http://flrules.elaws.us/fac/62-302.530
(b) https://www.epa.gov/sites/production/files/2018-03/documents/era_regional_supplemental_guidance_report-march-2018_update.pdf
Values for unfiltered samples from Table 1c; remaining values from Table 1a; "filtered" indicates that the screening level applies to filtered samples.
(c) The EPA Region 4 screening level for boron is below the global ocean background level of boron of 4,500 ug/L.
(d) Value for shellfish propagation only.

###	= Value above the Florida screening level only.
###	= Value above the Florida and EPA R4 screening levels.

Appendix A. Sample Location Data

Sample Location Number	Seafloor or Shoreline	Ponar or Soil Pit	Sediment Type	Sediment Thickness (cm) in Ponar	Potential Agremax present	Agremax Thickness (cm)	Benthic Organisms	Sediment Sample ID	Water Sample ID	Date	Latitude	Longitude
1-01	Sea	Ponar	sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.375592	-81.383480
1-02	Sea	Ponar	sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.368310	-81.383319
1-03	Sea	Ponar	shelly sand	5	no	n/a	no	n/a	n/a	5/27/2021	30.385092	-81.375200
1-04	Sea	Ponar	shelly sand	5	no	n/a	no	n/a	n/a	5/26/2021	30.375661	-81.370458
1-05	Sea	Ponar	sand	6	yes	<0.25	no	1-05s	1-05w	5/26/2021	30.374274	-81.370458
1-06	Sea	Ponar	sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.371986	-81.370699
1-07	Sea	Ponar	sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.368518	-81.370699
1-08	Sea	Ponar	sand	4	no	n/a	no	n/a	n/a	5/26/2021	30.375523	-81.367484
1-09	Sea	Ponar	shelly sand	4	no	n/a	no	n/a	n/a	5/26/2021	30.374344	-81.367484
1-10	Sea	Ponar	sand	7	no	n/a	no	n/a	n/a	5/26/2021	30.371847	-81.367564
1-11	Sea	Ponar	sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.368380	-81.367484
1-12a	Sea	Ponar	mud	8	no	n/a	yes; worms	n/a	n/a	5/27/2021	30.319224	-81.393357
1-13	Sea	Ponar	sand	5	no	n/a	no	n/a	n/a	5/27/2021	30.375592	-81.366358
2-01	Sea	Ponar	shelly sand	5	no	n/a	no	n/a	n/a	5/26/2021	30.374344	-81.366198
2-02	Sea	Ponar	shelly sand	6	no	n/a	no	n/a	n/a	5/26/2021	30.371917	-81.366358
2-03	Sea	Ponar	sand	3	no	n/a	yes; one starfish	n/a	n/a	5/26/2021	30.368310	-81.366198
2-04	Sea	Ponar	sand	2	no	n/a	no	n/a	n/a	5/26/2021	30.375800	-81.362982
2-05	Sea	Ponar	sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.374413	-81.362982
2-06	Sea	Ponar	silty sand	7	no	n/a	no	n/a	n/a	5/26/2021	30.371917	-81.362741
2-07	Sea	Ponar	sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.368102	-81.362902
2-08	Sea	Ponar	shelly sand	5	no	n/a	no	n/a	n/a	5/26/2021	30.384953	-81.356954
2-09	Sea	Ponar	sand	5	no	n/a	no	n/a	n/a	5/27/2021	30.374482	-81.357516
2-10	Sea	Ponar	sand	3	no	n/a	no	n/a	n/a	5/27/2021	30.370599	-81.357677
2-11	Sea	Ponar	shelly sand	5	no	n/a	no	n/a	n/a	5/27/2021	30.397029	-81.359874
2-12	Sea	Ponar	sandy mud	10	no	n/a	no	n/a	n/a	5/27/2021	30.365814	-81.383480
3-01	Sea	Ponar	silty sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.359641	-81.383640
3-02	Sea	Ponar	silty sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.352427	-81.383721
3-03	Sea	Ponar	silty sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.365051	-81.374638
3-04	Sea	Ponar	silty sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.359363	-81.374959
3-05	Sea	Ponar	silty sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.352427	-81.375602
3-06	Sea	Ponar	silty sand	4	no	n/a	no	n/a	n/a	5/26/2021	30.364634	-81.367564
3-07	Sea	Ponar	sand	3	no	n/a	no	n/a	n/a	5/26/2021	30.359294	-81.367403
3-08	Sea	Ponar	silty sand	5	no	n/a	no	n/a	n/a	5/26/2021	30.352080	-81.367725
3-09	Sea	Ponar	silty sand	5	no	n/a	no	n/a	n/a	5/26/2021	30.365120	-81.362822
4-01	Sea	Ponar	sand	5	no	n/a	no	4-01s	4-01w	5/26/2021	30.359294	-81.362902
4-02	Sea	Ponar	sand	5	no	n/a	no	n/a	n/a	5/27/2021	30.352288	-81.363304
4-03	Sea	Ponar	sand	4	no	n/a	no	n/a	n/a	5/27/2021	30.365328	-81.357034
4-04	Sea	Ponar	silty sand	5	no	n/a	no	n/a	n/a	5/27/2021	30.358947	-81.357034

4-05	Sea	Ponar	mud	8	no	n/a	no	n/a	n/a	5/27/2021	30.352080	-81.356954
4-06	Sea	Ponar	sand	4	no	n/a	no	n/a	n/a	5/27/2021	30.375912	-81.372952
5-01	Sea	Ponar	sand	6	yes	<0.25	no	n/a	n/a	5/27/2021	30.374470	-81.373005
5-02	Sea	Ponar	sand	5	no	n/a	no	n/a	n/a	5/27/2021	30.372010	-81.373147
5-03	Sea	Ponar	sand	5	yes	<0.25	no	n/a	n/a	5/27/2021	30.368646	-81.373122
5-04	Sea	Ponar	sand	5	yes	<0.25	no	n/a	n/a	5/27/2021	30.394559	-81.373301
A1 lower	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.358781	-81.397243
A1 upper	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.325628	-81.394210
A2	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.329063	-81.394624
A3	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.332985	-81.395012
A4	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.338230	-81.395510
A5	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.339042	-81.395537
A6	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.343725	-81.396000
A7	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.351342	-81.396779
A8	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.354680	-81.396880
A9	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.354680	-81.396880
A10	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.361521	-81.397162
A11	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.364557	-81.397206
A12	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.369074	-81.397311
A13	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.372837	-81.397344
A14	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.375680	-81.397356
A15	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.380422	-81.396711
A16	Shoreline	Soil Pit	sand	n/a	no	n/a	no	n/a	n/a	5/25/2021	30.319215	-81.393457

Appendix B. Representative Photographs of Offshore Sediment Sampling

Photo 1. Typical sand collected in the Ponar (Sample Location 1-08).

Photo 2. Typical shelly sand collected in the Ponar (Sample Location 1-09).

Photo 3. Typical silty sand collected in the Ponar (Sample Location 4-04).

Photo 4. Shelly sand with dark organic material on the surface (Sample Location 1-04).

Photo 5. Potential Agremax on the sand surface in the Ponar (Sample Location 1-05).

Photo 6. Typical sand sample in the Ponar (Sample Location 1-11).

Photo 7. Potential Agremax on the sand surface in the Ponar (Sample Location 5-01).

Photo 8. Typical sand sample in the Ponar (Sample Location 5-02).

Photo 9. Starfish with a sand sample collected in the Ponar (Sample Location 2-03).

Photo 10. Worm casing surrounding by shells (Sample Location 1-12a).

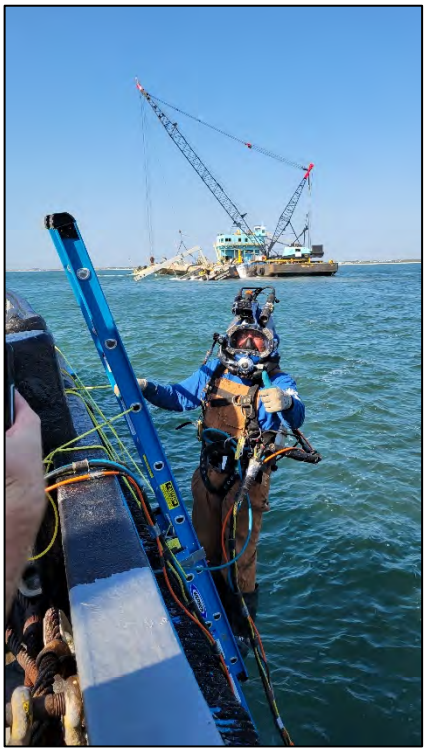

Photo 11. MER diver entering water to investigate potential Agremax accumulation at on May 27, 2021. This was the site where several Ponar grabs displayed potential Agremax (Sample Location 1-05)

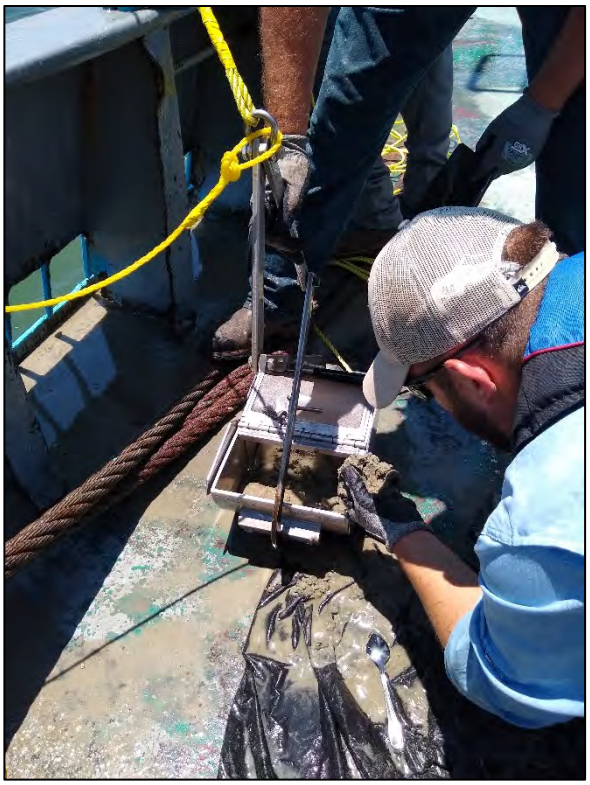

Photo 12. Investigating the sediment sample (Sample Location 1-07).

Appendix C. Photographs of Shoreline Survey

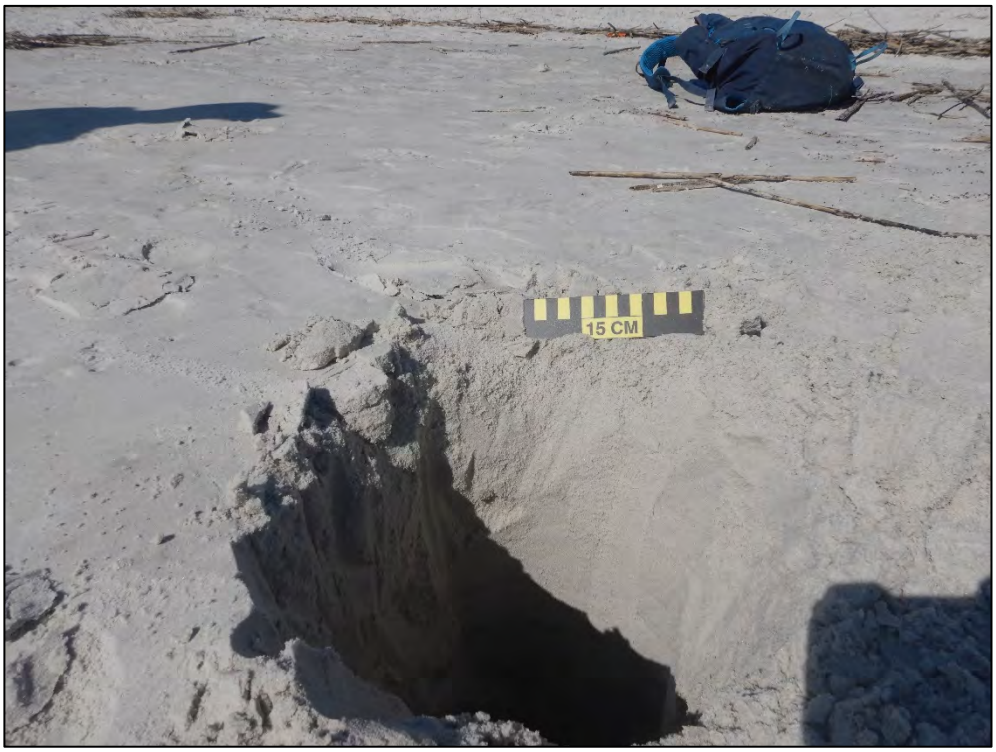

Photo 1. Beach sediment pit A-1 l (lower) at the southern extent of the shoreline assessment area.

Photo 2. Beach facing north at the south end of the shoreline assessment area (Sample Location A-1)

Photo 3. Beach sediment pit A-1 u (upper) at the southern extent of the shoreline assessment area.

Photo 4. Beach sediment pit A-2.

Photo 5. Beach sediment pit A-3.

Photo 6. Beach sediment pit A-4.

Photo 7. Beach sediment pit A-5

Photo 8. Beach sediment pit A-6.

Photo 9. Beach sediment pit A-7.

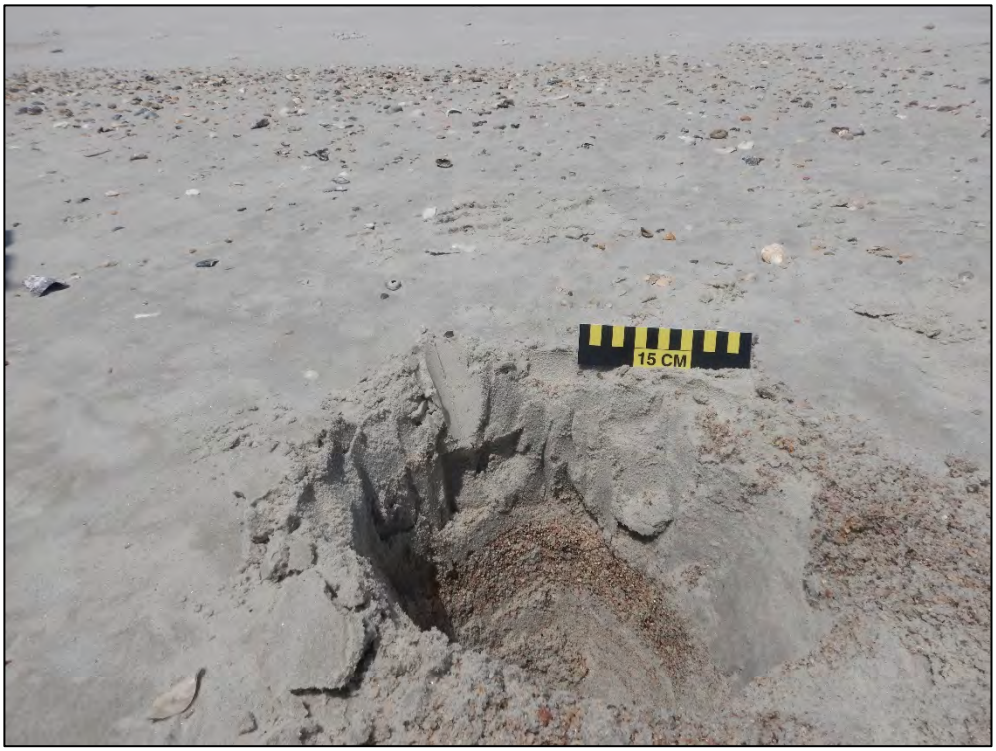

Photo 10. Beach sediment pit A-8.

Photo 11. Beach sediment pit A-9.

Photo 12. Beach sediment pit A-10.

Photo 13. Beach sediment pit A-11.

Photo 14. Beach sediment pit A-12.

Photo 15. Beach sediment pit A-13.

Photo 16. Beach sediment pit A-14.

Photo 17. Beach sediment pit A-15.

Photo 18. Beach sediment pit A-16.

Photo 19. Typical wrack line along the upper beach.

Photo 20. Facing south from the northernmost sample point (A-16).

Appendix D. Sediment, Water, and Agremax Sample Analytical Results

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June 18, 2021

Jacqueline Michel
Research Planning, Inc.
1121 Park Street
Columbia, SC 29201

RE: Workorder: J2107194 Bridgeport Barge

Dear Jacqueline Michel:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, May 28, 2021. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jerry Allen - Project Manager
JAllen@aellab.com

Enclosures

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SAMPLE SUMMARY

Workorder: J2107194 Bridgeport Barge

Lab ID	Sample ID	Matrix	Date Collected	Date Received
J2107194001	1-05s	Soil	5/26/2021 12:25	5/28/2021 10:28
J2107194002	1-05w	Water	5/26/2021 12:20	5/28/2021 10:28
J2107194003	4-01s	Soil	5/26/2021 15:25	5/28/2021 10:28
J2107194004	4-01w	Water	5/26/2021 15:30	5/28/2021 10:28
J2107194005	Hopper 1	Soil	5/28/2021 09:40	5/28/2021 10:28
J2107194006	1-05 Turbidity	Water	5/26/2021 15:55	5/28/2021 10:28
J2107194007	4-01 Turbidity	Water	5/26/2021 15:30	5/28/2021 10:28

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ANALYTICAL RESULTS

Workorder: J2107194 Bridgeport Barge

Lab ID: **J2107194001** Date Received: 05/28/21 10:28 Matrix: Soil

Sample ID: **1-05s** Date Collected: 05/26/21 12:25

Results for sample J2107194001 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Soils	Preparation Method: SW-846 3050B Analytical Method: SW-846 6010							
Aluminum	**480**	**J4**	**mg/Kg**	**1**	3.2	1.6	6/16/2021 13:19	T
Antimony	**0.65**	**U**	**mg/Kg**	**1**	1.6	0.65	6/16/2021 13:19	T
Arsenic	**0.97**		**mg/Kg**	**1**	0.32	0.16	6/16/2021 13:19	T
Barium	**6.4**		**mg/Kg**	**1**	0.32	0.16	6/16/2021 13:19	T
Beryllium	**0.13**	**U**	**mg/Kg**	**1**	0.32	0.13	6/16/2021 13:19	T
Boron	**4.7**		**mg/Kg**	**1**	1.6	1.3	6/16/2021 13:19	T
Cadmium	**0.032**	**U**	**mg/Kg**	**1**	0.065	0.032	6/16/2021 13:19	T
Calcium	**51000**	**J4**	**mg/Kg**	**25**	810	650	6/17/2021 11:27	T
Chromium	**1.3**		**mg/Kg**	**1**	0.32	0.26	6/16/2021 13:19	T
Cobalt	**0.21**	**I**	**mg/Kg**	**1**	0.32	0.065	6/16/2021 13:19	T
Copper	**0.36**		**mg/Kg**	**1**	0.32	0.16	6/16/2021 13:19	T
Iron	**910**	**J4**	**mg/Kg**	**1**	3.2	1.6	6/16/2021 13:19	T
Lead	**0.54**		**mg/Kg**	**1**	0.32	0.16	6/16/2021 13:19	T
Magnesium	**770**		**mg/Kg**	**1**	3.2	1.9	6/16/2021 13:19	T
Manganese	**16**		**mg/Kg**	**1**	0.32	0.26	6/16/2021 13:19	T
Molybdenum	**0.26**	**U**	**mg/Kg**	**1**	1.6	0.26	6/16/2021 13:19	T
Nickel	**0.60**		**mg/Kg**	**1**	0.32	0.16	6/16/2021 13:19	T
Potassium	**0.016**	**J4**	**%**	**1**	0.0032	0.0026	6/16/2021 13:19	T
Selenium	**1.3**	**U**	**mg/Kg**	**1**	3.2	1.3	6/16/2021 13:19	T
Silicon	**670**	**J4**	**mg/Kg**	**25**	40	20	6/17/2021 11:27	T^
Silver	**0.26**	**U**	**mg/Kg**	**1**	0.32	0.26	6/16/2021 13:19	T
Sodium	**3200**	**J4**	**mg/Kg**	**1**	32	16	6/16/2021 13:19	T
Strontium	**230**	**J4**	**mg/Kg**	**1**	0.32	0.16	6/16/2021 13:19	T
Thallium	**0.26**	**U,J4**	**mg/Kg**	**1**	0.32	0.26	6/16/2021 13:19	T
Tin	**0.81**	**U**	**mg/Kg**	**1**	1.6	0.81	6/16/2021 13:19	T
Titanium	**11**		**mg/Kg**	**1**	0.32	0.13	6/16/2021 13:19	T
Vanadium	**1.7**		**mg/Kg**	**1**	0.32	0.16	6/16/2021 13:19	T
Zinc	**3.2**	**I**	**mg/Kg**	**1**	3.2	1.6	6/16/2021 13:19	T
Analysis Desc: SW846 7471A Analysis, Soil	Preparation Method: SW-846 7471A Analytical Method: SW-846 7471A							
Mercury	**0.0066**		**mg/Kg**	**1**	0.0055	0.0014	6/9/2021 16:14	J
METALS								
Analysis Desc: Percent Solids,SM2540G,Soil	Analytical Method: SM 2540G							

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ANALYTICAL RESULTS

Workorder: J2107194 Bridgeport Barge

Lab ID: **J2107194001** Date Received: 05/28/21 10:28 Matrix: Soil

Sample ID: **1-05s** Date Collected: 05/26/21 12:25

Results for sample J2107194001 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Percent Moisture	**22**		**%**	**1**	0.0010	0.0010	6/10/2021 12:11	J

Lab ID: **J2107194002** Date Received: 05/28/21 10:28 Matrix: Water

Sample ID: **1-05w** Date Collected: 05/26/21 12:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Water	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Aluminum	**0.80**	**U**	**mg/L**	**4**	3.2	0.80	6/16/2021 20:57	M
Antimony	**0.028**	**U**	**mg/L**	**4**	1.1	0.028	6/16/2021 20:57	M
Arsenic	**0.032**	**U**	**mg/L**	**4**	0.13	0.032	6/16/2021 20:57	M
Barium	**0.013**	**I**	**mg/L**	**4**	0.048	0.012	6/16/2021 20:57	M
Beryllium	**0.0080**	**U**	**mg/L**	**4**	0.032	0.0080	6/16/2021 20:57	M
Boron	**3.9**		**mg/L**	**4**	1.6	0.40	6/16/2021 20:57	M
Cadmium	**0.0040**	**U**	**mg/L**	**4**	0.016	0.0040	6/16/2021 20:57	M
Calcium	**380**		**mg/L**	**4**	3.2	0.80	6/16/2021 20:57	M
Chromium	**0.020**	**U**	**mg/L**	**4**	0.080	0.020	6/16/2021 20:57	M
Cobalt	**0.0040**	**U**	**mg/L**	**4**	0.16	0.0040	6/16/2021 20:57	M
Copper	**0.040**	**U**	**mg/L**	**4**	0.16	0.040	6/16/2021 20:57	M
Iron	**0.80**	**U**	**mg/L**	**4**	3.2	0.80	6/16/2021 20:57	M
Lead	**0.012**	**U**	**mg/L**	**4**	0.048	0.012	6/16/2021 20:57	M
Magnesium	**1200**		**mg/L**	**4**	1.6	0.40	6/16/2021 20:57	M
Manganese	**0.020**	**U**	**mg/L**	**4**	0.080	0.020	6/16/2021 20:57	M
Molybdenum	**0.016**	**U**	**mg/L**	**4**	0.064	0.016	6/16/2021 20:57	M
Nickel	**0.040**	**U**	**mg/L**	**4**	0.16	0.040	6/16/2021 20:57	M
Potassium	**480**		**mg/L**	**4**	8.0	2.0	6/16/2021 20:57	M
Selenium	**0.16**	**U**	**mg/L**	**4**	0.64	0.16	6/16/2021 20:57	M
Silicon	**0.93**	**I**	**mg/L**	**4**	3.2	0.80	6/16/2021 20:57	M^
Silver	**0.032**	**U**	**mg/L**	**4**	0.13	0.032	6/16/2021 20:57	M
Sodium	**7800**		**mg/L**	**20**	64	16	6/18/2021 13:36	M
Strontium	**7.2**		**mg/L**	**4**	0.16	0.040	6/16/2021 20:57	M
Thallium	**0.040**	**U**	**mg/L**	**4**	0.16	0.040	6/16/2021 20:57	M
Tin	**0.16**	**U**	**mg/L**	**4**	0.64	0.16	6/16/2021 20:57	M
Titanium	**0.016**	**I**	**mg/L**	**4**	0.032	0.0080	6/16/2021 20:57	M

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ANALYTICAL RESULTS

Workorder: J2107194 Bridgeport Barge

Lab ID: **J2107194002** Date Received: 05/28/21 10:28 Matrix: Water
Sample ID: **1-05w** Date Collected: 05/26/21 12:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Vanadium	**0.0080**	**U**	**mg/L**	**4**	0.032	0.0080	6/16/2021 20:57	M
Zinc	**0.20**	**U**	**mg/L**	**4**	0.80	0.20	6/16/2021 20:57	M
Analysis Desc: SW846 7470A Analysis,Water	Analytical Method: SW-846 7470A							
Mercury	**0.000011**	**U**	**mg/L**	**1**	0.00010	0.000011	6/10/2021 19:13	J

Lab ID: **J2107194003** Date Received: 05/28/21 10:28 Matrix: Soil
Sample ID: **4-01s** Date Collected: 05/26/21 15:25

Results for sample J2107194003 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Soils	Preparation Method: SW-846 3050B Analytical Method: SW-846 6010							
Aluminum	**240**		**mg/Kg**	**1**	3.1	1.6	6/16/2021 13:31	T
Antimony	**0.62**	**U**	**mg/Kg**	**1**	1.6	0.62	6/16/2021 13:31	T
Arsenic	**0.93**		**mg/Kg**	**1**	0.31	0.16	6/16/2021 13:31	T
Barium	**2.1**		**mg/Kg**	**1**	0.31	0.16	6/16/2021 13:31	T
Beryllium	**0.12**	**U**	**mg/Kg**	**1**	0.31	0.12	6/16/2021 13:31	T
Boron	**2.5**		**mg/Kg**	**1**	1.6	1.2	6/16/2021 13:31	T
Cadmium	**0.031**	**U**	**mg/Kg**	**1**	0.062	0.031	6/16/2021 13:31	T
Calcium	**42000**		**mg/Kg**	**25**	780	620	6/17/2021 11:36	T
Chromium	**1.2**		**mg/Kg**	**1**	0.31	0.25	6/16/2021 13:31	T
Cobalt	**0.14**	**I**	**mg/Kg**	**1**	0.31	0.062	6/16/2021 13:31	T
Copper	**0.16**	**U**	**mg/Kg**	**1**	0.31	0.16	6/16/2021 13:31	T
Iron	**790**		**mg/Kg**	**1**	3.1	1.6	6/16/2021 13:31	T
Lead	**0.61**		**mg/Kg**	**1**	0.31	0.16	6/16/2021 13:31	T
Magnesium	**540**		**mg/Kg**	**1**	3.1	1.9	6/16/2021 13:31	T
Manganese	**13**		**mg/Kg**	**1**	0.31	0.25	6/16/2021 13:31	T
Molybdenum	**0.25**	**U**	**mg/Kg**	**1**	1.6	0.25	6/16/2021 13:31	T
Nickel	**0.30**	**I**	**mg/Kg**	**1**	0.31	0.16	6/16/2021 13:31	T
Potassium	**0.013**		**%**	**1**	0.0031	0.0025	6/16/2021 13:31	T
Selenium	**1.2**	**U**	**mg/Kg**	**1**	3.1	1.2	6/16/2021 13:31	T
Silicon	**370**		**mg/Kg**	**25**	39	19	6/17/2021 11:36	T^
Silver	**0.25**	**U**	**mg/Kg**	**1**	0.31	0.25	6/16/2021 13:31	T

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ANALYTICAL RESULTS

Workorder: J2107194 Bridgeport Barge

Lab ID: **J2107194003** Date Received: 05/28/21 10:28 Matrix: Soil

Sample ID: **4-01s** Date Collected: 05/26/21 15:25

Results for sample J2107194003 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Sodium	**2600**		**mg/Kg**	**1**	31	16	6/16/2021 13:31	T
Strontium	**190**		**mg/Kg**	**1**	0.31	0.16	6/16/2021 13:31	T
Thallium	**0.25**	**U**	**mg/Kg**	**1**	0.31	0.25	6/16/2021 13:31	T
Tin	**0.78**	**U**	**mg/Kg**	**1**	1.6	0.78	6/16/2021 13:31	T
Titanium	**7.7**		**mg/Kg**	**1**	0.31	0.12	6/16/2021 13:31	T
Vanadium	**1.0**		**mg/Kg**	**1**	0.31	0.16	6/16/2021 13:31	T
Zinc	**3.0**	**I**	**mg/Kg**	**1**	3.1	1.6	6/16/2021 13:31	T
Analysis Desc: SW846 7471A Analysis, Soil			Preparation Method: SW-846 7471A Analytical Method: SW-846 7471A					
Mercury	**0.0014**	**U**	**mg/Kg**	**1**	0.0057	0.0014	6/9/2021 16:19	J
METALS								
Analysis Desc: Percent Solids,SM2540G,Soil			Analytical Method: SM 2540G					
Percent Moisture	**21**		**%**	**1**	0.0010	0.0010	6/10/2021 12:11	J

Lab ID: **J2107194004** Date Received: 05/28/21 10:28 Matrix: Water

Sample ID: **4-01w** Date Collected: 05/26/21 15:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Water			Preparation Method: SW-846 3010A Analytical Method: SW-846 6010					
Aluminum	**0.83**	**I**	**mg/L**	**4**	3.2	0.80	6/16/2021 20:53	M
Antimony	**0.028**	**U**	**mg/L**	**4**	1.1	0.028	6/16/2021 20:53	M
Arsenic	**0.032**	**U**	**mg/L**	**4**	0.13	0.032	6/16/2021 20:53	M
Barium	**0.014**	**I**	**mg/L**	**4**	0.048	0.012	6/16/2021 20:53	M
Beryllium	**0.0080**	**U**	**mg/L**	**4**	0.032	0.0080	6/16/2021 20:53	M
Boron	**3.1**		**mg/L**	**4**	1.6	0.40	6/16/2021 20:53	M
Cadmium	**0.0040**	**U**	**mg/L**	**4**	0.016	0.0040	6/16/2021 20:53	M
Calcium	**290**		**mg/L**	**4**	3.2	0.80	6/16/2021 20:53	M
Chromium	**0.020**	**U**	**mg/L**	**4**	0.080	0.020	6/16/2021 20:53	M
Cobalt	**0.0040**	**U**	**mg/L**	**4**	0.16	0.0040	6/16/2021 20:53	M

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Fax: (904)363-9354

ANALYTICAL RESULTS

Workorder: J2107194 Bridgeport Barge

Lab ID: **J2107194004** Date Received: 05/28/21 10:28 Matrix: Water

Sample ID: **4-01w** Date Collected: 05/26/21 15:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Copper	**0.040**	**U**	**mg/L**	**4**	0.16	0.040	6/16/2021 20:53	M
Iron	**0.85**	**I**	**mg/L**	**4**	3.2	0.80	6/16/2021 20:53	M
Lead	**0.012**	**U**	**mg/L**	**4**	0.048	0.012	6/16/2021 20:53	M
Magnesium	**930**		**mg/L**	**4**	1.6	0.40	6/16/2021 20:53	M
Manganese	**0.023**	**I**	**mg/L**	**4**	0.080	0.020	6/16/2021 20:53	M
Molybdenum	**0.016**	**U**	**mg/L**	**4**	0.064	0.016	6/16/2021 20:53	M
Nickel	**0.040**	**U**	**mg/L**	**4**	0.16	0.040	6/16/2021 20:53	M
Potassium	**350**		**mg/L**	**4**	8.0	2.0	6/16/2021 20:53	M
Selenium	**0.16**	**U**	**mg/L**	**4**	0.64	0.16	6/16/2021 20:53	M
Silicon	**2.0**	**I**	**mg/L**	**4**	3.2	0.80	6/16/2021 20:53	M^
Silver	**0.032**	**U**	**mg/L**	**4**	0.13	0.032	6/16/2021 20:53	M
Sodium	**4800**		**mg/L**	**10**	32	8.0	6/16/2021 21:07	M
Strontium	**5.3**		**mg/L**	**4**	0.16	0.040	6/16/2021 20:53	M
Thallium	**0.040**	**U**	**mg/L**	**4**	0.16	0.040	6/16/2021 20:53	M
Tin	**0.16**	**U**	**mg/L**	**4**	0.64	0.16	6/16/2021 20:53	M
Titanium	**0.022**	**I**	**mg/L**	**4**	0.032	0.0080	6/16/2021 20:53	M
Vanadium	**0.0080**	**U**	**mg/L**	**4**	0.032	0.0080	6/16/2021 20:53	M
Zinc	**0.20**	**U**	**mg/L**	**4**	0.80	0.20	6/16/2021 20:53	M
Analysis Desc: SW846 7470A Analysis,Water			Preparation Method: SW-846 7470A Analytical Method: SW-846 7470A					
Mercury	**0.000011**	**U**	**mg/L**	**1**	0.00010	0.000011	6/10/2021 19:26	J

Lab ID: **J2107194005** Date Received: 05/28/21 10:28 Matrix: Soil

Sample ID: **Hopper 1** Date Collected: 05/28/21 09:40

Results for sample J2107194005 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS								
Analysis Desc: SW846 6010B Analysis,Soils			Preparation Method: SW-846 3050B Analytical Method: SW-846 6010					
Aluminum	**31000**		**mg/Kg**	**100**	350	180	6/17/2021 11:39	T
Antimony	**0.70**	**U**	**mg/Kg**	**1**	1.8	0.70	6/16/2021 13:34	T
Arsenic	**17**		**mg/Kg**	**1**	0.35	0.18	6/16/2021 13:34	T
Barium	**36**		**mg/Kg**	**1**	0.35	0.18	6/16/2021 13:34	T

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ANALYTICAL RESULTS

Workorder: J2107194 Bridgeport Barge

Lab ID: **J2107194005** Date Received: 05/28/21 10:28 Matrix: Soil

Sample ID: **Hopper 1** Date Collected: 05/28/21 09:40

Results for sample J2107194005 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Beryllium	**0.14**	**U**	**mg/Kg**	**1**	0.35	0.14	6/16/2021 13:34	T
Boron	**170**	**I**	**mg/Kg**	**100**	180	140	6/17/2021 11:39	T
Cadmium	**1.2**		**mg/Kg**	**1**	0.070	0.035	6/16/2021 13:34	T
Calcium	**220000**		**mg/Kg**	**100**	3500	2800	6/17/2021 11:39	T
Chromium	**21**		**mg/Kg**	**1**	0.35	0.28	6/16/2021 13:34	T
Cobalt	**7.1**		**mg/Kg**	**1**	0.35	0.070	6/16/2021 13:34	T
Copper	**54**		**mg/Kg**	**1**	0.35	0.18	6/16/2021 13:34	T
Iron	**15000**		**mg/Kg**	**100**	350	180	6/17/2021 11:39	T
Lead	**3.6**		**mg/Kg**	**1**	0.35	0.18	6/16/2021 13:34	T
Magnesium	**4200**		**mg/Kg**	**1**	3.5	2.1	6/16/2021 13:34	T
Manganese	**180**		**mg/Kg**	**1**	0.35	0.28	6/16/2021 13:34	T
Molybdenum	**8.5**		**mg/Kg**	**1**	1.8	0.28	6/16/2021 13:34	T
Nickel	**30**		**mg/Kg**	**1**	0.35	0.18	6/16/2021 13:34	T
Potassium	**0.56**		**%**	**1**	0.0035	0.0028	6/16/2021 13:34	T
Selenium	**26**		**mg/Kg**	**1**	3.5	1.4	6/16/2021 13:34	T
Silicon	**37000**		**mg/Kg**	**1000**	1800	880	6/17/2021 11:42	T^
Silver	**0.28**	**U**	**mg/Kg**	**1**	0.35	0.28	6/16/2021 13:34	T
Sodium	**26000**		**mg/Kg**	**100**	3500	1800	6/17/2021 11:39	T
Strontium	**370**		**mg/Kg**	**1**	0.35	0.18	6/16/2021 13:34	T
Thallium	**0.28**	**U**	**mg/Kg**	**1**	0.35	0.28	6/16/2021 13:34	T
Tin	**0.88**	**U**	**mg/Kg**	**1**	1.8	0.88	6/16/2021 13:34	T
Titanium	**0.14**	**U**	**mg/Kg**	**1**	0.35	0.14	6/16/2021 13:34	T
Vanadium	**66**		**mg/Kg**	**1**	0.35	0.18	6/16/2021 13:34	T
Zinc	**32**		**mg/Kg**	**1**	3.5	1.8	6/16/2021 13:34	T
Analysis Desc: SW846 7471A Analysis, Soil	Preparation Method: SW-846 7471A Analytical Method: SW-846 7471A							
Mercury	**0.35**		**mg/Kg**	**1**	0.0069	0.0017	6/9/2021 16:31	J
METALS								
Analysis Desc: Percent Solids,SM2540G,Soil	Analytical Method: SM 2540G							
Percent Moisture	**27**		**%**	**1**	0.0010	0.0010	6/10/2021 12:11	J

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ANALYTICAL RESULTS

Workorder: J2107194 Bridgeport Barge

Lab ID: **J2107194006** Date Received: 05/28/21 10:28 Matrix: Water
Sample ID: **1-05 Turbidity** Date Collected: 05/26/21 15:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: Turbidity,2130B,WA	Analytical Method: SM 2130B							
Turbidity	**1.5**		**NTU**	**1**	0.40	0.10	5/28/2021 11:30	J

Lab ID: **J2107194007** Date Received: 05/28/21 10:28 Matrix: Water
Sample ID: **4-01 Turbidity** Date Collected: 05/26/21 15:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: Turbidity,2130B,WA	Analytical Method: SM 2130B							
Turbidity	**1.4**		**NTU**	**1**	0.40	0.10	5/28/2021 11:30	J

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ANALYTICAL RESULTS QUALIFIERS

Workorder: J2107194 Bridgeport Barge

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J4	Estimated Result

LAB QUALIFIERS

J	DOH Certification #E82574(AEL-JAX)(FL NELAC Certification)
M	DOH Certification #E82535(AEL-M)(FL NELAC Certification)
M^	Not Certified
T	DOH Certification #E84589(AEL-T)(FL NELAC Certification)
T^	Not Certified

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QUALITY CONTROL DATA

Workorder: J2107194 Bridgeport Barge

QC Batch: WCAj/2518 Analysis Method: SM 2130B
QC Batch Method: SM 2130B Prepared:
Associated Lab Samples: J2107194006, J2107194007

METHOD BLANK: 3906076

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Turbidity	NTU	0.10	0.10	U

QC Batch: DGMj/1661 Analysis Method: SW-846 7471A
QC Batch Method: SW-846 7471A Prepared: 06/09/2021 11:41
Associated Lab Samples: J2107194001, J2107194003, J2107194005

METHOD BLANK: 3915207

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
METALS				
Mercury	mg/Kg	0.0012	0.0012	U

QC Batch: DGMj/1669 Analysis Method: SW-846 7470A
QC Batch Method: SW-846 7470A Prepared: 06/10/2021 12:02
Associated Lab Samples: J2107194004

METHOD BLANK: 3917518

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
METALS				
Mercury	mg/L	0.000011	0.000011	U

QC Batch: DGMt/1889 Analysis Method: SW-846 6010
QC Batch Method: SW-846 3050B Prepared: 06/15/2021 13:00
Associated Lab Samples: J2107194001, J2107194003, J2107194005

METHOD BLANK: 3923339

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
METALS				
Silver	mg/Kg	0.20	0.20	U

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QUALITY CONTROL DATA

Workorder: J2107194 Bridgeport Barge

METHOD BLANK: 3923339

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Aluminum	mg/Kg	1.2	1.2	U
Arsenic	mg/Kg	0.12	0.12	U
Boron	mg/Kg	1.0	1.0	U
Barium	mg/Kg	0.12	0.12	U
Beryllium	mg/Kg	0.10	0.10	U
Calcium	mg/Kg	20	20	U
Cadmium	mg/Kg	0.025	0.025	U
Cobalt	mg/Kg	0.050	0.050	U
Chromium	mg/Kg	0.20	0.20	U
Copper	mg/Kg	0.12	0.12	U
Iron	mg/Kg	1.2	1.2	U
Potassium	%	0.0020	0.0020	U
Magnesium	mg/Kg	1.5	1.5	U
Manganese	mg/Kg	0.20	0.20	U
Molybdenum	mg/Kg	0.20	0.20	U
Sodium	mg/Kg	12	12	U
Nickel	mg/Kg	0.12	0.12	U
Lead	mg/Kg	0.12	0.12	U
Antimony	mg/Kg	0.50	0.50	U
Selenium	mg/Kg	1.0	1.0	U
Silicon	mg/Kg	0.62	0.62	U
Tin	mg/Kg	0.62	0.62	U
Strontium	mg/Kg	0.12	0.12	U
Titanium	mg/Kg	0.10	0.10	U
Thallium	mg/Kg	0.20	0.20	U
Vanadium	mg/Kg	0.12	0.12	U
Zinc	mg/Kg	1.2	1.2	U

QC Batch: DGMm/1461 Analysis Method: SW-846 6010

QC Batch Method: SW-846 3010A Prepared: 06/16/2021 03:00

Associated Lab Samples: J2107194002, J2107194004

METHOD BLANK: 3923838

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
METALS				
Silver	mg/L	0.0080	0.0080	U
Aluminum	mg/L	0.20	0.20	U
Arsenic	mg/L	0.0080	0.0080	U
Boron	mg/L	0.10	0.10	U
Barium	mg/L	0.0030	0.0030	U
Beryllium	mg/L	0.0020	0.0020	U

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QUALITY CONTROL DATA

Workorder: J2107194 Bridgeport Barge

METHOD BLANK: 3923838

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Calcium	mg/L	0.20	0.20	U
Cadmium	mg/L	0.0010	0.0010	U
Cobalt	mg/L	0.0010	0.0010	U
Chromium	mg/L	0.0050	0.0050	U
Copper	mg/L	0.010	0.010	U
Iron	mg/L	0.20	0.20	U
Potassium	mg/L	0.50	0.50	U
Magnesium	mg/L	0.10	0.10	U
Manganese	mg/L	0.0050	0.0050	U
Molybdenum	mg/L	0.0040	0.0040	U
Sodium	mg/L	0.80	0.80	U
Nickel	mg/L	0.010	0.010	U
Lead	mg/L	0.0030	0.0030	U
Antimony	mg/L	0.0070	0.0070	U
Selenium	mg/L	0.040	0.040	U
Silicon	mg/L	0.20	0.20	U
Tin	mg/L	0.040	0.040	U
Strontium	mg/L	0.010	0.010	U
Titanium	mg/L	0.0020	0.0020	U
Thallium	mg/L	0.010	0.010	U
Vanadium	mg/L	0.0020	0.0020	U
Zinc	mg/L	0.050	0.050	U

QUALITY CONTROL DATA QUALIFIERS

Workorder: J2107194 Bridgeport Barge

QUALITY CONTROL PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J4	Estimated Result
L	Off-scale high. Actual value could be more than the value given.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: J2107194 Bridgeport Barge

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
J2107194006	1-05 Turbidity			SM 2130B	WCAj/2518
J2107194007	4-01 Turbidity			SM 2130B	WCAj/2518
J2107194001	1-05s	SW-846 7471A	DGMj/1661	SW-846 7471A	CVAj/1149
J2107194003	4-01s	SW-846 7471A	DGMj/1661	SW-846 7471A	CVAj/1149
J2107194005	Hopper 1	SW-846 7471A	DGMj/1661	SW-846 7471A	CVAj/1149
J2107194004	4-01w	SW-846 7470A	DGMj/1669	SW-846 7470A	CVAj/1153
J2107194001	1-05s			SM 2540G	WCAj/2616
J2107194003	4-01s			SM 2540G	WCAj/2616
J2107194005	Hopper 1			SM 2540G	WCAj/2616
J2107194002	1-05w			SW-846 7470A	CVAj/1153
J2107194001	1-05s	SW-846 3050B	DGMt/1889	SW-846 6010	ICPt/1548
J2107194003	4-01s	SW-846 3050B	DGMt/1889	SW-846 6010	ICPt/1548
J2107194005	Hopper 1	SW-846 3050B	DGMt/1889	SW-846 6010	ICPt/1548
J2107194002	1-05w	SW-846 3010A	DGMm/1461	SW-846 6010	ICPm/1462
J2107194004	4-01w	SW-846 3010A	DGMm/1461	SW-846 6010	ICPm/1462

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☐ Fort Myers: 13100 Westlinks Terrace, Ste. 10, FL 33913 • 239.674.8130 • Lab ID: E84492
☑ Jacksonville: 6581 Southpoint Pkwy., FL 32216 • 904.363.9350 • Lab ID: E82574
☐ Tallahassee: 2639 North Monroe St., Suite D, FL 32303 • 850.219.6274 • Lab ID: E811095
☐ Gr
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☐ Ta

J2107194

Client Name:	Research Planning, Inc.	Project Name:	Bridgeport Barge
Address:	1121 Park Street	Project Number:	
	Columbia, SC 29201	PO Number:	
Phone:	803-256-7322	FDEP Facility No:	
FAX:		FDEP Facility Addr:	
Contact:	Jacqueline Michel		
Sampled By:	Hal Fravel	Special Instructions:	
Turn Around Time:	(Standard) Rush		
AEL Profile #:	67171	ADaPT EQuIS Other	

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: Meals Scan + Hg	Turbidity	Preservation	Field-Filtered?	LABORATORY I.D. NUMBER
1-05s	Sediment - potential Agremax	Grab	5/26/21	1225	SO	1		x				001
1-05w	Water - potential Agremax	Grab	5/26/21	1220	SW	1		x				002
4-01s	Sediment - background	Grab	5/26/21	1525	SO	1		x				003
4-01w	Water - background	Grab	5/26/21	1530	SW	1		x				004
Hopper 1	Agremax	Grab	5/25/21	0940	SO	1		x				005
1-05 turbidity	Turbidity	Grab	5/26/21	1555	SW	1			x			006
4-01 turbidity	Turbidity background	Grab	5/26/21	1530	SW	1			x			007

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge **Preservation Code:** I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☐ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temp. when received (observed) 4.0 °C Temp. when received (corrected) 3.8 °C

DCN: AD-D051web Form last revised 08/07/2019 Device used for measuring Temp by unique identifier (circle IR temp gun used) 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V F: 1A

	Relinquished by:	Date	Time	Received by:	Date	Time
1	[signature]	5/28/21	1025	[signature]	5/28/21	1028
2						
3						
4						

FOR DRINKING WATER USE:
(When PWS Information not otherwise supplied) PWS ID: _____
Contact Person: _____
Supplier of Water: _____
Site-Address: _____

Advanced Environmental Labs Inc

Client: Research Planning Project name: Bridgeport Barge

Date/Time Rcvd: 5-28-2021 10:28 Log-In request number: J2107194

Received by: JB Completed by: BA

Cooler/Shipping Information:

Courier: ☐ AEL ☒ Client ☐ UPS ☐ Blue Streak ☐ FedEx ☐ AES ☐ ASAP ☐ Other (describe): _____

Type: ☒ Cooler ☐ Box ☐ Other (describe) _____

Cooler temperature: Identify the cooler and document the temperature blank or ice water measurement

Cooler ID					
Temp (°C)	3.0				
Temp taken from	☒ Sample Bottle ☐ Cooler	☐ Sample Bottle ☐ Cooler	☐ Sample Bottle ☐ Cooler	☐ Sample Bottle ☐ Cooler	☐ Sample Bottle ☐ Cooler
Temp measured with	☒ IR gun S/N 9333779 ☐ Thermometer (enter ID):	☐ IR gun S/N 9333779 ☐ Thermometer (enter ID):	☐ IR gun S/N 9333779 ☐ Thermometer (enter ID):	☐ IR gun S/N 9333779 ☐ Thermometer (enter ID):	☐ IR gun S/N 9333779 ☐ Thermometer (enter ID):

Other Information:

Any discrepancies should be explained in the "Comments" section below.

CHECKLIST	YES	NO	NA
1. Were custody seals on shipping container(s) intact?			✓
2. Were custody papers properly included with samples?	✓		
3. Were custody papers properly filled out (ink, signed, match labels)?	✓		
4. Did all bottles arrive in good condition (unbroken)?	✓		
5. Were all bottle labels complete (sample #, date, signed, analysis, preservatives)?	✓		
6. Did the sample labels agree with the chain of custody?	✓		
7. Were correct bottles used for the tests indicated?	✓		
8. Were proper sample preservation techniques indicated on the label?	✓		
9. Were samples received within holding times?	✓		
10. Were all VOA vials free of the presence of air bubbles?			✓
11. Have all Soil VOA Vials and Encores been placed in a freezer within 48 hours of collection?			✓
12. Were samples in direct contact with wet ice? If "No," check one: ☐ NO ICE ☐ BLUE ICE	✓		
13. Was the cooler temperature less than 6°C?	✓		
14. Where pH preservation is required, are sample pHs checked and any anomalies recorded by Sample control? Are all <2 or >10? Note: VOA samples are checked by laboratory analysts.	✓		
15. Was sufficient sample volume provided to perform all tests?	✓		
16. If for Bacteriological testing, were containers supplied by AEL? (See QA officer if answer is no)			✓
17. Were all sample containers provided by AEL? (Other than Bacteriological)	✓		
18. Were samples accepted into the laboratory?	✓		
19. When necessary to split samples into other bottles, is it noted in the comments?	✓		
20. Where Encores received and if so, how many?			✓

Comments: (Note all sample(s) and container (s)" with a "No" checklist response in this comment section)

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Appendix E. Marine Water Data Quality Levels

TABLE 2
MARINE WATER DATA QUALITY LEVELS
AES PUERTO RICO, LP

Constituent	CAS	Units	Florida Surface Water Criteria - Class II - Shellfish Propagation or Harvesting (a)	Florida Surface Water Criteria - Class III - Predominantly Marine Waters (a)	USEPA Ambient Water Quality Criteria for Saltwater (acute) (b) Total	USEPA Ambient Water Quality Criteria for Saltwater (acute) (b) Dissolved	USEPA Ambient Water Quality Criteria for Saltwater (chronic) (b) Total	USEPA Ambient Water Quality Criteria for Saltwater (chronic) (b) Dissolved	Data Quality Level (mg/L) (c)	Data Quality Level (ug/L) (c)
Aluminum	7429-90-5	mg/L	1.5	1.5	NA	NA	NA	NA	1.5	1500
Antimony	7440-36-0	mg/L	4.3	4.3	NA	NA	NA	NA	4.3	4300
Arsenic	7440-38-2	mg/L	0.05	0.05	0.069	0.069	0.036	0.036	0.036	36
Barium	7440-39-3	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	mg/L	0.00013 (d)	0.00013 (d)	NA	NA	NA	NA	0.00013	0.13
Boron	7440-42-8	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	mg/L	0.0088	0.0088	0.033	0.033	0.0079	0.0079	0.0079	7.9
Calcium	7440-70-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	mg/L	0.050 (e)	0.050 (e)	1.1 (e)	1.1 (e)	0.050 (e)	0.050 (e)	0.050	50
Cobalt	7440-48-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	mg/L	0.0037	0.0037	0.0048	0.0040	0.0031	0.0026	0.0026	2.6
Iron	7439-89-6	mg/L	0.3	0.3	NA	NA	NA	NA	0.3	300
Lead	7439-92-1	mg/L	0.0085	0.0085	0.14	0.13	0.0056	0.0053	0.0053	5.3
Magnesium	7439-95-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	mg/L	0.1	NA	NA	NA	NA	NA	0.1	100
Mercury	7439-97-6	mg/L	0.000025	0.000025	0.0018	0.0015	0.0094	0.008	0.000025	0.025
Molybdenum	7439-98-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	mg/L	0.0083	0.0083	0.074	0.073	0.0082	0.0081	0.0081	8.1
Potassium	7440-09-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	mg/L	0.071	0.071	0.29	0.29	0.071	0.071	0.071	71
Silver	7440-22-4	mg/L	0.0023	0.0023	0.0019	0.0016	NA	NA	0.0016	1.6
Sodium	7440-23-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Strontium	7440-24-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	mg/L	0.0063	0.0063	NA	NA	NA	NA	0.0063	6.3
Tin	7440-31-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	mg/L	0.086	0.086	0.090	0.085	0.081	0.077	0.077	77

Notes:

AWQC - Ambient Water Quality Criteria.
CAS - Chemical Abstracts Service Registry Number.
mg/L - milligram per liter.
NA - Not Available.
ug/L - micrograms per liter.
USEPA - United States Environmental Protection Agency.

(a) - Florida Administrative Code. Chapter 62-302. Surface Water Quality Standards. Values for Class III Marine for Fish Consumption; Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife and Class II Shellfish Propagation or Harvesting. https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-302

(b) - USEPA Ambient Water Quality Criteria for Saltwater. https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table

(c) - Data quality level - analytical detection limit should be at or below this level.

(d) - Annual average.

(e) - Values are not available for chromium (III), therefore values for chromium (VI) are used.