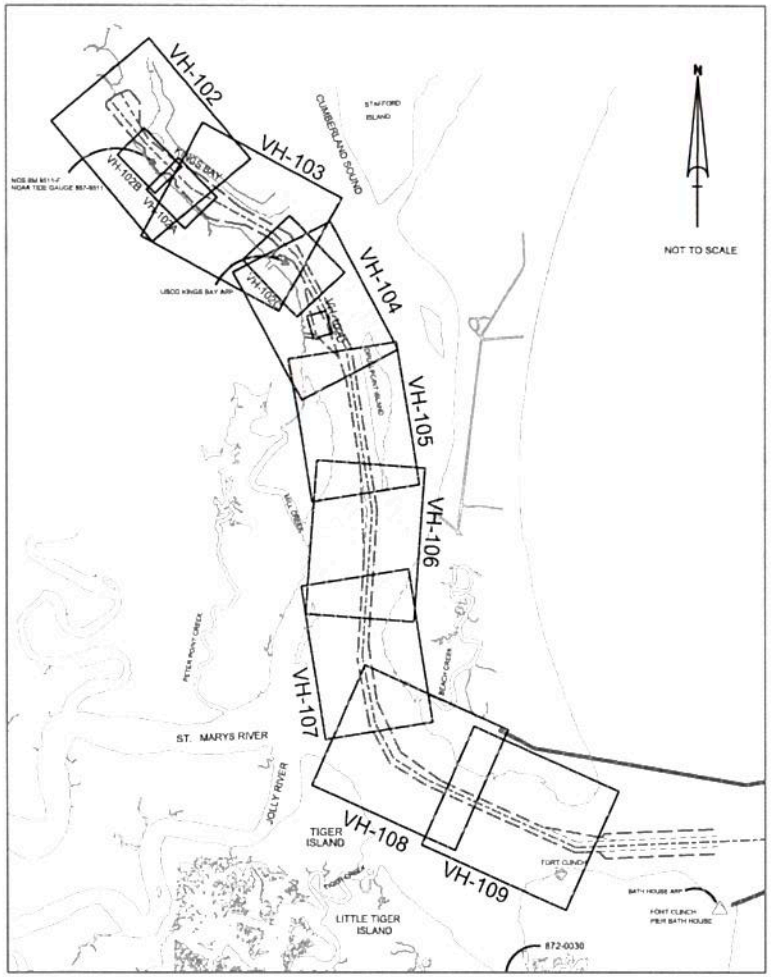
U.S. NAVY SUBMARINE BASE
KINGS BAY, GEORGIA
KINGS BAY INNER CHANNEL
BIMONTHLY EXAMINATION SURVEY - JULY 2015



LEGEND	
△	MONUMENT
	LIGHTED BEACON
	GREEN DAYBEACON
▲	RED DAYBEACON
	RED LIGHTED BUOY
	GREEN LIGHTED BUOY
	CAN BUOY
	NUN BUOY
	TOP STAFF
	MAJOR CONTOUR
	MINOR CONTOUR
	MAJOR DEPRESSION
	MINOR DEPRESSION

DEPTH COLOR CODE
≤ 21.9
[illegible]
[illegible]
45.0 - 48.9
≥ 49.0

SURVEY NOTES

1. REFER TO SURVEY NO. 15-181. ALSO SHOWN IN THIS SURVEY ARE SOUNDINGS FROM BEFORE-DREDGE SURVEY NO. 15-092 AND AFTER-DREDGE SURVEY NO. 15-093.

2. SOUNDINGS ARE IN FEET AND TENTHS AND REFER TO MEAN LOWER LOW WATER (MLLW) TIDAL DATUM.

3. ALL ELEVATIONS ARE BELOW THE CHART DATUM UNLESS PRECEDED BY A (+) SIGN.

4. TIDAL REDUCTIONS WERE OBTAINED UTILIZING REAL-TIME KINEMATIC (RTK) GPS USING A HYPACK KINEMATIC TIDAL DATUM MODEL (KINGSBAY-2013 08 28.KTD).

5. PLANE COORDINATES ARE BASED ON THE TRANSVERSE MERCATOR PROJECTION FOR THE EAST ZONE OF GEORGIA AND REFERENCED TO NORTH AMERICAN DATUM OF 1983 (NAD83).

6. ALL STATIONING REFERS TO THE CENTERLINE OF THE CHANNEL.

7. THIS SURVEY WAS PERFORMED USING REAL-TIME KINEMATIC (RTK) GPS POSITIONING WITH THE FOLLOWING REFERENCE BASE LOCATIONS:

   REFERENCE BASE LOCATED AT "BATH HOUSE ARP" (OPUS PID # BB0298), FOR RANGE-A THRU RANGE-C.

   REFERENCE BASE LOCATED AT "USCG KINGS BAY ARP" (OPUS PID # BB0K29), FOR RANGE-D THRU RANGE-I.

8. DEPTHS DEPICTED BY THIS SURVEY ARE REFERENCED TO MLLW, AS REPORTED BY THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA). NOAA'S VDATUM MODEL WAS USED AND CALIBRATED TO THE PUBLISHED MLLW HEIGHTS OF THE BENCH MARKS ASSOCIATED WITH THE TIDE GAUGE SITES SPECIFIED BELOW:

   NOAA TIDAL STATION 872-0030, FERNANDINA, FL, FOR RANGE A THRU RANGE-D (OUTSIDE WRA)

   NOAA TIDAL STATION 867-8511, KINGS BAY, GA, FOR RGE-G THRU RGE-I (INSIDE WRA)

9. VERTICAL MEASUREMENTS WERE MADE USING A RESON MODEL 7101 MULTIBEAM SYSTEM AND A ROSS MODEL 636C SMARTSOUNDER WITH A DUAL-FREQUENCY (28/200KHZ) TRANSDUCER. SOUNDINGS SHOWN ARE IN HIGH FREQUENCY FROM RANGE-A THRU RANGE-D, SITE-E, MSF, E-NW-1 AND WARPING WHARF AND LOW FREQUENCY FROM RANGE-E THRU RANGE-I.

VESSEL	DATE OF SURVEY	AREA SURVEYED
SB-36	13 JUN 2015	REFIT WHARFS
SB-36	14 JUL 2015	MSF
SB-36	29 JUL 2015	RGE-G, STA 39+100 THRU 41+900
SB-36	30 JUL 2015	SITE-E & RANGE-F
SB-36	30-31 JUL 2015	RGE-E, STA 36+148 TO 36+999
SB-36	31 JUL 2015	RGE-G, STA 37+504 TO 39+900
SB-36	1 AUG 2015	RGE-A THRU RGE-A2, STA 12+005
SB-36	2 AUG 2015	RGE-B THRU RGE-C, STA 22+347
SB-36	3 AUG 2015	E-NW-1 & WARPING WHARF
SB-36	5 AUG 2015	RGE-D, STA 22+347 TO 36+148
SB-36	7 AUG 2015	RGE-E, STA 41+900 TO 48+175
SB-36	15 AUG 2015	RGE-G, STA 42+00 THRU RGE-I, STA 46+900

10. AIDS TO NAVIGATION WERE LOCATED DURING THIS SURVEY.

11. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED ABOVE AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS AT THAT TIME. THIS CHART IS SOLELY FOR THE DISTRIBUTION OF AVAILABLE DEPTHS AT THE TIME OF THE SURVEY AND IS NOT TO BE USED FOR NAVIGATION.

12. SURVEY ACCURACY PERFORMANCE STANDARDS, QUALITY CONTROL, AND QUALITY ASSURANCE REQUIREMENTS WERE FOLLOWED IN ACCORDANCE WITH USACE EM 1110-2-1003, HYDROGRAPHIC SURVEYING, 30 NOV 2013 AND EM 1110-2-6056, STANDARDS AND PROCEDURES FOR REFERENCING PROJECT ELEVATION GRADES TO NATIONWIDE VERTICAL DATUMS, 31 DEC 2010.

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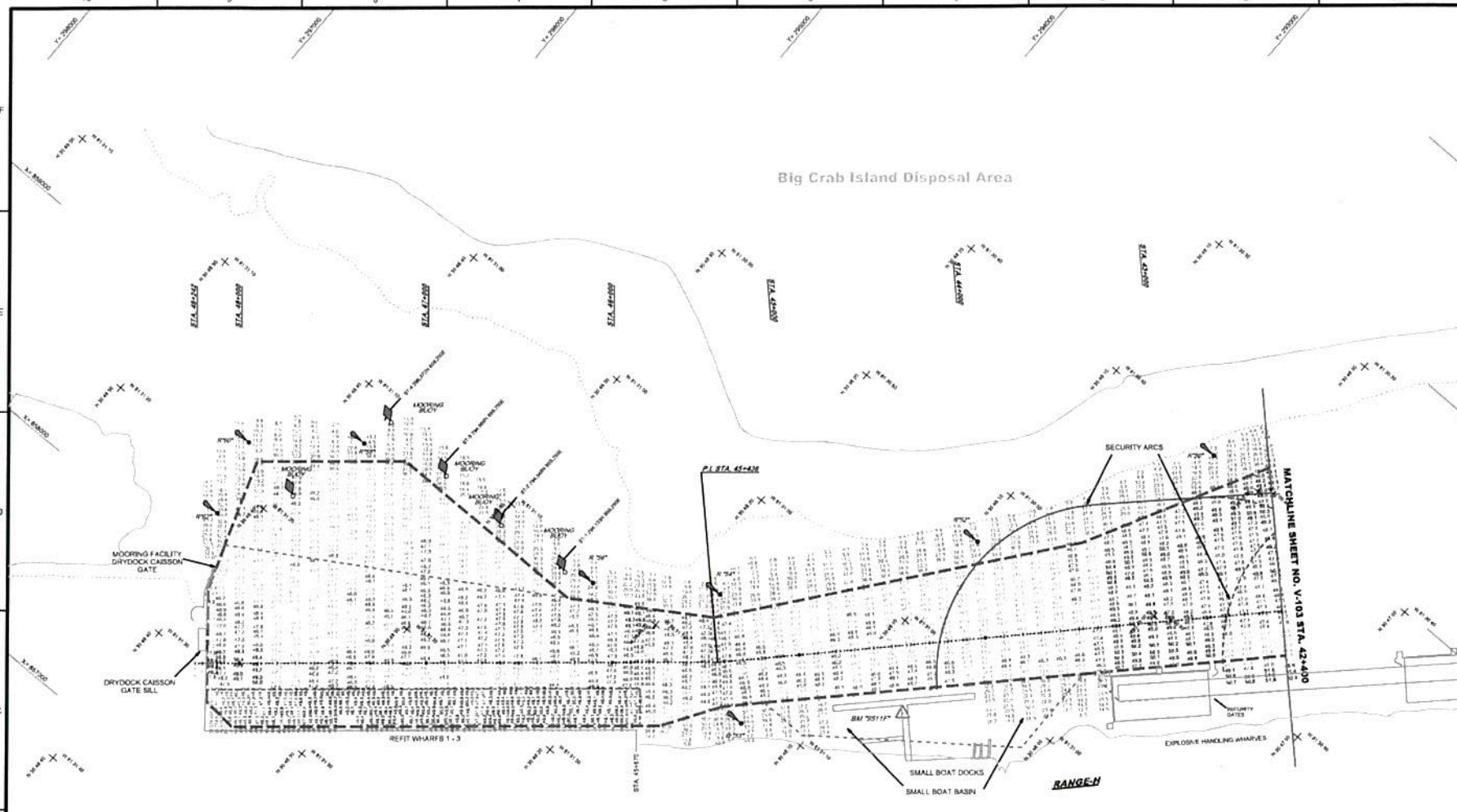
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

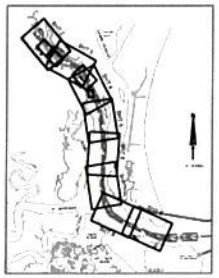
BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT
MAP

Scale: AS SHOWN

Drawing no.
V-101

SHEET 01 OF 12





AIDS TO NAVIGATION	PLANE COORDINATES		LATITUDE	LONGITUDE
	X	Y		
LT - 50 (07/15)	861,979	291,849	30°48'03.04"	81°30'40.62"
LT - 52 (07/15)	860,867	292,521	30°48'09.76"	81°30'53.42"
LT - 53 (07/15)	858,251	292,853	30°48'13.13"	81°31'11.24"
LT - 54 (07/15)	858,764	293,390	30°48'18.42"	81°31'06.01"
LT - 56 (07/15)	859,334	293,941	30°48'23.89"	81°31'10.22"
LT - 58 (07/15)	859,087	295,379	30°48'38.14"	81°31'12.95"
LT - 60 (07/15)	858,893	295,854	30°48'42.87"	81°31'17.44"
LT - 62 (07/15)	858,295	295,738	30°48'41.74"	81°31'22.62"
MOORING BUOY (07/15)	859,290	294,102	30°48'25.49"	81°31'11.05"
MOORING BUOY (07/15)	859,228	294,329	30°48'29.71"	81°31'11.38"
MOORING BUOY (07/15)	859,241	294,927	30°48'33.65"	81°31'11.22"
MOORING BUOY (07/15)	859,265	295,341	30°48'37.75"	81°31'10.91"
MOORING BUOY (07/15)	858,827	295,487	30°48'39.24"	81°31'18.22"

DEPTH COLOR CODE

≥ 35.9	
[illegible]	
[illegible]	
[illegible]	
46.9 - 48.9	
≥ 48.8	

GRAPHIC SCALE

100' 0 100' 200'

NOTES:
1. REFER TO SURVEY NO. 13-161.
2. SEE SHEET NO. 1 FOR SURVEY NOTES.
3. LATLONG GRID TICS ARE AT 10-SECOND INTERVALS.

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JACKSONVILLE, FLORIDA

BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT
PLAN

Scale: AS SHOWN

Drawing no.
V-102

SHEET 82 OF 12

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SAFETY ON THIS JOB DEPENDS ON YOU

RANGE-H

RANGE-G

N 30 48 00 W 81 30 50

N 30 47 50 W 81 30 40

WARPING WHARF

EHW UNDER CONSTRUCTION

EXPLOSIVE HANDLING WHARVES

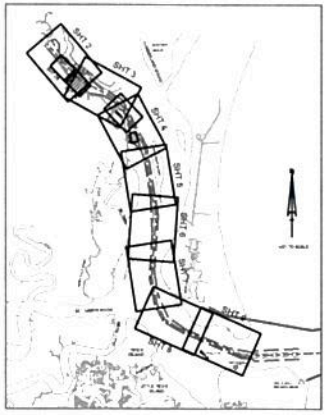
EXPLOSIVE HANDLING WHARVES

W 81 31 00

N 30 47 50 W 81 30 50

N 30 47 40

N 30 47 40 W 81 30 50



DEPTH COLOR CODE	
≥ 51.0	
[illegible]	
[illegible]	
45.0 - 48.9	
≤ 49.0	

GRAPHIC SCALE

NOTES:
1. REFER TO SURVEY NO. 15-101.
2. SEE SHEET NO. 1 FOR SURVEY NOTES.

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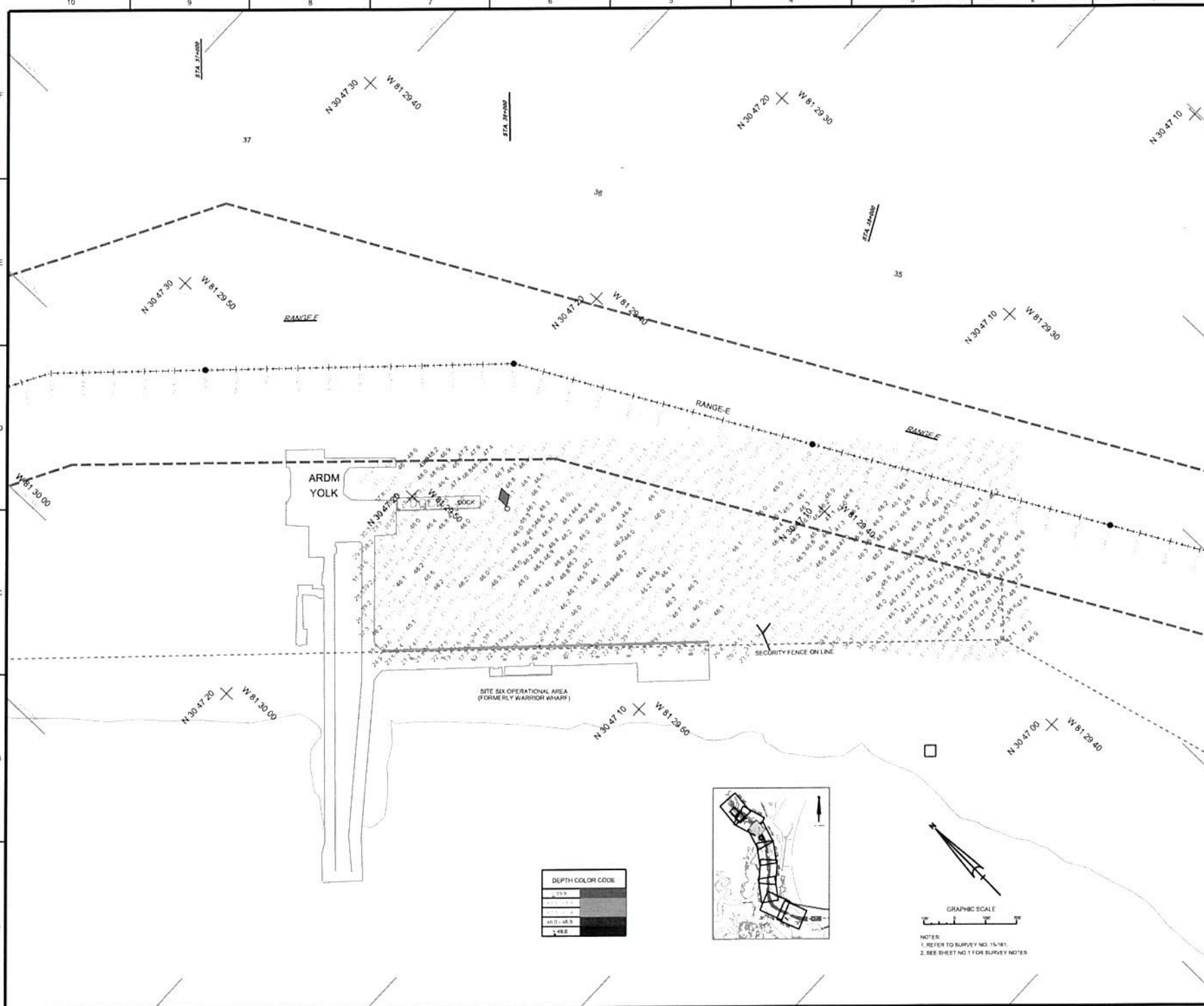
BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT
PLAN

Scale: AS SHOWN

Drawing no.

V-102A

SHEET 93 OF 12



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BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT

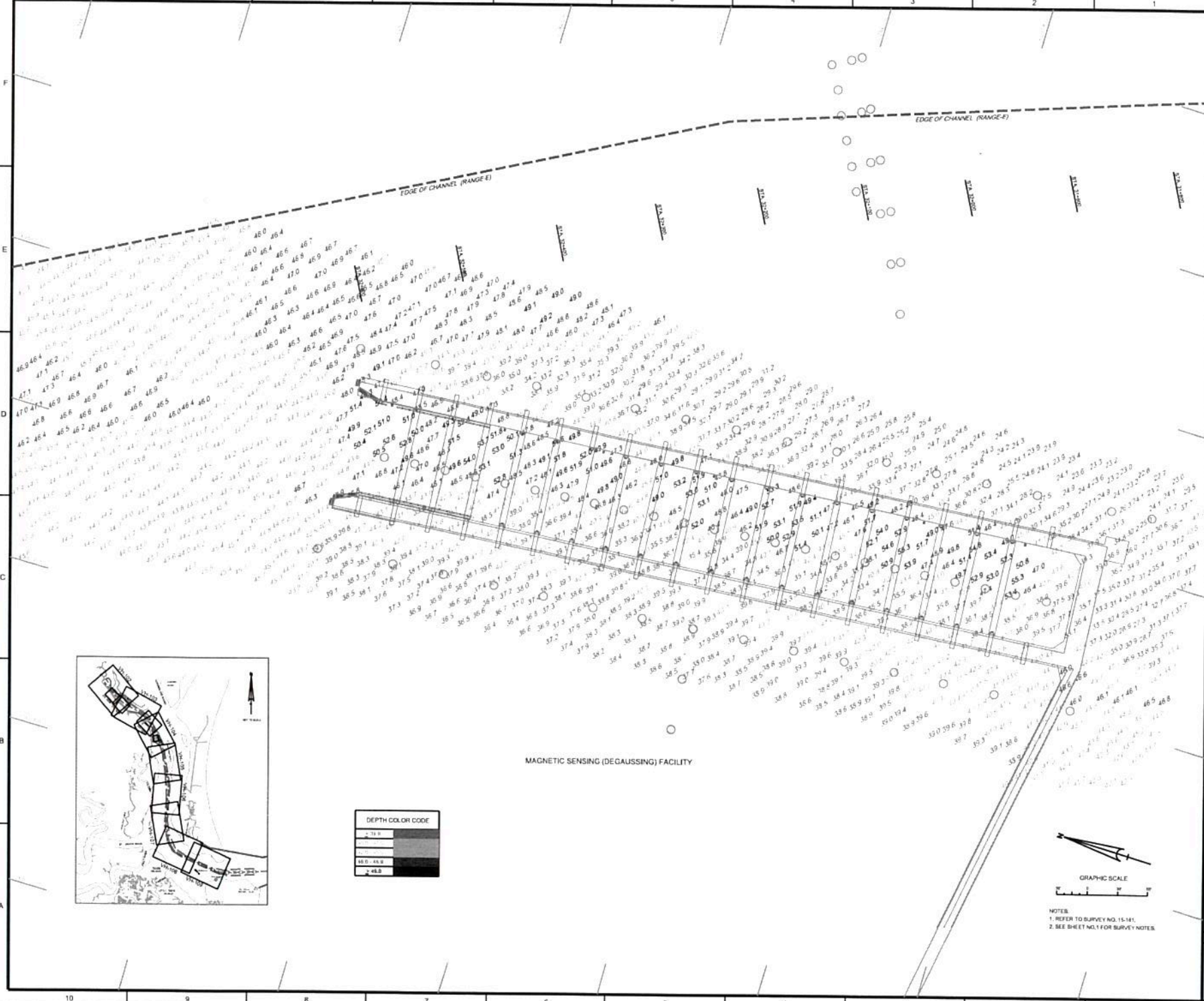
SITE 6 & ARDM YOLK
PLAN

Scale: AS SHOWN

Drawing no.

V-102C

SHEET 4 OF 12



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BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT

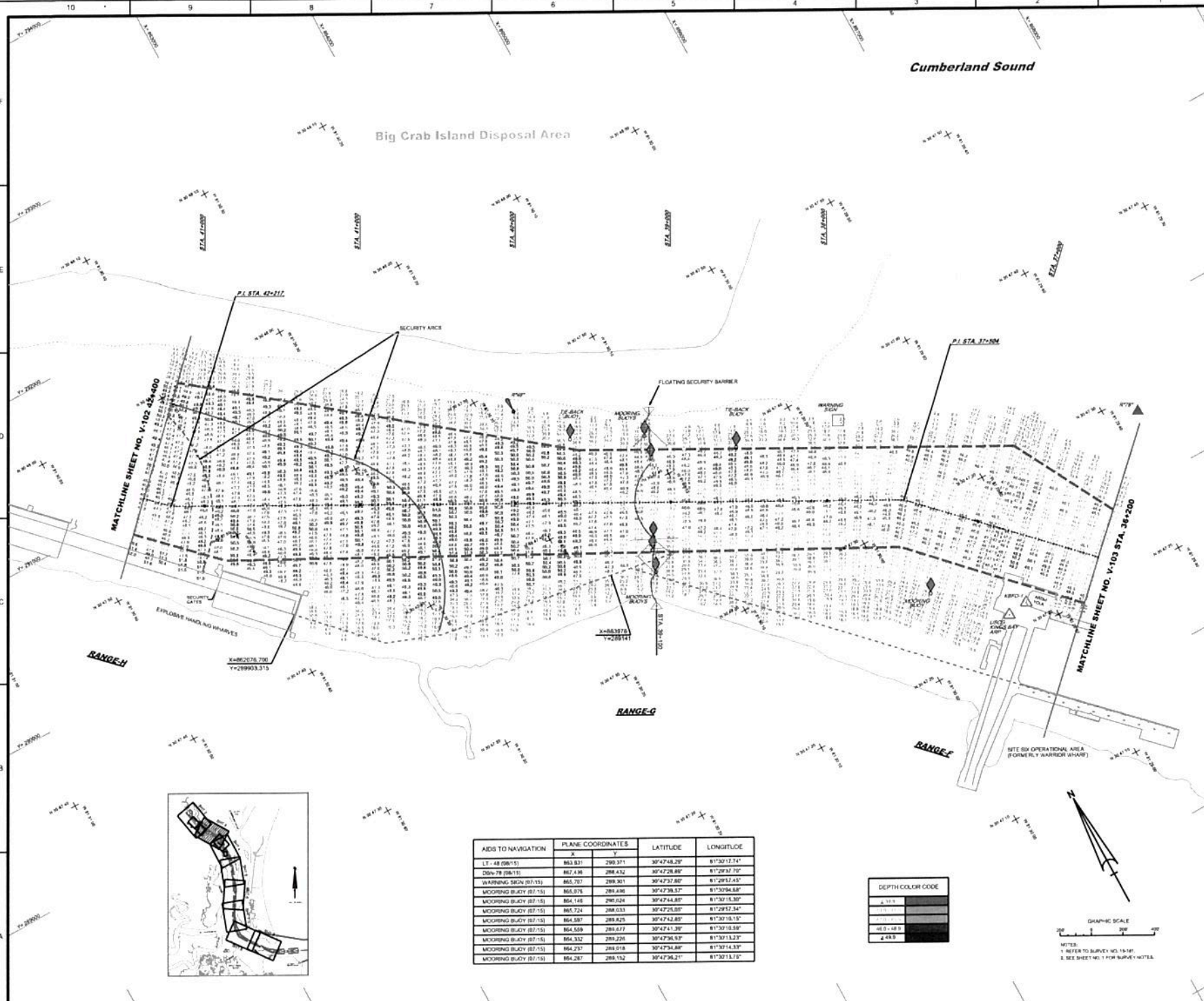
MSF OPERATION BASIN PLAN

Scale: AS SHOWN

Drawing no.

VH-102D

SHEET 5 OF 12



AIDS TO NAVIGATION	PLANE COORDINATES		LATITUDE	LONGITUDE
	X	Y		
LT - 48 (08/15)	863,831	290,371	30°47'48.29"	81°30'17.74"
DBN-78 (08/15)	867,436	288,432	30°47'28.49"	81°29'37.70"
WARNING SIGN (07/15)	865,707	289,301	30°47'37.80"	81°29'57.45"
MOORING BUOY (07/15)	865,076	289,496	30°47'39.57"	81°30'04.88"
MOORING BUOY (07/15)	864,146	290,024	30°47'44.85"	81°30'15.30"
MOORING BUOY (07/15)	865,724	288,033	30°47'25.05"	81°29'57.34"
MOORING BUOY (07/15)	864,587	289,825	30°47'42.85"	81°30'10.15"
MOORING BUOY (07/15)	864,559	289,677	30°47'41.39"	81°30'10.58"
MOORING BUOY (07/15)	864,332	289,226	30°47'36.93"	81°30'13.23"
MOORING BUOY (07/15)	864,237	289,018	30°47'34.88"	81°30'14.33"
MOORING BUOY (07/15)	864,287	289,152	30°47'36.21"	81°30'13.70"

DEPTH COLOR CODE

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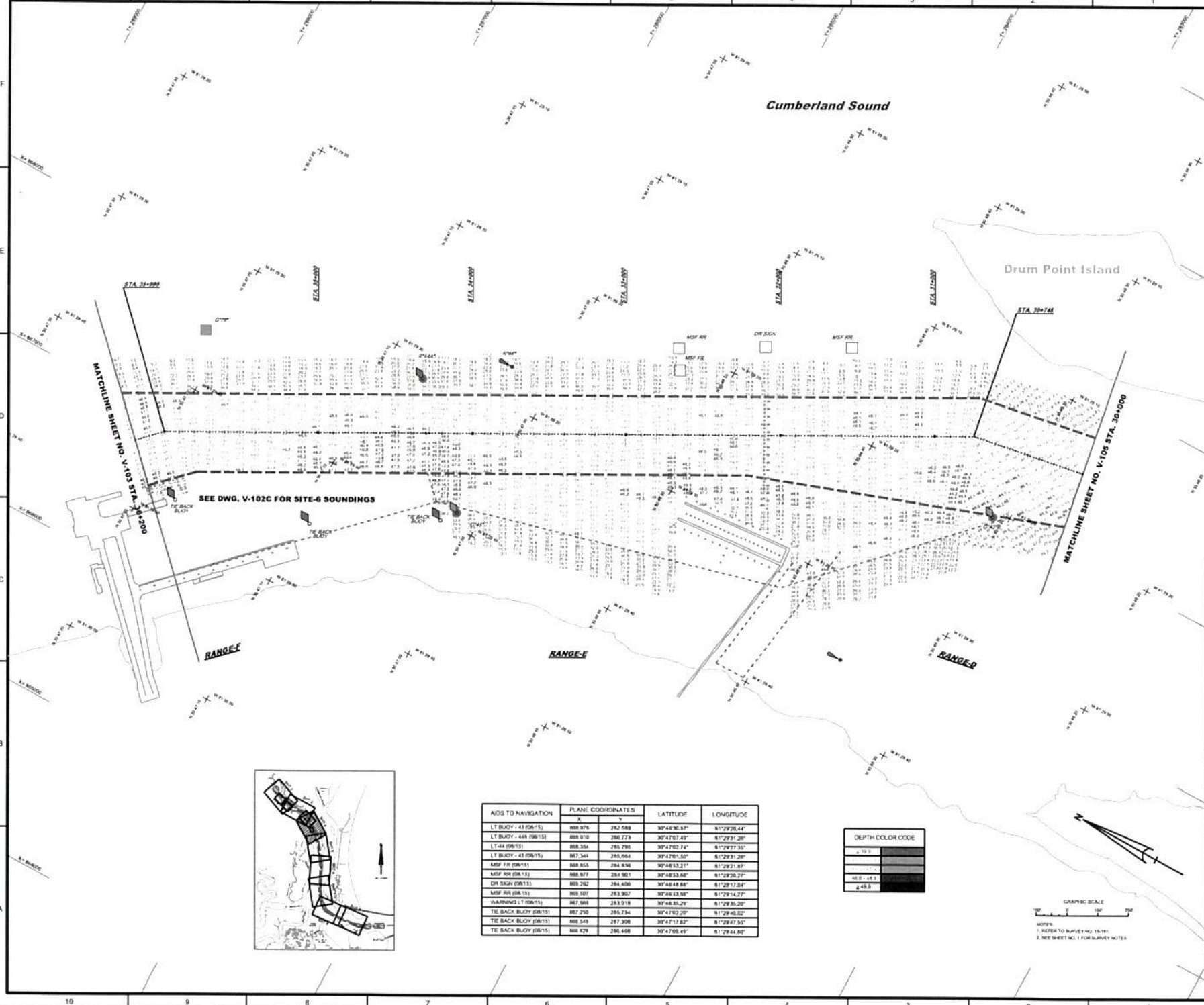
JACKSONVILLE, FLORIDA

BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT
PLAN

Scale: AS SHOWN

Drawing no.
V-103

SHEET 06 OF 12



AIDS TO NAVIGATION	PLANE COORDINATES		LATITUDE	LONGITUDE
	X	Y		
LT BUOY - 43 (08/15)	888,976	282,589	30°46'30.97"	81°29'26.44"
LT BUOY - 44A (08/15)	888,910	286,773	30°47'07.49"	81°29'31.26"
LT-44 (08/15)	888,354	285,796	30°47'02.74"	81°29'27.35"
LT BUOY - 45 (08/15)	887,344	285,664	30°47'01.50"	81°29'31.26"
MSF FR (08/15)	888,855	284,836	30°46'53.21"	81°29'21.87"
MSF RR (08/15)	888,977	284,901	30°46'53.88"	81°29'20.27"
DR SIGN (08/15)	889,262	284,480	30°46'48.88"	81°29'17.84"
MSF RR (08/15)	889,587	283,907	30°46'43.98"	81°29'14.27"
WARNING LT (08/15)	887,686	283,918	30°46'35.29"	81°29'35.20"
TE BACK BUOY (08/15)	887,250	285,734	30°47'02.20"	81°29'40.02"
TE BACK BUOY (08/15)	888,549	287,308	30°47'17.82"	81°29'47.95"
TE BACK BUOY (08/15)	888,828	286,468	30°47'09.49"	81°29'44.80"

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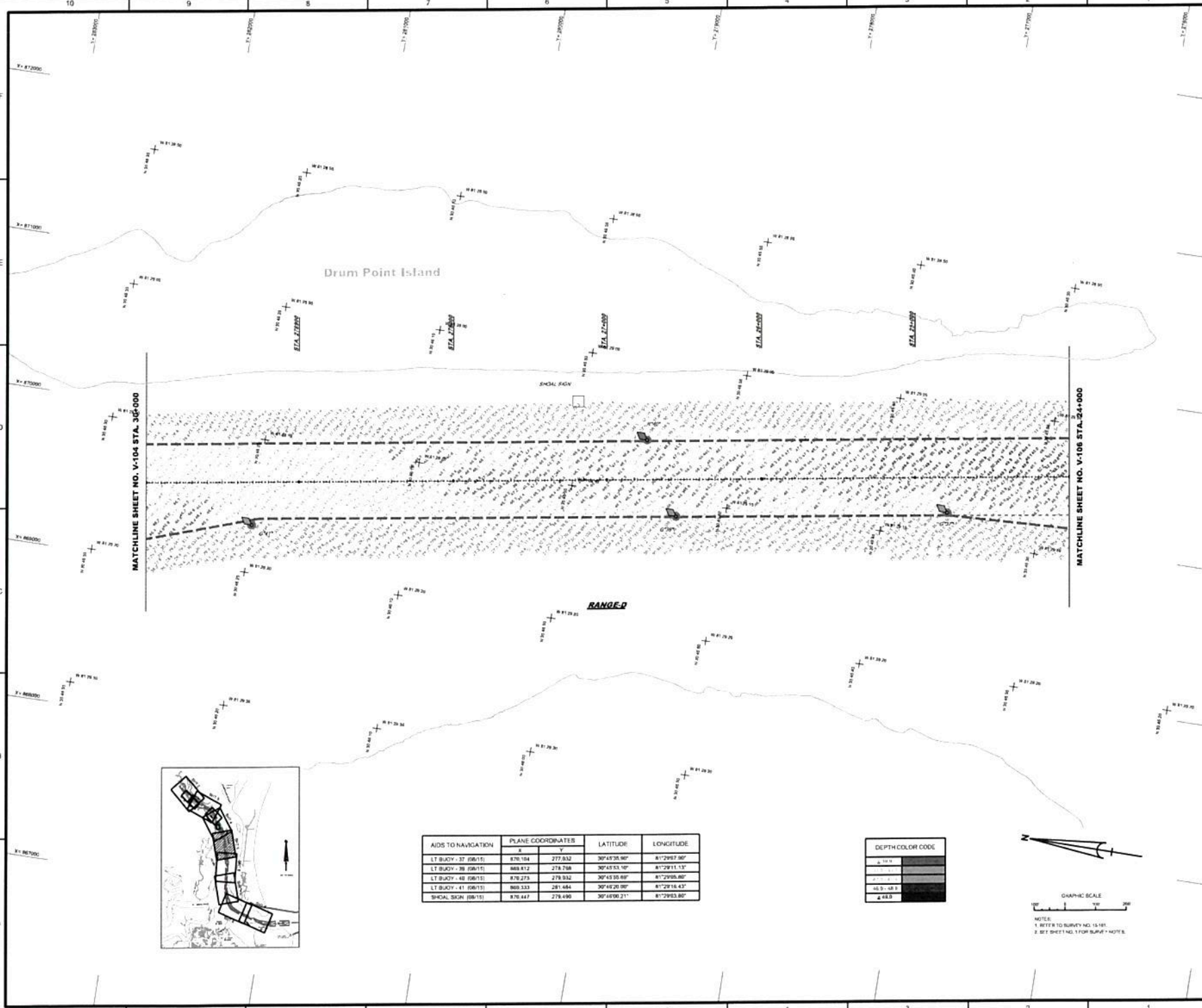
BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT
PLAN

Scale: AS SHOWN

Drawing no.
V-104

SHEET 87 OF 12


Drum Point Island
MATCHLINE SHEET NO. V-104 STA. 30+000
MATCHLINE SHEET NO. V-106 STA. 24+000
STA. 27+000
STA. 26+000
STA. 25+000
STA. 24+000
STA. 23+000
SHOAL SIGN
RANGE-D
AIDS TO NAVIGATION
PLANE COORDINATES
X
Y
LATITUDE
LONGITUDE
LT BUOY - 37 (08/15) 870.184 277.832 30°45'35.90" 81°29'57.90"
LT BUOY - 39 (08/15) 869.812 278.768 30°45'53.10" 81°29'31.13"
LT BUOY - 40 (08/15) 870.273 279.932 30°45'55.69" 81°29'05.80"
LT BUOY - 41 (08/15) 869.333 281.464 30°46'20.90" 81°28'16.43"
SHOAL SIGN (08/15) 870.447 279.496 30°46'00.21" 81°29'53.80"
DEPTH COLOR CODE
GRAPHIC SCALE
NOTES:
1. REFER TO SURVEY NO. 15-161.
2. SEE SHEET NO. 1 FOR SURVEY NOTES.
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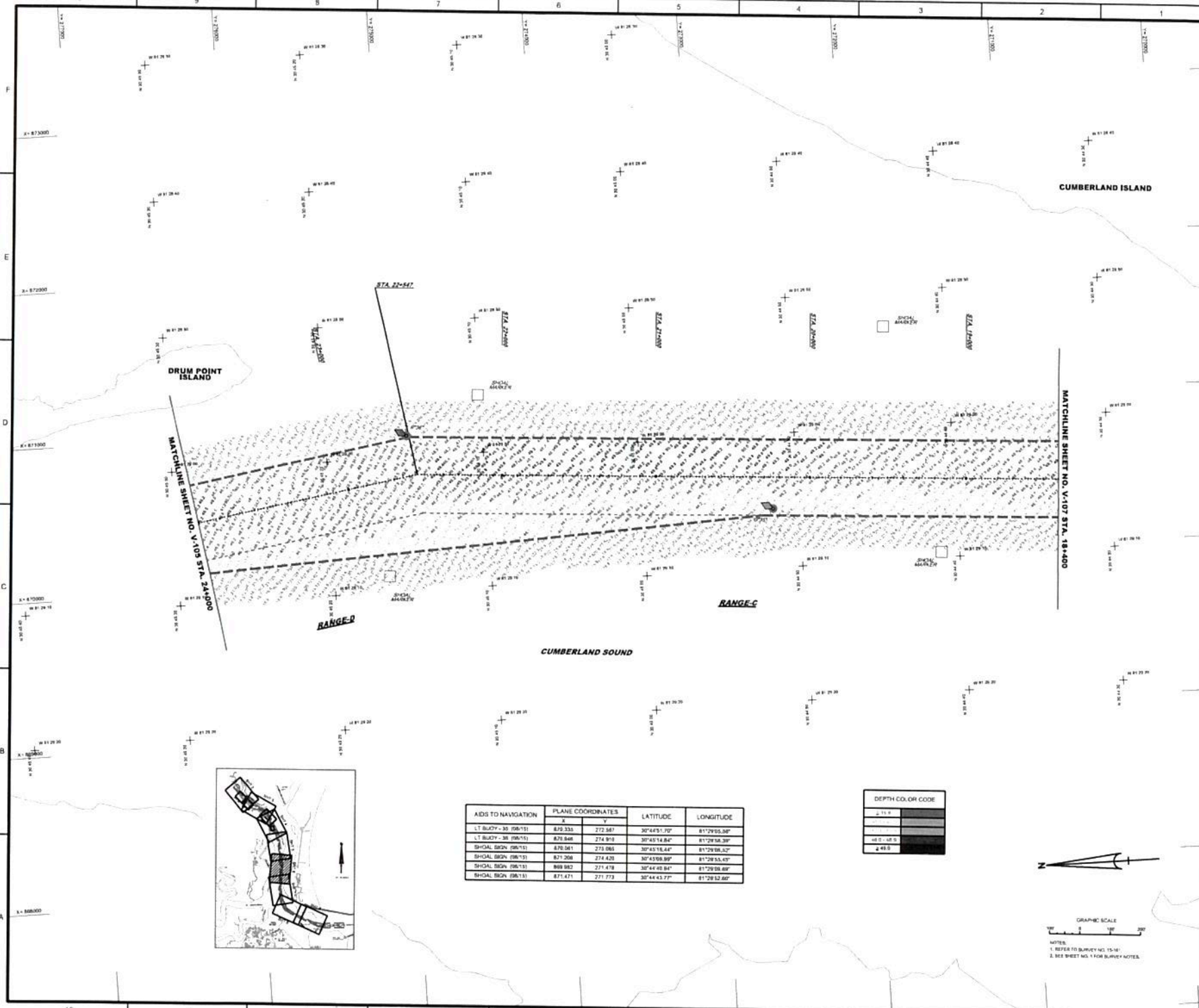
BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT
MAP
Scale: AS SHOWN
Drawing no.
V-105
SHEET 08 OF 12



AIDS TO NAVIGATION	PLANE COORDINATES X	PLANE COORDINATES Y	LATITUDE	LONGITUDE
LT BUOY - 33 (08/13)	870.335	272.587	30°44'51.70"	81°29'05.98"
LT BUOY - 38 (08/13)	870.846	274.918	30°45'14.84"	81°28'58.39"
SHOAL SIGN (08/13)	870.061	273.085	30°43'18.44"	81°29'08.52"
SHOAL SIGN (08/13)	871.206	274.420	30°43'08.99"	81°28'53.43"
SHOAL SIGN (08/13)	869.982	271.478	30°44'40.84"	81°29'09.69"
SHOAL SIGN (08/13)	871.471	271.773	30°44'43.77"	81°28'52.80"

DEPTH COLOR CODE
≥ 11.0
[illegible]
[illegible]
48.0 - 48.9
≥ 49.0

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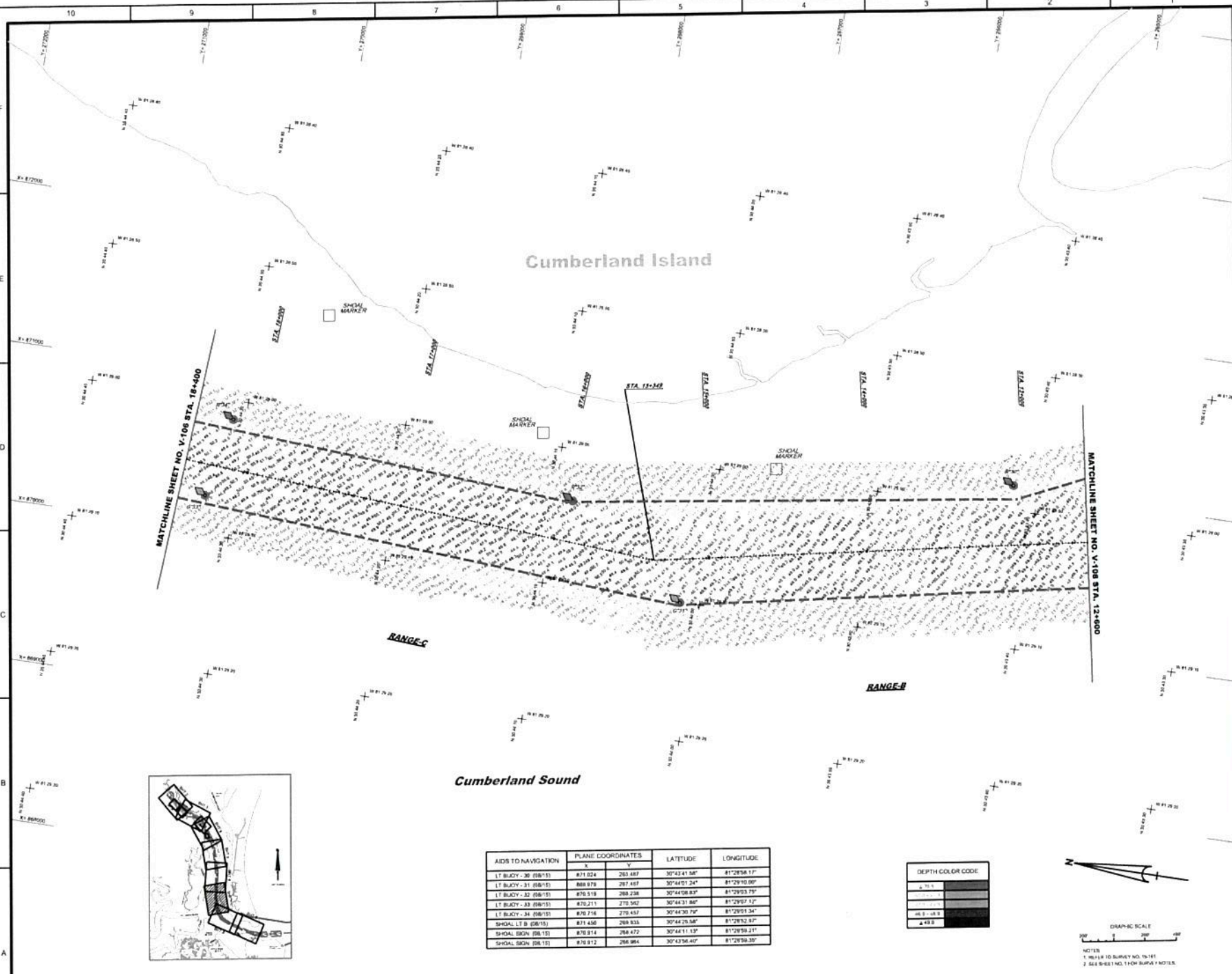
JACKSONVILLE, FLORIDA

BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT
MAP

Scale: AS SHOWN

Drawing No.
V-106

SHEET 06 OF 12



AIDS TO NAVIGATION	PLANE COORDINATES		LATITUDE	LONGITUDE
	X	Y		
LT BUOY - 30 (08/15)	871,824	263,487	30°43'41.58"	81°28'58.17"
LT BUOY - 31 (08/15)	868,978	267,487	30°44'01.24"	81°29'10.00"
LT BUOY - 32 (08/15)	870,519	268,238	30°44'08.83"	81°29'03.75"
LT BUOY - 33 (08/15)	870,211	270,562	30°44'31.86"	81°29'07.12"
LT BUOY - 34 (08/15)	870,716	270,457	30°44'30.79"	81°29'01.34"
SHOAL LT B (08/15)	871,456	269,935	30°44'25.58"	81°28'52.97"
SHOAL SIGN (08/15)	870,914	264,472	30°44'11.13"	81°28'59.21"
SHOAL SIGN (08/15)	870,912	264,984	30°43'54.40"	81°28'59.39"

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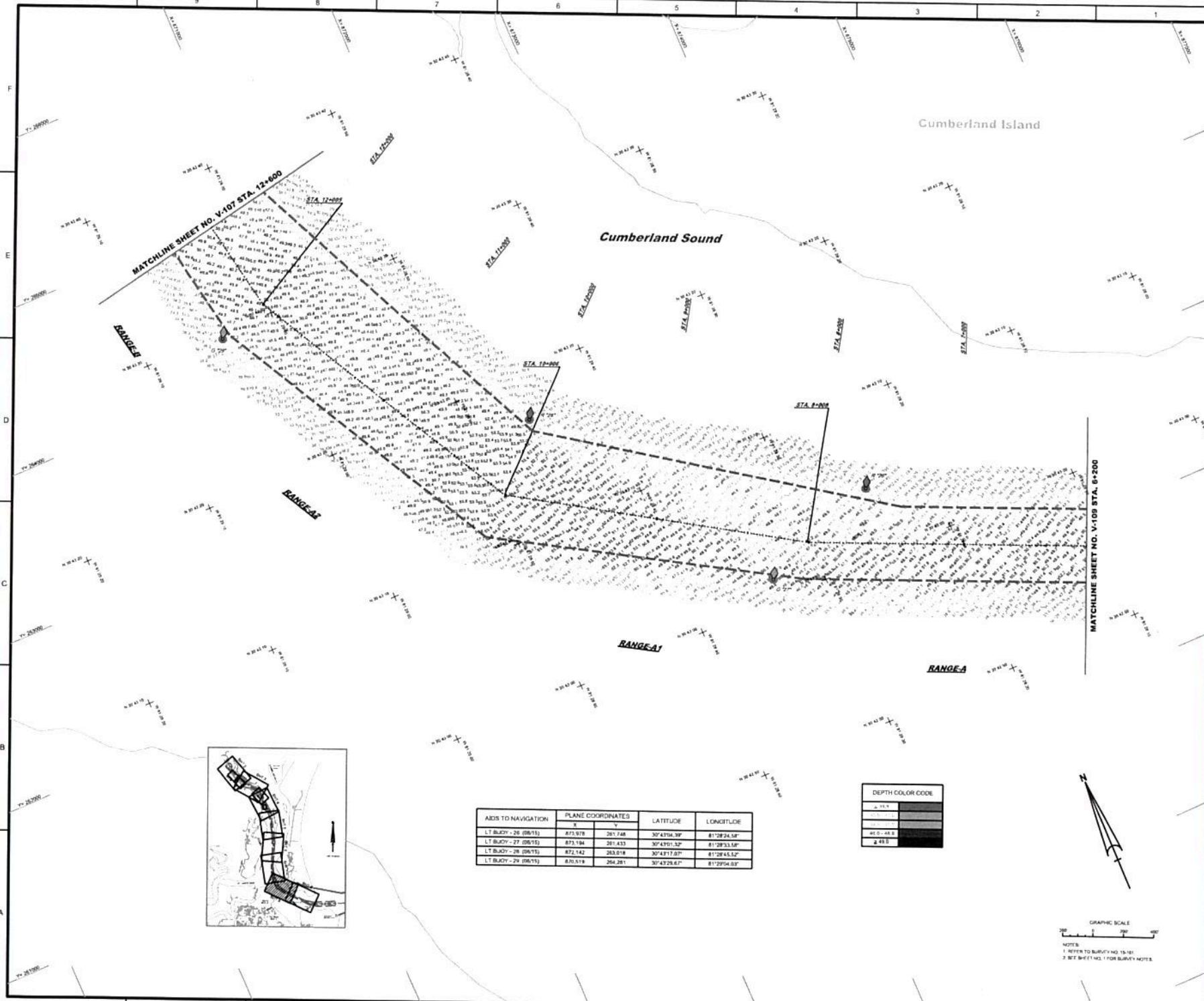
JACKSONVILLE, FLORIDA

BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT
M&P

Scale: AS SHOWN

Drawing no.
V-107

SHEET 10 OF 12



AIDS TO NAVIGATION	PLANE COORDINATES		LATITUDE	LONGITUDE
	X	Y		
LT BUOY - 26 (06/15)	873,978	261,746	30°43'04.39"	81°28'34.58"
LT BUOY - 27 (06/15)	873,194	261,433	30°43'01.32"	81°28'33.58"
LT BUOY - 28 (06/15)	872,142	263,018	30°43'17.07"	81°28'45.52"
LT BUOY - 29 (06/15)	870,519	264,261	30°43'29.67"	81°29'04.03"

DEPTH COLOR CODE
≥ 11.1
[illegible]
[illegible]
40.0 - 49.9
≥ 49.0

GRAPHIC SCALE

NOTES:
1. REFER TO SURVEY NO. 15-161.
2. SEE SHEET NO. 1 FOR SURVEY NOTES.

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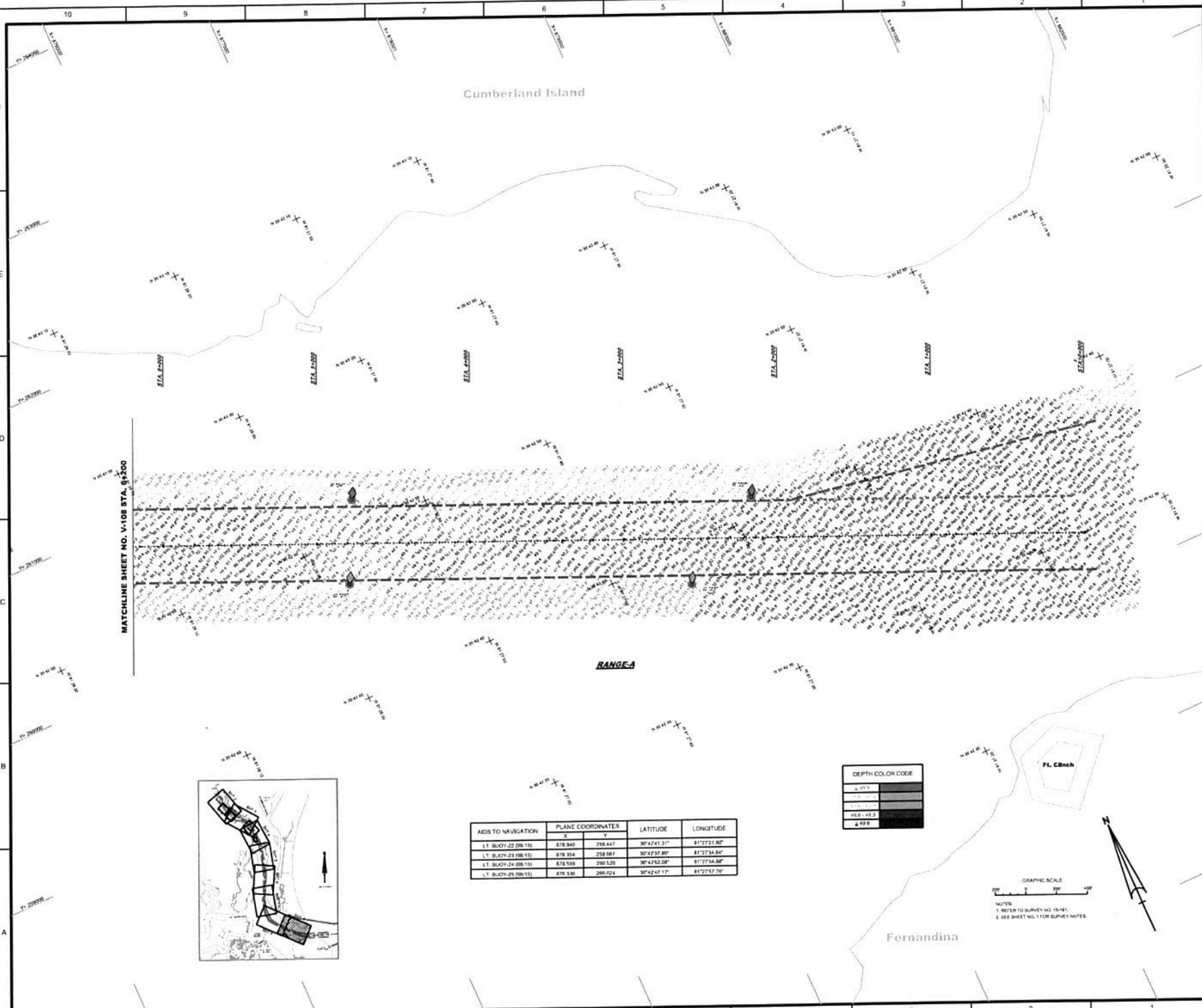
JACKSONVILLE, FLORIDA

BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT
PLAN

Scale: AS SHOWN

Drawing no.
V-108

SHEET 11 OF 12



AIDS TO NAVIGATION	PLANE COORDINATES		LATITUDE	LONGITUDE
	X	Y		
LT. BUOY-22 (06/15)	878.940	258.447	30°42'41.31"	81°27'27.90"
LT. BUOY-23 (06/15)	878.354	259.087	30°42'37.80"	81°27'34.84"
LT. BUOY-24 (06/15)	878.568	260.520	30°42'52.08"	81°27'34.98"
LT. BUOY-25 (06/15)	878.330	260.024	30°42'47.17"	81°27'37.70"

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BIMONTHLY EXAMINATION SURVEY - JUL 2015
44, 45 & 46-FOOT PROJECT
PLAN

Scale: AS SHOWN

Drawing no.
V-109

SHEET 12 OF 12

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	KB16-1-A
Sample ID:	
Sampled By:	D. BISHOP & A. LASSITER
Sample Date:	1-12-16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 1345 **End Sampling Time:** 1615

Collection Method: Bucket 1 of 2
Van Veen Large Ponar Petite Ponar (Vibracore) Hand Core Lexan Tube Other 1) Box Core Bucket 2 of 2

Sample Containers:
Type and Number: Teflon X Glass ____ Plastic ____ Ziploc ____ Other Liner in 5 GAL Buckets

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay Silt Fine Sand Medium Sand Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray Lt. Gray (Dk. Gray)

			Notes:
Live Organisms? Describe.	Y	N	
Odor Present? Describe.	(Y)	N	slight sulfur odor
Organic Debris? Describe.	Y	N	
Picture of Sample?	(Y)	N	
Volume/# Grabs Collected:			Bucket 1 of 2 consisted of 4 vibracores
Penetration Depth (cm):			Refusal @ 3' penetration

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): 46'

Tidal Cycle: Low Mid High
Slack Incoming Outgoing

Air Temp (°F): ____

Wind Speed (knots): 0-5 (5-10) 10-15 >15

Wind Direction: N (NE) E SE S SW W NW

Sea State: (Calm) 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.

Weather: (Sunny) P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time:			1345
Depth (ft):			38.5
Temp (°C):			14.20
pH (units):			7.89
Salinity (ppt):			29.47
Cond. (mS/cm):			36.10
DO (mg/L):			8.0
DO (% sat.):			
Turbidity (NTU):			11.9

Station Coordinates: 81 29 51.2

Longitude (W): 288123 (N)

Latitude (N): 866194 (W) East
30 47 26.79

Waypoint #: ____

Addt'l Waypoint #: ____

Additional Observations, Notes:

Sheet ____ of ____

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB-16-1-B
Sampled By:	D. BISHOP & A. LASSITER
Sample Date:	1-12-16

SAMPLE COLLECTION INFORMATION

* **Start Sampling Time:** 1218 **End Sampling Time:** 1244 * LOCAL, EST

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube Other BOXCORE

Sample Containers: LINER IN 5 GAL BUCKET
Type and Number: Teflon X Glass ____ Plastic ____ Ziploc ____ Other ____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay Silt (Fine Sand) (Medium Sand) Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray (Lt. Gray) (Dk. Gray)

		Notes:
Live Organisms? Describe.	Y (N)	
Odor Present? Describe.	(Y) ~~(N)~~	SLIGHT SULFUR ODOR
Organic Debris? Describe.	(Y) ~~(N)~~	MINIMAL
Picture of Sample?	(Y) N	
Volume/# Grabs Collected:	2 BUCKETS	
Penetration Depth (cm):		

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): 50
Tidal Cycle: (Low) Mid High
Slack Incoming (Outgoing)
Air Temp (°F): 55

Wind Speed (knots): 0-5 5-10 10-15 >15
Wind Direction: N NE E SE S SW W NW
Sea State: (Calm) 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.
Weather: (Sunny) P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom (LOCAL EST)
Time:			1720 (1220)
Depth (ft):			38.5
Temp (°C):			14.25
pH (units):			7.89
Salinity (ppt):			29.5
Cond. (mS/cm):			39.95
DO (mg/L):			9.3
DO (% sat.):			
Turbidity (NTU):			18.9

Station Coordinates:
Longitude (W): ____
Latitude (N): ____
Waypoint #: ____
Addt'l Waypoint #: ____

Additional Observations, Notes:

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SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB-16-1-C
Sampled By:	D. BISHOP & A. LASSITER
Sample Date:	1-12-16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 1000 **End Sampling Time:** 1102

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube Other BOX CORE

Sample Containers: LINER IN 5 GAL BUCKET
Type and Number: Teflon X Glass ____ Plastic ____ Ziploc ____ Other ____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay Silt (Fine Sand) (Medium Sand) Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray (Lt. Gray) Dk. Gray

Live Organisms? Describe. Y (N) **Notes:**
Odor Present? Describe. Y (N)
Organic Debris? Describe. (Y) N VEGETATIVE MATERIAL
Picture of Sample? (Y) N
Volume/# Grabs Collected: 1.3 BUCKETS (5 GALLONS)
Penetration Depth (cm): ____
Desribe any Leakage, Winnowing, or Overfill here: ____

STATION INFORMATION

Water Depth (ft): 48
Tidal Cycle: Low (Mid) High
Slack (Incoming) Outgoing
Air Temp (°F): 53°

Wind Speed (knots): 0-5 5-10 10-15 >15
Wind Direction: N NE E SE S SW W NW
Sea State: (Calm) 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.
Weather: (Sunny) P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	(Near-Bottom) (LOCAL EST)
Time:			1523 (1050)
Depth (ft):			40.3
Temp (°C):			14.5
pH (units):			7.98
Salinity (ppt):			30.41
Cond. (mS/cm):			37.41
DO (mg/L):			9.9
DO (% sat.):			—
Turbidity (NTU):			10.95

Station Coordinates:
Longitude (W): ____
Latitude (N): ____
Waypoint #: ____
Addt'l Waypoint #: ____

Additional Observations, Notes: ____

Sheet ____ of ____

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB-16-1-D
Sampled By:	D. BISHOP & A. LASSITER
Sample Date:	1-12-16

SAMPLE COLLECTION INFORMATION

* **Start Sampling Time:** 1120 **End Sampling Time:** 1150 * LOCAL EST

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube Other BOX CORE

Sample Containers: LINER IN 5 GAL BUCKET
Type and Number: Teflon X Glass ____ Plastic ____ Ziploc ____ Other ____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay Silt Fine Sand Medium Sand Coarse Sand Shell Hash CLASSIFICATION (SM)
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray Lt. Gray Dk. Gray

			Notes:
Live Organisms? Describe.	Y	N	
Odor Present? Describe.	Y	N	MILD ROTTEN EGG (SULFUR) ODOR
Organic Debris? Describe.	Y	N	
Picture of Sample?	Y	N	
Volume/# Grabs Collected:	2 BUCKETS		(5 GAL)
Penetration Depth (cm):			

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): 45
Tidal Cycle: Low Mid High Slack Incoming Outgoing
Air Temp (°F): 54°

Wind Speed (knots): 0-5 5-10 10-15 >15
Wind Direction: N NE E SE S SW W NW
Sea State: Calm 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.
Weather: Sunny P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom (LOCALIEST)
Time:			1624 (1126)
Depth (ft):			39.6
Temp (°C):			14.6
pH (units):			7.99
Salinity (ppt):			30.63
Cond. (mS/cm):			37.78
DO (mg/L):			9.1
DO (% sat.):			~~[illegible]~~
Turbidity (NTU):			10.85

Station Coordinates:
Longitude (W): ____
Latitude (N): ____
Waypoint #: ____
Addt'l Waypoint #: ____

Additional Observations, Notes:

Sheet ____ of ____

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB-16-1-E
Sampled By:	D. BISHOP & A. LASSITER
Sample Date:	1-12-16

SAMPLE COLLECTION INFORMATION

*Start Sampling Time: 1254 **End Sampling Time:** 1311 *LOCAL, EST

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube Other BOX CORE

Sample Containers: LINER IN 5 GAL BUCKET
Type and Number: Teflon X Glass ____ Plastic ____ Ziploc ____ Other ____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay Silt Fine Sand Medium Sand Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray Lt. Gray Dk. Gray

Live Organisms? Describe.	Y	N	Notes: WORMS
Odor Present? Describe.	Y	N	MINIMAL SULFUR ODOR
Organic Debris? Describe.	Y	N	
Picture of Sample?	Y	N	
Volume/# Grabs Collected:	2 BUCKETS		
Penetration Depth (cm):			

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): 52
Tidal Cycle: Low Mid High
Slack Incoming Outgoing
Air Temp (°F): 55

Wind Speed (knots): 0-5 5-10 10-15 >15
Wind Direction: N NE E SE S SW W NW
Sea State: Calm 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.
Weather: Sunny P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom (LOCAL, EST)
Time:			1306
Depth (ft):			38.6
Temp (°C):			14.5
pH (units):			7.94
Salinity (ppt):			30.35
Cond. (mS/cm):			37.25
DO (mg/L):			8.0
DO (% sat.):			—
Turbidity (NTU):			20.7

Station Coordinates:
Longitude (W): ____
Latitude (N): ____
Waypoint #: ____
Addt'l Waypoint #: ____

Additional Observations, Notes:

Sheet ____ of ____

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB-16-A-A
Sampled By:	D. BISHOP
Sample Date:	1-13-16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 0920 **End Sampling Time:** 0946

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube (Other) BOX CORE

Sample Containers:
Type and Number: (Teflon) LINER ____ Glass ____ Plastic ____ Ziploc ____ Other ____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay (Silt) Fine Sand (Medium Sand) Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray (Lt. Gray) Dk. Gray

Live Organisms? Describe. Y (N)
Odor Present? Describe. Y (N)
Organic Debris? Describe. Y (N)
Picture of Sample? (Y) N
Volume/# Grabs Collected: 2 Grab
Penetration Depth (cm): ~1 ft

Notes: Medium Sand
SP-SM
Few Silt 5-12%

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): 48
Tidal Cycle: Low (Mid) High
Slack (Incoming) Outgoing
Air Temp (°F): 41

Wind Speed (knots): 0-5 5-10 10-15 >15
Wind Direction: N NE E SE S SW W NW
Sea State: Calm 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.
Weather: (Sunny) P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time: LOCAL, EST			0927
Depth (ft):			37.5
Temp (°C):			14.9
pH (units):			8.02
Salinity (ppt):			31.54
Cond. (mS/cm):			39.02
DO (mg/L):			8.2
DO (% sat.):			
Turbidity (NTU):			11.6

Station Coordinates:
Longitude (W): ____
Latitude (N): ____
Waypoint #: ____
Addt'l Waypoint #: ____

Additional Observations, Notes:

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SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB16-4-13
Sampled By:	D Bishop
Sample Date:	1-13-16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 0954 **End Sampling Time:** 1035

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube Other Box core

Sample Containers:
Type and Number: Teflon Liner ____ Glass ____ Plastic ____ Ziploc ____ Other ____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay Silt Some Fine Sand Medium Sand Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray Lt. Gray Dk. Gray

Live Organisms? Describe.	Y	N	**Notes:**
Odor Present? Describe.	Y	N	SM silty sand
Organic Debris? Describe.	Y	N	slight odor w/ some organics
Picture of Sample?	Y	N	
Volume/# Grabs Collected:			
Penetration Depth (cm):			

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): 48

Tidal Cycle: Low Mid High
Slack Incoming Outgoing

Air Temp (°F): 52

Wind Speed (knots): 0-5 5-10 10-15 >15

Wind Direction: N NE E SE S SW W NW

Sea State: Calm 1-2 ft. 3-4 ft. 4-5 ft. >5 ft. 2-3

Weather: Sunny P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time: LOCAL, EST			0955
Depth (ft):			38.8
Temp (°C):			14.83
pH (units):			8.01
Salinity (ppt):			31.37
Cond. (mS/cm):			38.75
DO (mg/L):			8.1
DO (% sat.):			
Turbidity (NTU):			12.2

Station Coordinates:
Longitude (W): ____
Latitude (N): ____
Waypoint #: ____
Addt'l Waypoint #: ____

Additional Observations, Notes:

Sheet ____ of ____

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	i
Sample ID:	KB-16-4-C
Sampled By:	D. BISHOP & A. LASSITER
Sample Date:	1-14-16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 1526 **End Sampling Time:** 1600

Collection Method:
Van Veen Large Ponar Petite Ponar (Vibracore) Hand Core Lexan Tube Other _____

Sample Containers: LINERS
Type and Number: (Teflon) X Glass ____ Plastic ____ Ziploc ____ Other _____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay Silt Fine Sand (Medium Sand) Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray (Olive Gray) (Lt. Gray) Dk. Gray

Live Organisms? Describe.	Y	(N)	**Notes:** Sm -
Odor Present? Describe.	Y	N	Slight odor sulfur
Organic Debris? Describe.	Y	(N)	
Picture of Sample?	(Y)	N	
Volume/# Grabs Collected:			1) 5 1/2" 2) 5'
Penetration Depth (cm):			

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): 48

Tidal Cycle: Low Mid (High) Slack Incoming (Outgoing)

Air Temp (°F): _____

Wind Speed (knots): 0-5 5-10 10-15 >15

Wind Direction: N NE E SE S SW W NW

Sea State: (Calm) (1-2 ft.) 3-4 ft. 4-5 ft. >5 ft.

Weather: Sunny P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time:			1527
Depth (ft):			21.2
Temp (°C):			14.91
pH (units):			8.01
Salinity (ppt):			31.42
Cond. (mS/cm):			38.87
DO (mg/L):			8.5
DO (% sat.):			
Turbidity (NTU):			12.1

Station Coordinates:
Longitude (W): _____
Latitude (N): _____
Waypoint #: _____
Addt'l Waypoint #: _____

Additional Observations, Notes:

Sheet ____ of ____

SEDIMENT SAMPLING FIELD SHEET * see notes

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB-16-4-D
Sampled By:	D. BISHOP & A. LASSITER
Sample Date:	1-14-16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 1358 **End Sampling Time:** 1505

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube Other _____

Sample Containers:
Type and Number: (Teflon) ____ Glass ____ Plastic ____ Ziploc ____ Other _____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay (Silt) Fine Sand Medium Sand Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange (Greenish Gray) Olive Gray Lt. Gray (Dk. Gray)

			Notes:
Live Organisms? Describe.	Y	(N)	
Odor Present? Describe.	Y	(N)	ML Low plasticity silt
Organic Debris? Describe.	Y	(N)	* Potential Lines in Bucket (core lines in sample)
Picture of Sample?	(Y)	N	
Volume/# Grabs Collected:			1) 5'6" 2) 5'6"
Penetration Depth (cm):			

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): 46.0

Tidal Cycle: Low Mid (High)
Slack Incoming (Outgoing)

Air Temp (°F): _____

Wind Speed (knots): 0-5 5-10 10-15 >15

Wind Direction: N NE E SE S SW W NW

Sea State: (Calm) (1-2 ft.) 3-4 ft. 4-5 ft. >5 ft.

Weather: (Sunny) P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time: LOCAL			1400
Depth (ft):			
Temp (°C):			15.13
pH (units):			8.03
Salinity (ppt):			31.65
Cond. (mS/cm):			39.32
DO (mg/L):			8.6
DO (% sat.):			
Turbidity (NTU):			12.1

Station Coordinates:
Longitude (W): _____
Latitude (N): _____
Waypoint #: _____
Addt'l Waypoint #: _____

Additional Observations, Notes:

Sheet ____ of ____

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB-16-4-E
Sampled By:	D. BISHOP
Sample Date:	

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 1046 **End Sampling Time:** 1130

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube Other Box core Grab

Sample Containers: LINER WITH 5-GAL BUCKET
Type and Number: Teflon X Glass ____ Plastic ____ Ziploc ____ Other ____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay (Silt) Fine Sand Medium Sand Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray Lt. Gray (Dk. Gray)

Live Organisms? Describe.	Y	N
Odor Present? Describe.	Y	(N)
Organic Debris? Describe.	(Y)	N
Picture of Sample?	(Y)	N
Volume/# Grabs Collected:	1 Grab	
Penetration Depth (cm):		

Notes:
ML SiH
Low plasticity soft, inorganic

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): 49.5

Tidal Cycle: Low Mid (High) Slack Incoming (Outgoing)

Air Temp (°F): ____

Wind Speed (knots): 0-5 5-10 10-15 >15

Wind Direction: N NE E SE S SW W NW

Sea State: Calm 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.

Weather: (Sunny) P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time: LOCAL			1046
Depth (ft):			38.9
Temp (°C):			15.94
pH (units):			8.03
Salinity (ppt):			32.27
Cond. (mS/cm):			40.77
DO (mg/L):			7.8
DO (% sat.):			
Turbidity (NTU):			14.2

Station Coordinates:
Longitude (W): ____
Latitude (N): ____
Waypoint #: ____
Addt'l Waypoint #: ____

Additional Observations, Notes:

Sheet ____ of ____

SEDIMENT SAMPLING FIELD SHEET

* See notes

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB16-5-A
Sampled By:	D. BISHOP & A. LASSITER
Sample Date:	1-14-16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 1243 **End Sampling Time:** 1352

Collection Method:
Van Veen Large Ponar Petite Ponar (Vibracore) Hand Core Lexan Tube Other _____

Sample Containers:
Type and Number: Teflon ____ Glass ____ Plastic ____ Ziploc ____ Other _____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay Silt Fine Sand (Medium Sand) Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange (Greenish Gray) Olive Gray Lt. Gray Dk. Gray

			Notes:
Live Organisms? Describe.	Y	(N)	
Odor Present? Describe.	Y	(N)	SM Silty Sand
Organic Debris? Describe.	Y	(N)	Some Silt
Picture of Sample?	(Y)	N	* Potentive core liner in sample
Volume/# Grabs Collected:			
Penetration Depth (cm):			1) 5'5" 2) 3'8" 3) 5'4"

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): ~~44.0~~ 45.0

Tidal Cycle: Low Mid (High) Slack Incoming (Outgoing)

Air Temp (°F): 59

Wind Speed (knots): 0-5 5-10 10-15 >15

Wind Direction: N NE E SE S SW W NW

Sea State: (Calm) (1-2 ft.) 3-4 ft. 4-5 ft. >5 ft.

Weather: (Sunny) P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time:			1245
Depth (ft):			39.4
Temp (°C):			15.22
pH (units):			8.02
Salinity (ppt):			31.70
Cond. (mS/cm):			39.4
DO (mg/L):			8.8
DO (% sat.):			
Turbidity (NTU):			7.6

Station Coordinates:
Longitude (W): _____
Latitude (N): _____
Waypoint #: _____
Addt'l Waypoint #: _____

Additional Observations, Notes:

Sheet ____ of _____

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB16-S-B
Sampled By:	D. BISHOP
Sample Date:	1-13-16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 1133 **End Sampling Time:** 1155

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube Other GRAB Box core

Sample Containers:
Type and Number: Teflon ____ Glass ____ Plastic ____ Ziploc ____ Other Bucket Liner

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay (Silt) Fine Sand Medium Sand Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray Lt. Gray (Dk. Gray)

Live Organisms? Describe. Y (N)
Odor Present? Describe. (Y) (N)
Organic Debris? Describe. Y N
Picture of Sample? (Y) N
Volume/# Grabs Collected: 1 grab
Penetration Depth (cm): ____

Notes: ML Slight organic odor
Low plasticity, soft, inorganics

Desribe any Leakage, Winnowing, or Overfill here: ____

STATION INFORMATION

Water Depth (ft): 49.7
Tidal Cycle: Low Mid (High) Slack Incoming (Outgoing)
Air Temp (°F): ____

Wind Speed (knots): 0-5 5-10 10-15 >15
Wind Direction: N NE E SE S SW W NW
Sea State: Calm 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.
Weather: Sunny P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time: LOCAL EST			1134
Depth (ft):			38.4
Temp (°C):			15.88
pH (units):			8.04
Salinity (ppt):			32.66
Cond. (mS/cm):			41.41
DO (mg/L):			7.6
DO (% sat.):			
Turbidity (NTU):			4.4

Station Coordinates:
Longitude (W): ____
Latitude (N): ____
Waypoint #: ____
Addt'l Waypoint #: ____

Additional Observations, Notes: ____

Sheet ____ of ____

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:
Sample ID: KB16-5-C
Sampled By: D. Bishop, A. LASSITER
Sample Date: 1/19/16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 1120 **End Sampling Time:** 1220

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube Other _____

Sample Containers:
Type and Number: Teflon ____ Glass ____ Plastic ____ Ziploc ____ Other _____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay Silt Fine Sand Medium Sand Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray Lt. Gray Dk. Gray

			Notes:
Live Organisms? Describe.	Y	N	
Odor Present? Describe.	Y	N	ML silt, soft low plasticity
Organic Debris? Describe.	Y	N	
Picture of Sample?	Y	N	
Volume/# Grabs Collected:			1) 2'10" 2) 3'8" 3) 5'2"
Penetration Depth (cm):			

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): 48.6
Tidal Cycle: Low Mid High
Slack Incoming Outgoing
Air Temp (°F): _____

Wind Speed (knots): 0-5 5-10 10-15 >15
Wind Direction: N NE E SE S SW W NW
Sea State: Calm 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.
Weather: Sunny P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time:			1121
Depth (ft):			39.22
Temp (°C):			15.55
pH (units):			8.04
Salinity (ppt):			32.35
Cond. (mS/cm):			40.40
DO (mg/L):			8.5
DO (% sat.):			
Turbidity (NTU):			4.5

Station Coordinates:
Longitude (W): _____
Latitude (N): _____
Waypoint #: _____
Addt'l Waypoint #: _____

Additional Observations, Notes:

Sheet ____ of _____

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB-16 - 5-D
Sampled By:	D. BISHOP
Sample Date:	1-13-16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 1212 **End Sampling Time:** 1245

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube Other GRAB Box Core

Sample Containers: LINERS IN 5 GAL BUCKET
Type and Number: Teflon X Glass ____ Plastic ____ Ziploc ____ Other ____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay (Silt) Fine Sand Medium Sand Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray Lt. Gray (Dk. Gray)

Live Organisms? Describe. Y (N)
Odor Present? Describe. Y (N)
Organic Debris? Describe. Y (N)
Picture of Sample? (Y) N
Volume/# Grabs Collected: 1 Grab
Penetration Depth (cm): ____

Notes: ML - No odor
Low plasticity, soft inorganics

Desribe any Leakage, Winnowing, or Overfill here: ____

STATION INFORMATION

Water Depth (ft): 50.5
Tidal Cycle: Low Mid (High) Slack Incoming (Outgoing)
Air Temp (°F): ____

Wind Speed (knots): 0-5 5-10 10-15 >15
Wind Direction: N NE E SE S SW W NW
Sea State: Calm 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.
Weather: (Sunny) P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time:			1213
Depth (ft):			37.6
Temp (°C):			16.10
pH (units):			8.04
Salinity (ppt):			32.60
Cond. (mS/cm):			41.28
DO (mg/L):			7.8
DO (% sat.):			[illegible]
Turbidity (NTU):			6.1

Station Coordinates:
Longitude (W): ____
Latitude (N): ____
Waypoint #: ____
Addt'l Waypoint #: ____

Additional Observations, Notes: ____

Sheet ____ of ____

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB16-5E
Sampled By:	D. BISHOP & A. LASSITER
Sample Date:	1-14-16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 0903 **End Sampling Time:** 1103

Collection Method:
Van Veen Large Ponar Petite Ponar (Vibracore) Hand Core Lexan Tube Other _____

Sample Containers:
Type and Number: Teflon ____ Glass ____ Plastic ____ Ziploc ____ Other _____

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay (Silt) Fine Sand Medium Sand Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange (Greenish Gray) Olive Gray Lt. Gray Dk. Gray

Live Organisms? Describe. Y (N)
Odor Present? Describe. Y (N)
Organic Debris? Describe. Y (N)
Picture of Sample? (Y) N
Volume/# Grabs Collected: _____
Penetration Depth (cm): _____

Notes: SM silty sand
Few Shell
1) 3'9", 2) 1'4", 3) 2", 4) 1'6" 5) 1'8" 6)

Desribe any Leakage, Winnowing, or Overfill here: _____

STATION INFORMATION

Water Depth (ft): 50.5
Tidal Cycle: Low (Mid) High
Slack (Incoming) Outgoing
Air Temp (°F): 43

Wind Speed (knots): 0-5 5-10 10-15 >15
Wind Direction: N NE E SE S SW W NW
Sea State: (Calm) 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.
Weather: (Sunny) P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time:			0903
Depth (ft):			39
Temp (°C):			15.5
pH (units):			8.0
Salinity (ppt):			32.15
Cond. (mS/cm):			40.37
DO (mg/L):			9.1
DO (% sat.):			
Turbidity (NTU):			5.3

Station Coordinates:
Longitude (W): 917 ~~8~~0 540 75
Latitude (N): 2603 ~~32~~
Waypoint #: _____
Addt'l Waypoint #: _____

Additional Observations, Notes: _____

Sheet ____ of _____

SEDIMENT SAMPLING FIELD SHEET

PROJECT: KINGS BAY

Project #:	
Sample ID:	KB16 - RS
Sampled By:	D. BISHOP & A. LASSITER
Sample Date:	1-13-16

SAMPLE COLLECTION INFORMATION

Start Sampling Time: 1310 **End Sampling Time:** 1500

Collection Method:
Van Veen Large Ponar Petite Ponar Vibracore Hand Core Lexan Tube Other Box Core Grab

Sample Containers: LINER IN 5 GAL BUCKET
Type and Number: Teflon ____ Glass ____ Plastic ____ Ziploc ____ Other teflon lined Bucket

Sediment Description: Can circle more than one texture, if applicable
Texture: Clay Silt Fine Sand Medium Sand Coarse Sand Shell Hash
Color: Lt. Brown Yellowish Orange Greenish Gray Olive Gray Lt. Gray Dk. Gray

Live Organisms? Describe.	Y	N	**Notes:** 11" FAWINGLO
Odor Present? Describe.	Y	N	top layer mucky, some shell hash
Organic Debris? Describe.	Y	N	underneath some fine sand
Picture of Sample?	Y	N	ML
Volume/# Grabs Collected:	7		
Penetration Depth (cm):			

Desribe any Leakage, Winnowing, or Overfill here:

STATION INFORMATION

Water Depth (ft): 46'
Tidal Cycle: Low Mid High
Slack Incoming Outgoing
Air Temp (°F): 59

Wind Speed (knots): 0-5 5-10 10-15 >15
Wind Direction: N NE E SE S SW W NW
Sea State: Calm 1-2 ft. 3-4 ft. 4-5 ft. >5 ft.
Weather: Sunny P. Cloudy Cloudy Rain (drizzle, mod, heavy)

In Situ Readings:	Near-Surface	Mid-Depth	Near-Bottom
Time: LOCAL			1310
Depth (ft):			40'
Temp (°C):			15.84
pH (units):			8.06
Salinity (ppt):			32.14
Cond. (mS/cm):			40.6
DO (mg/L):			8.2
DO (% sat.):			/
Turbidity (NTU):			2.9

Station Coordinates:
Longitude (W): ____
Latitude (N): ____
Waypoint #: ____
Addt'l Waypoint #: ____

Additional Observations, Notes:

Sheet ____ of ____

Instrument Calibration Field Sheet

Project: Kings Bay	Team Initials: DWP
Instrument: YSI 6820 + Extech DO	Date: 1/11/2016
Battery Voltage:	Time: 1600 EST

Salinity/Conductivity

Standrad Used	Pre-Cal	Post-Cal	End of Day		
Distilled Water	0.2	0.2		Acceptance Criteria: ±5%	
Salt Solution ~~35.4~~ 30.9 ppt	30.5	30.5			

pH

Buffer	Pre-Cal	Post-Cal	End of Day		
7	6.93	7.0		Acceptance Criteria: ±0.2SU	
10	9.87	10.01			
4	4.16	4.0			

Disolved Oxygen

Parameter	Pre-Cal	Post-Cal	End of Day		
Temperature (°C)				Acceptance Criteria: ±5%	D.O. Reading in air
Atm. Press (mmHg)					
DO (% sat)					
DO (mg/L)	20.9	20.9			

Field Maintenance

Service	Y	N	Initials
Membranes Changed		X	DWP
O-rings Changed		X	DWP
Probes Changed		X	DWP

Notes

Extech D.O. meter calibrated with atmospheric reading, per manufacturers direction. Salinity correction was applied by placing probe in salinity standard of 30.9 ppt.

Instrument Calibration Field Sheet

Project: Kings Bay	Team Initials: DWP
Instrument: YSI 6820 + Extech D.O.	Date: 1/13/2016
Battery Voltage:	Time: 17:04

Salinity/Conductivity

Standrad Used	Pre-Cal	Post-Cal	End of Day	Acceptance Criteria: ±5%	
Distilled Water	0.19	N/A			
Salt Solution ~~35.4ppt~~ 30.9	30.56	N/A			

pH

Buffer	Pre-Cal	Post-Cal	End of Day	Acceptance Criteria: ±0.2SU	
7	7.01	N/A			
10	9.96	N/A			
4	4.1	N/A			

Disolved Oxygen

Parameter	Pre-Cal	Post-Cal	End of Day	Acceptance Criteria: ±5%	Atm. D.O. Reading
Temperature (°C)	N/A				
Atm. Press (mmHg)	N/A				
DO (% sat)	N/A				
DO (mg/L)	20.9	N/A			

Field Maintenance

Service	Y	N	Initials
Membranes Changed		X	DWP
O-rings Changed		X	DWP
Probes Changed		X	DWP

Notes

Turbidity : 1.4 (pre-cal) ~~Turbidity~~ → Distilled H_2O

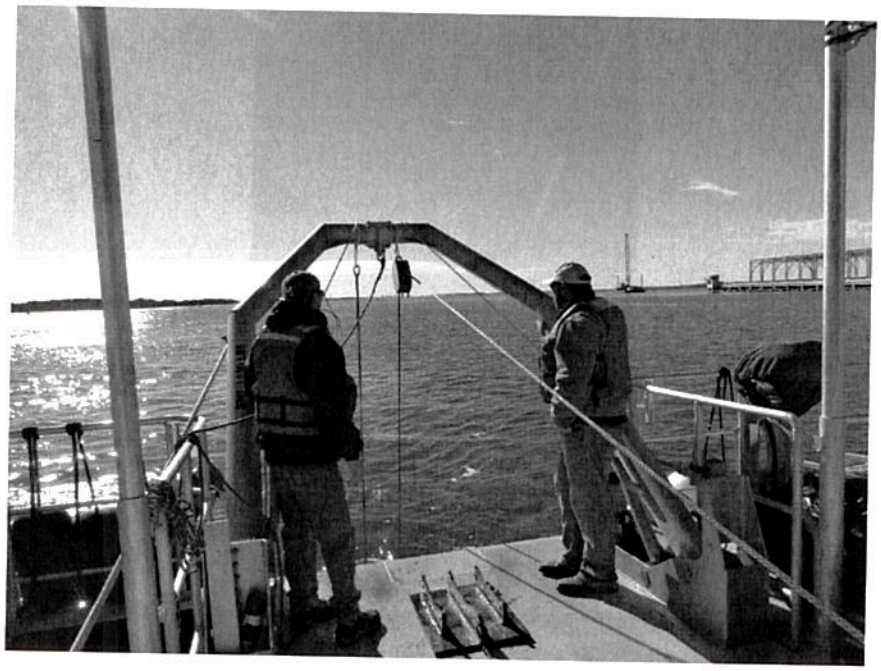
Salt standard = 30.9‰

Turbidity : 126.5 NTU → Turbidity Std 126.0

All probes within calibration range

Appendix C.

Field collection pictures



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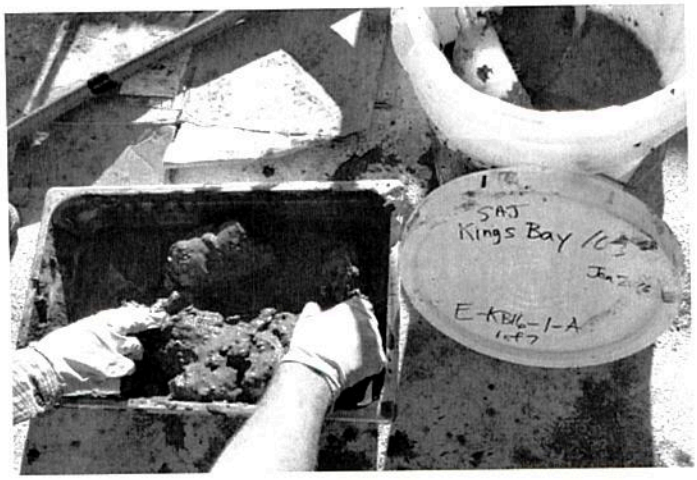

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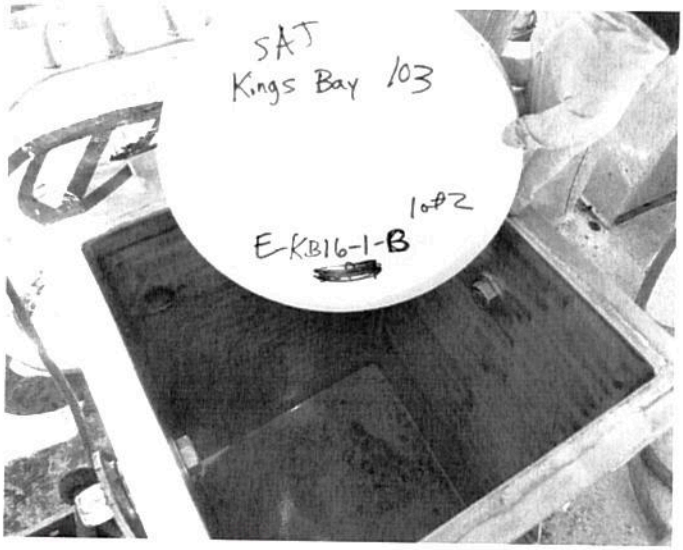
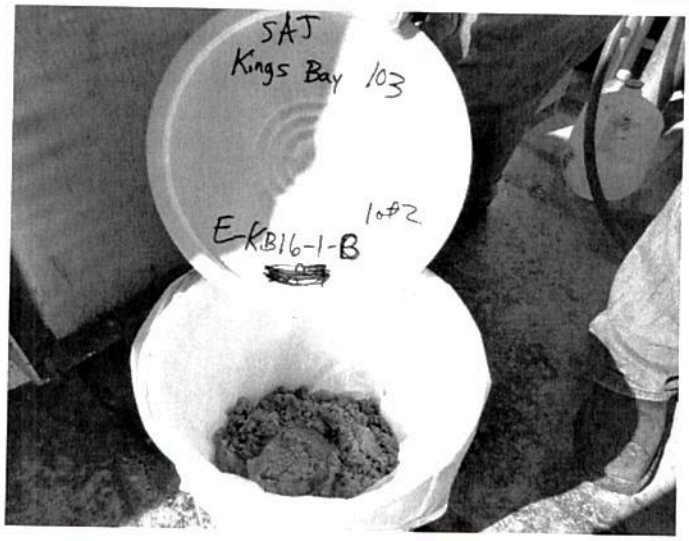
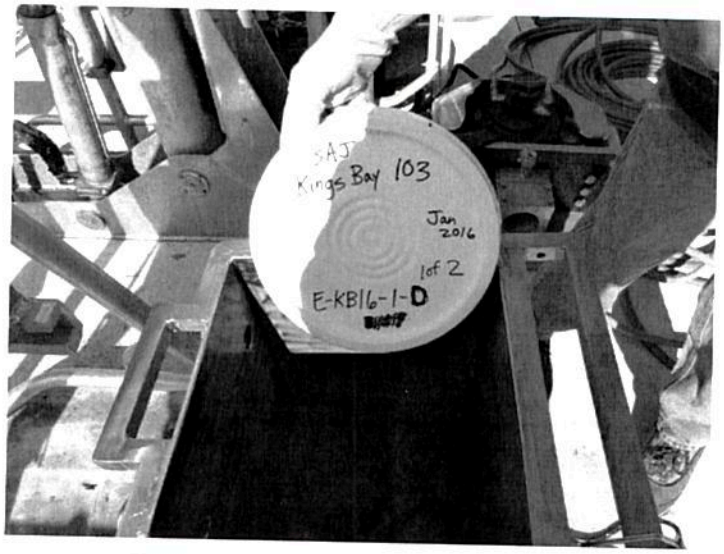
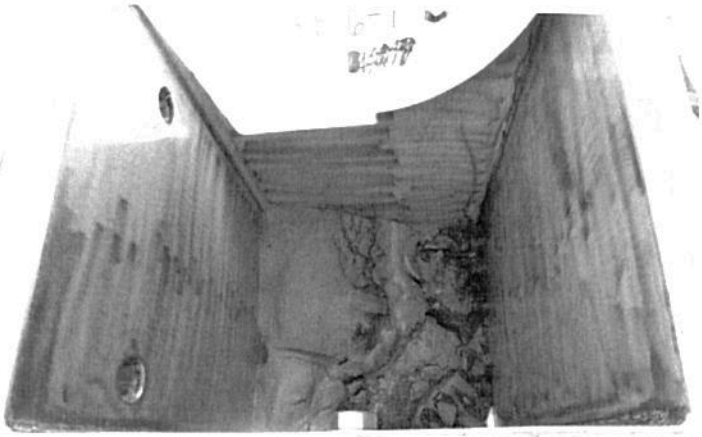




Station E-KB-1C

Station E-KB-1D





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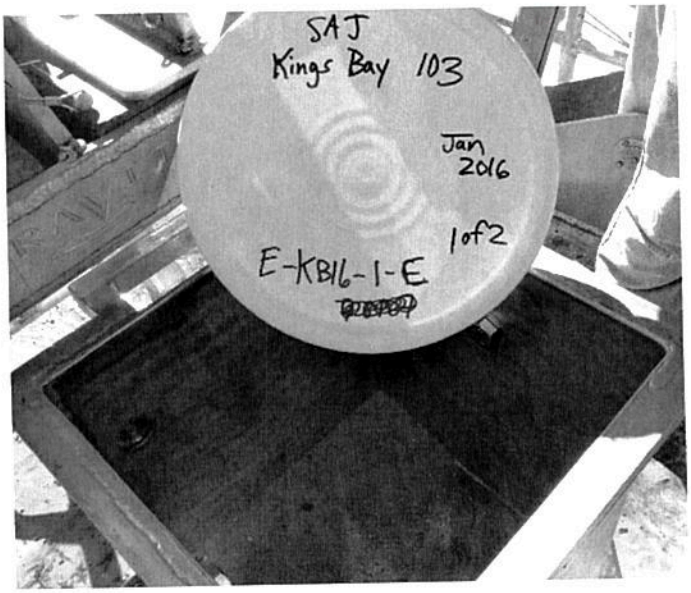
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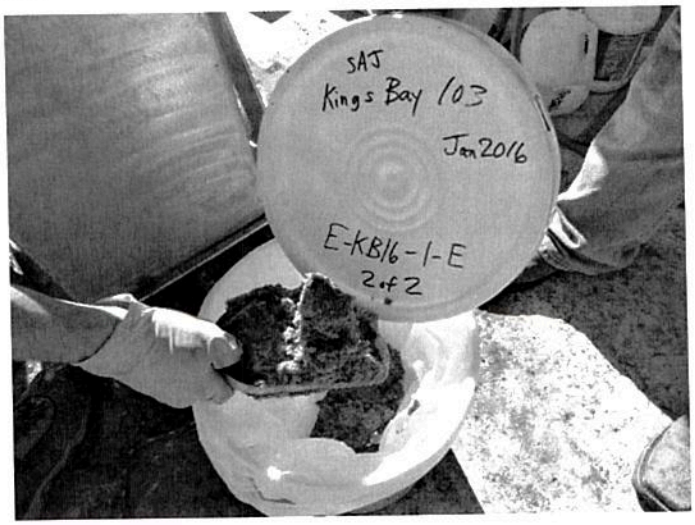
2016
1of2
E-KB16-1-E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Kings Bay 103
Jan2016
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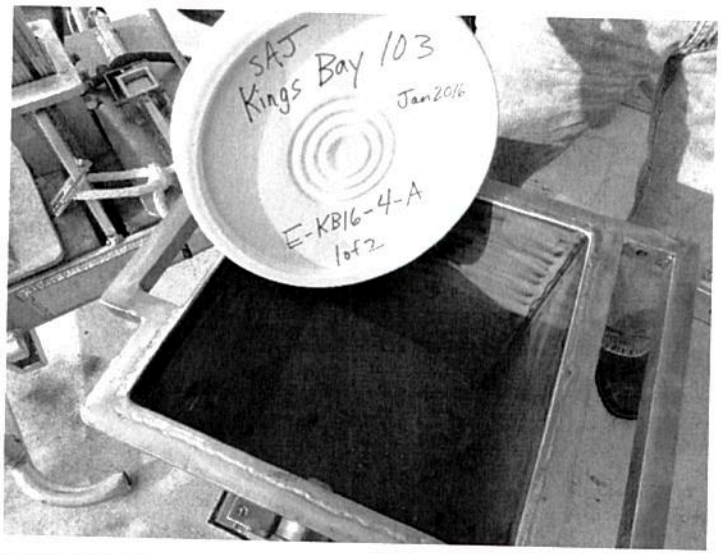
E-KB16-4A



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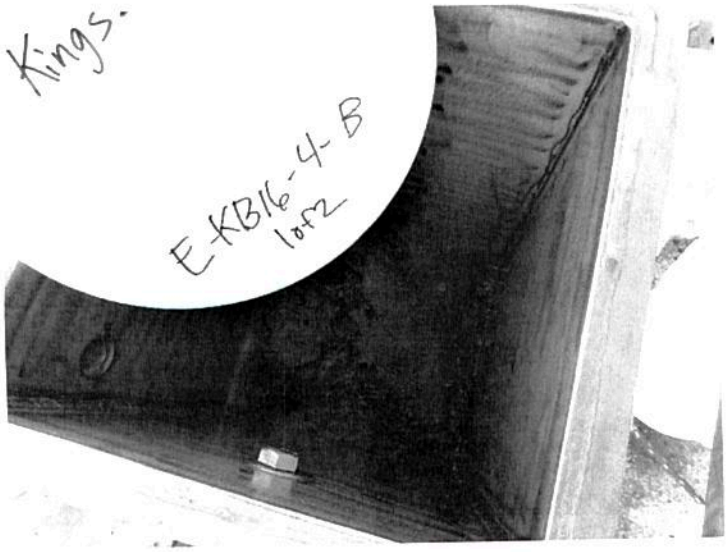

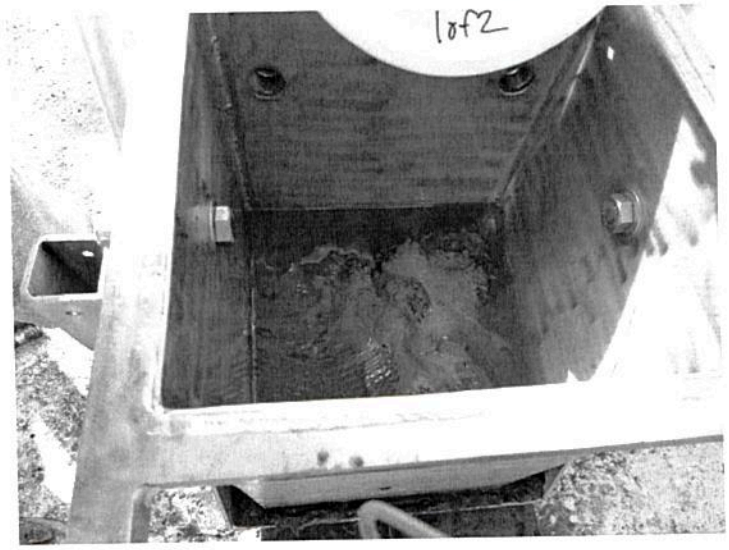

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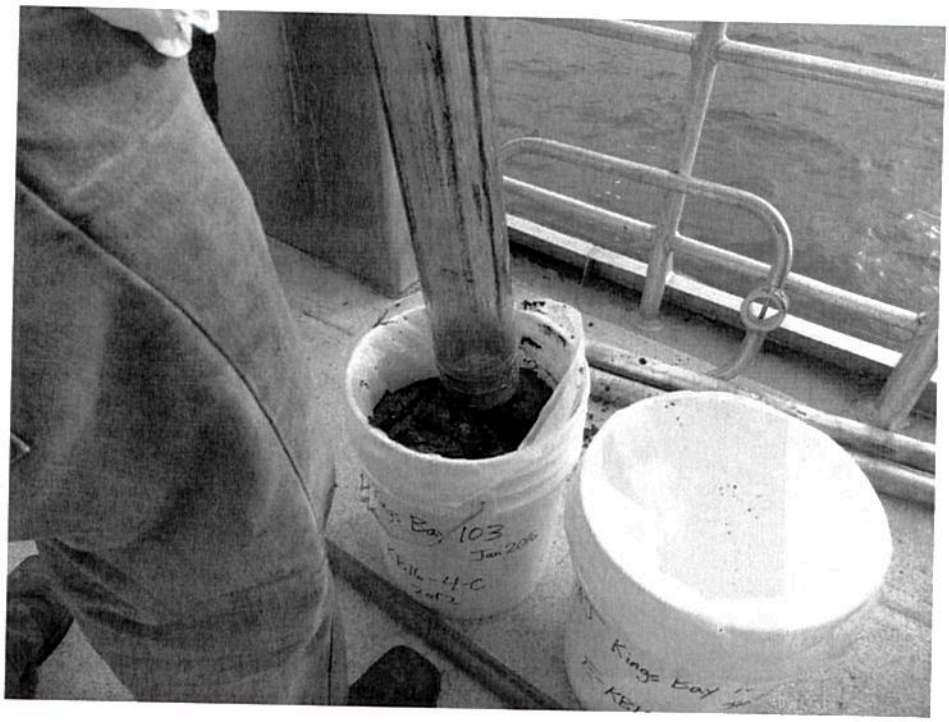

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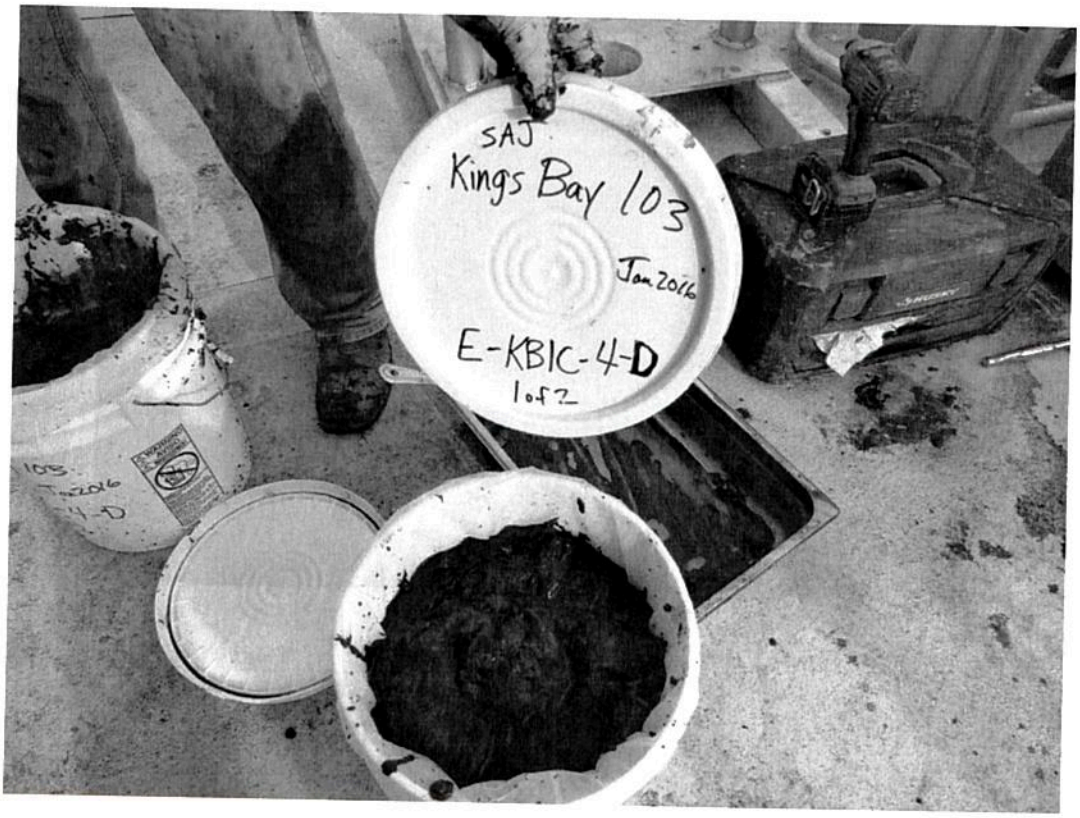

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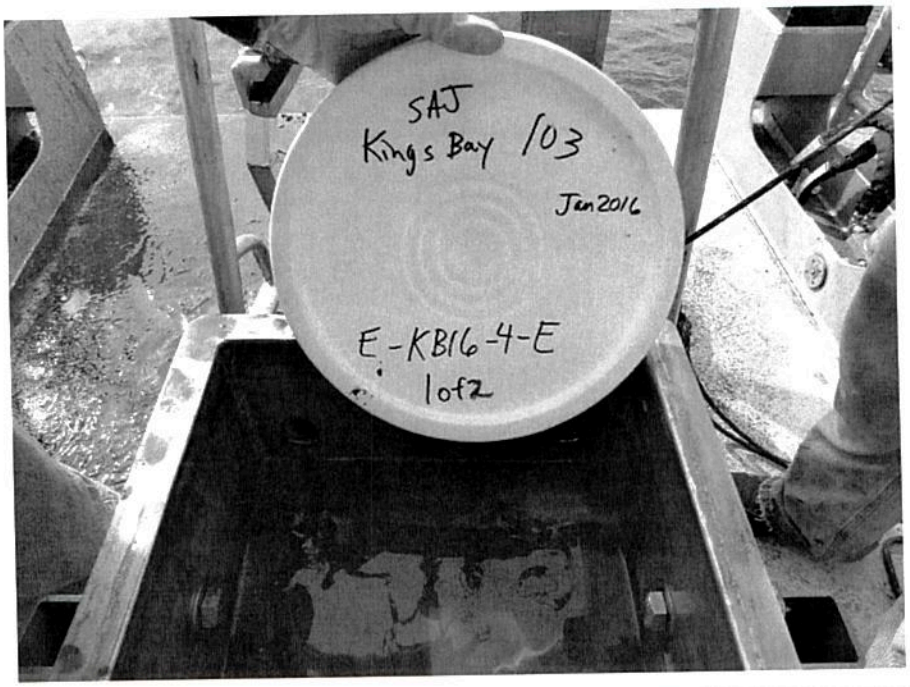

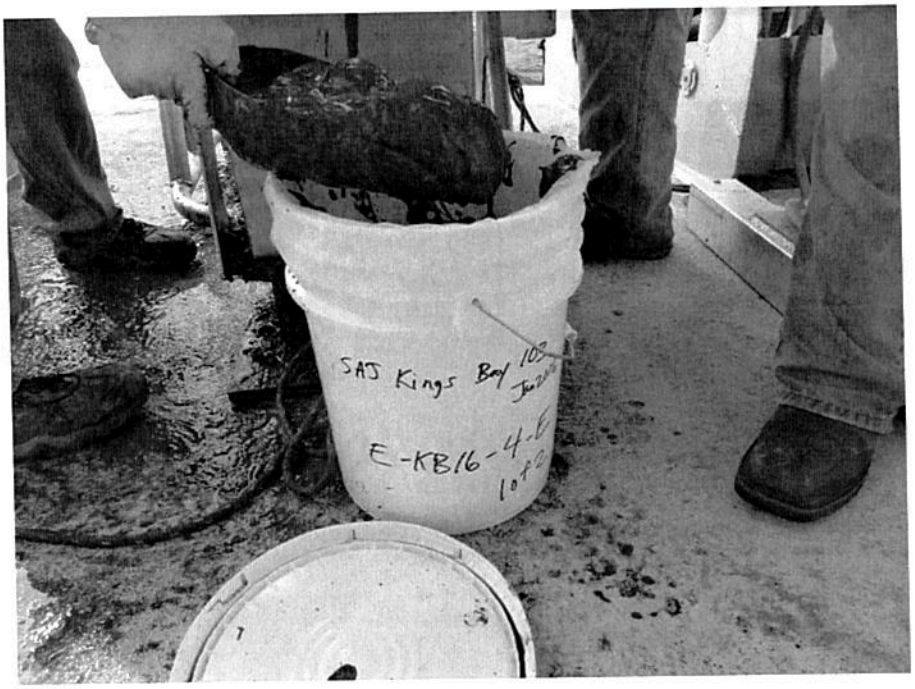

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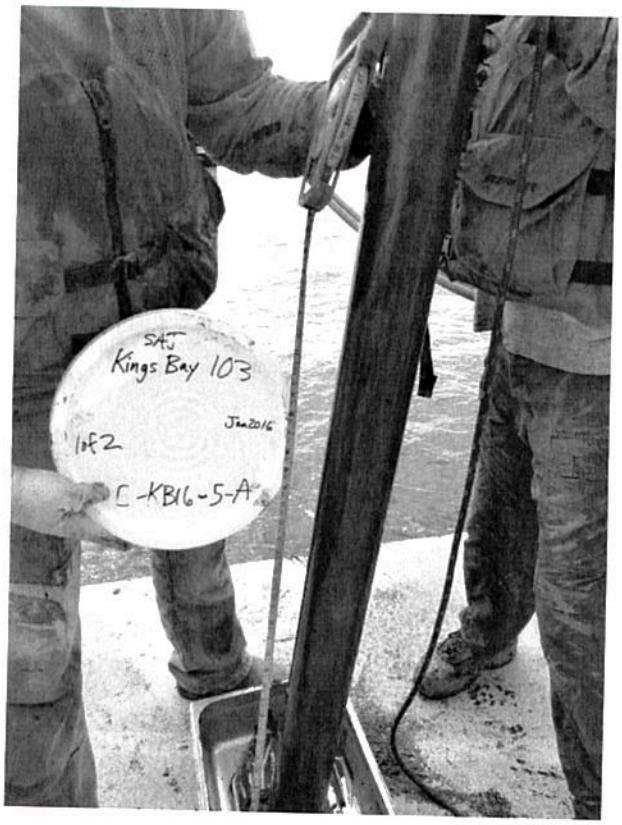

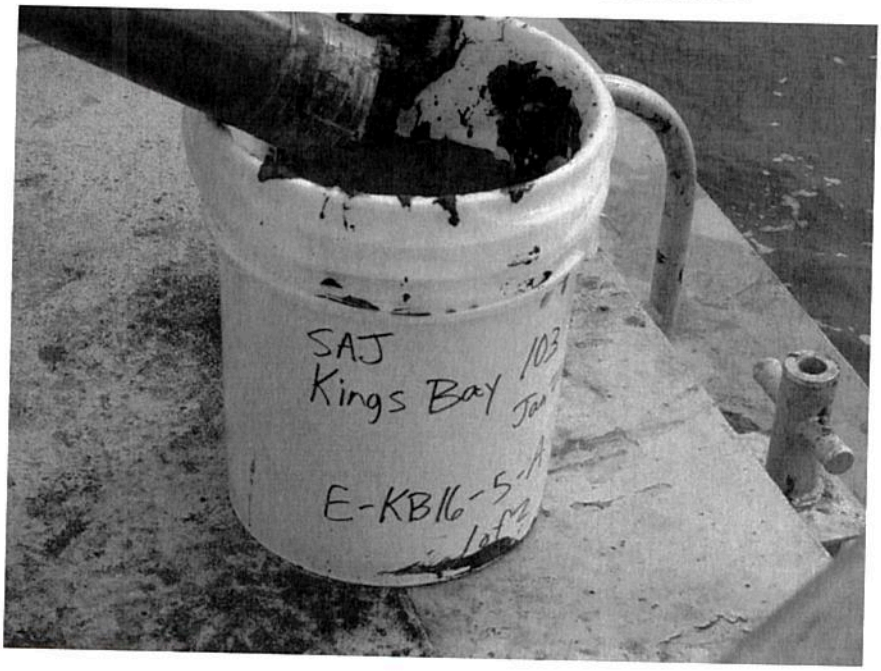

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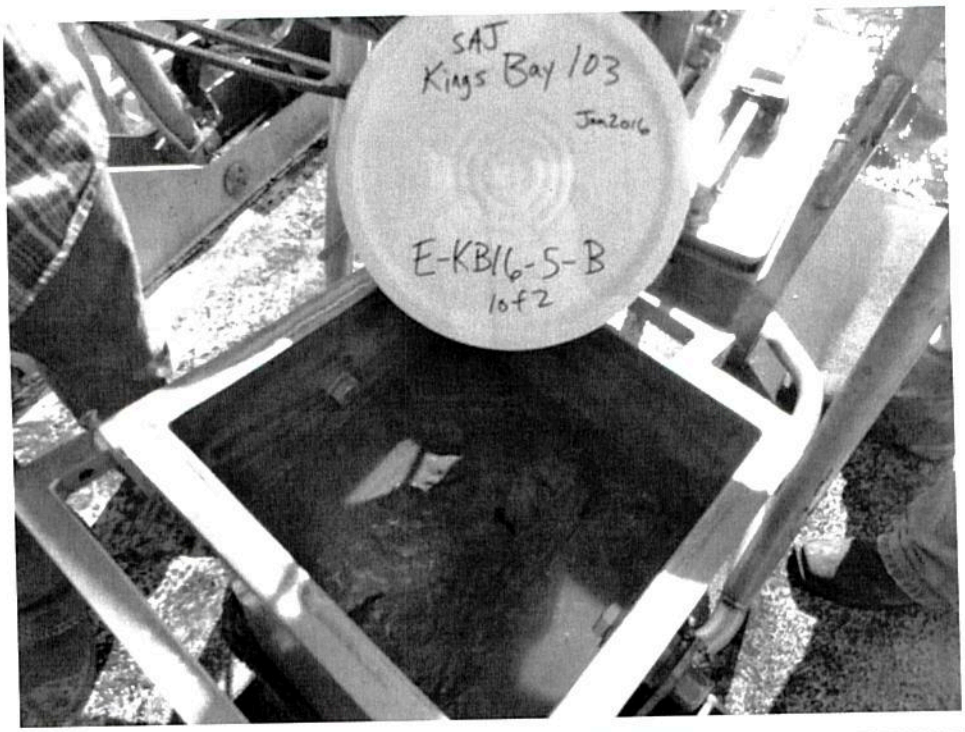
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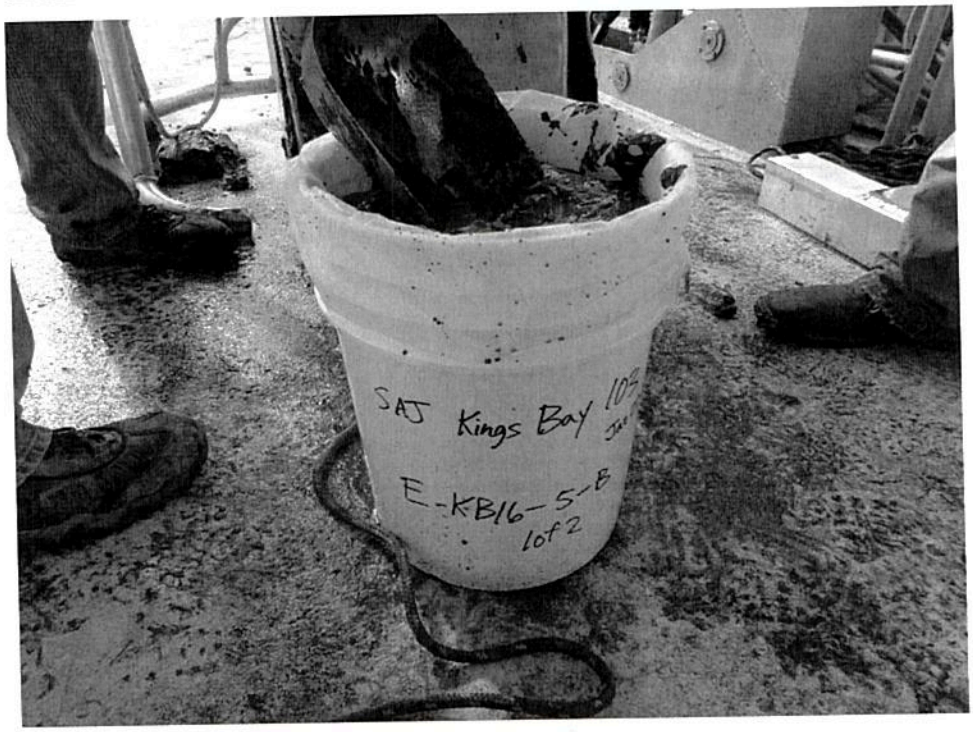
1 of 2


SAJ Kings Bay
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1 of 2

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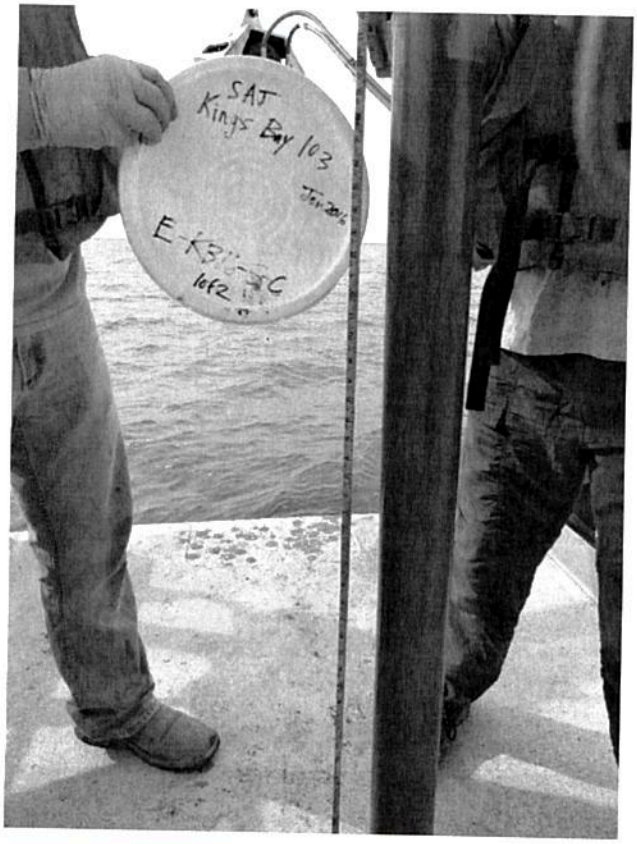

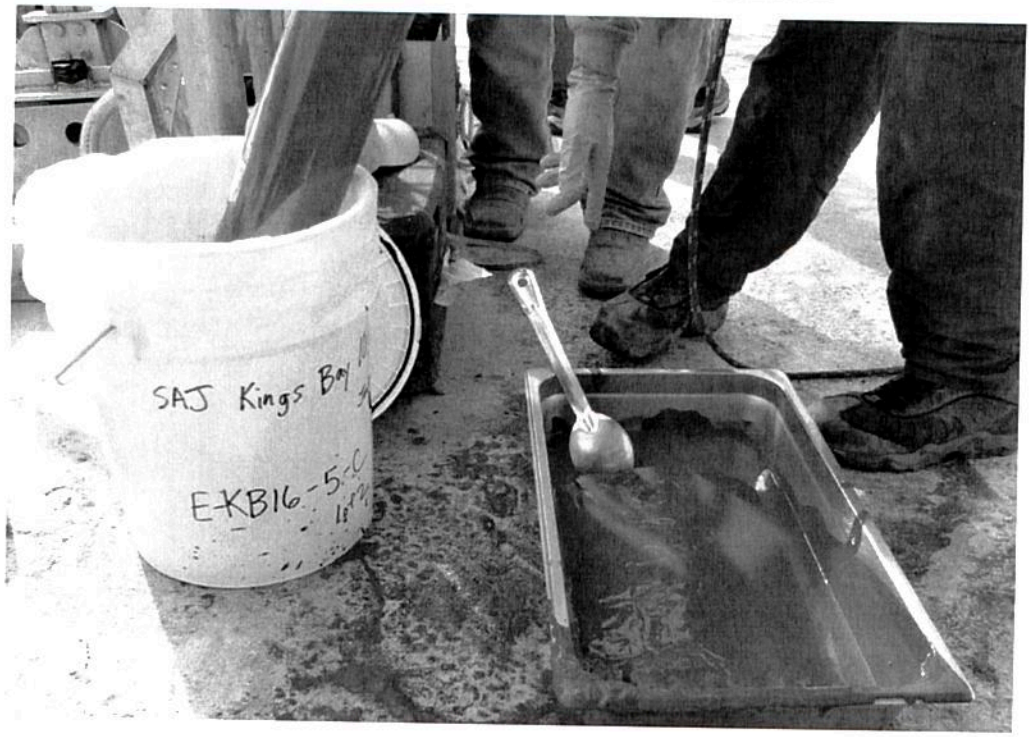

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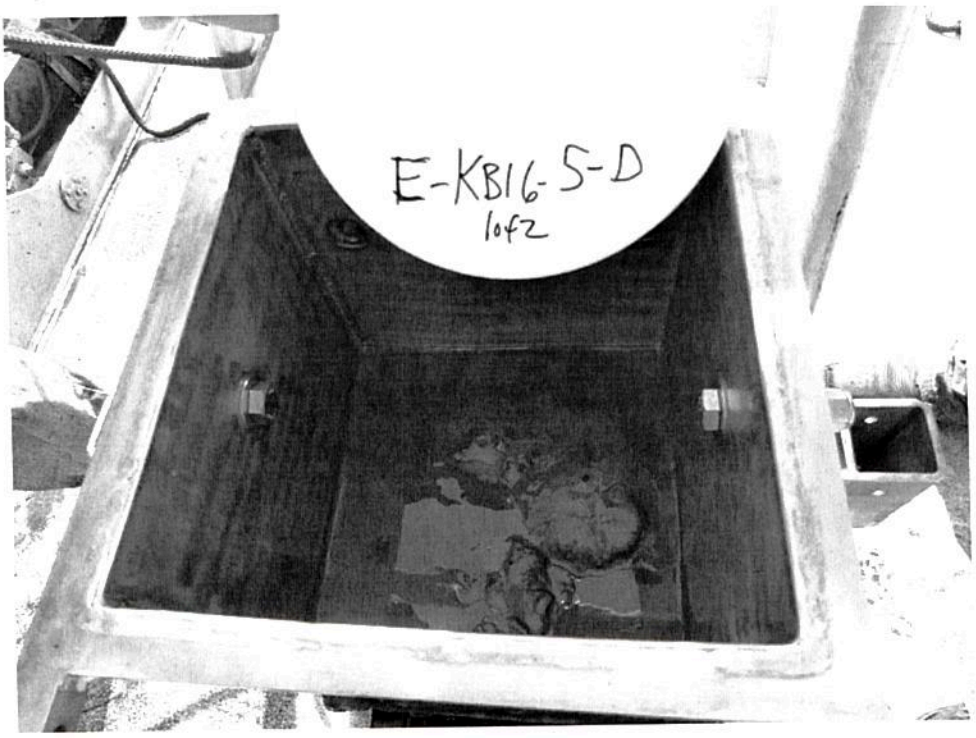

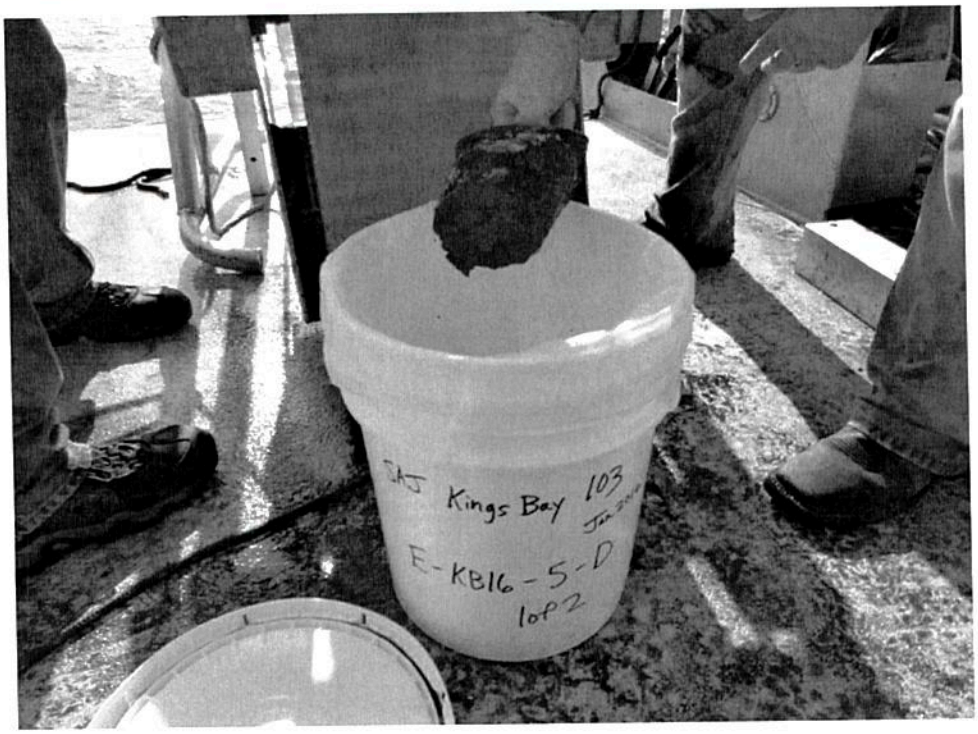

E-KB16-5E

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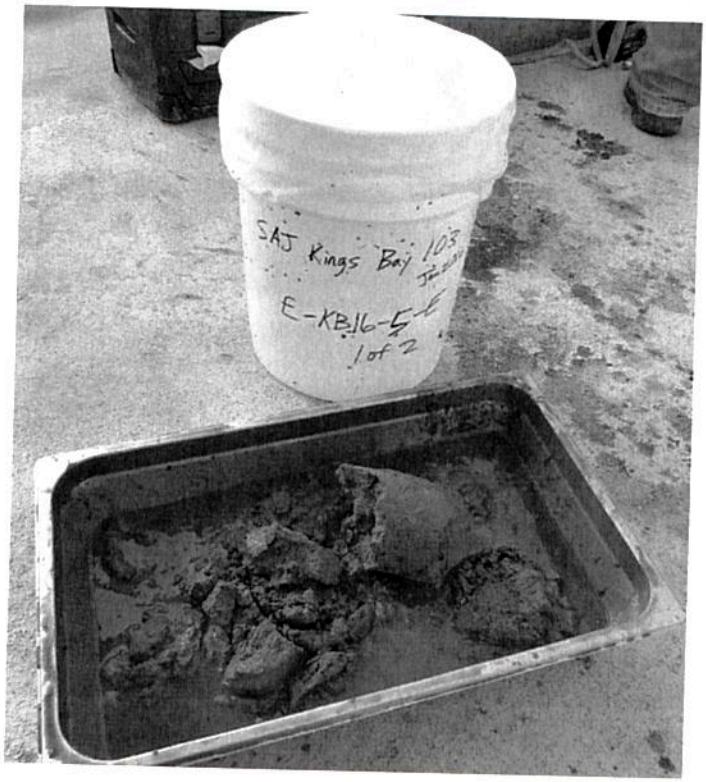
1 of 2


SAJ Kings Bay 103
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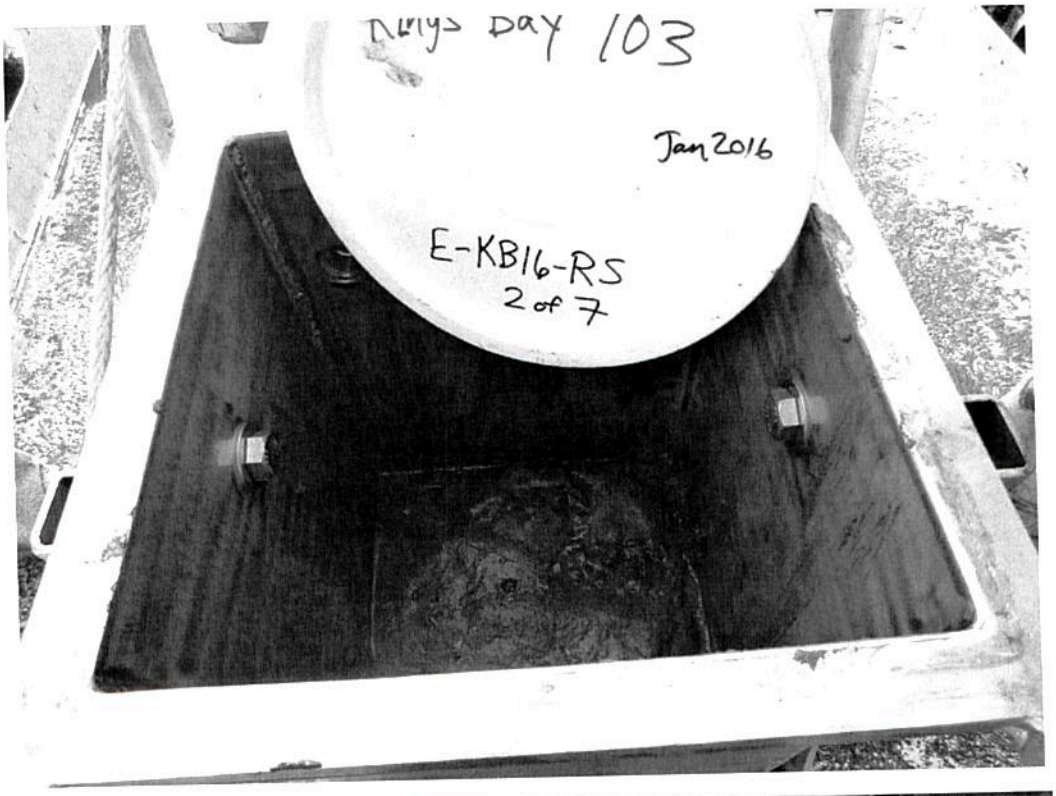
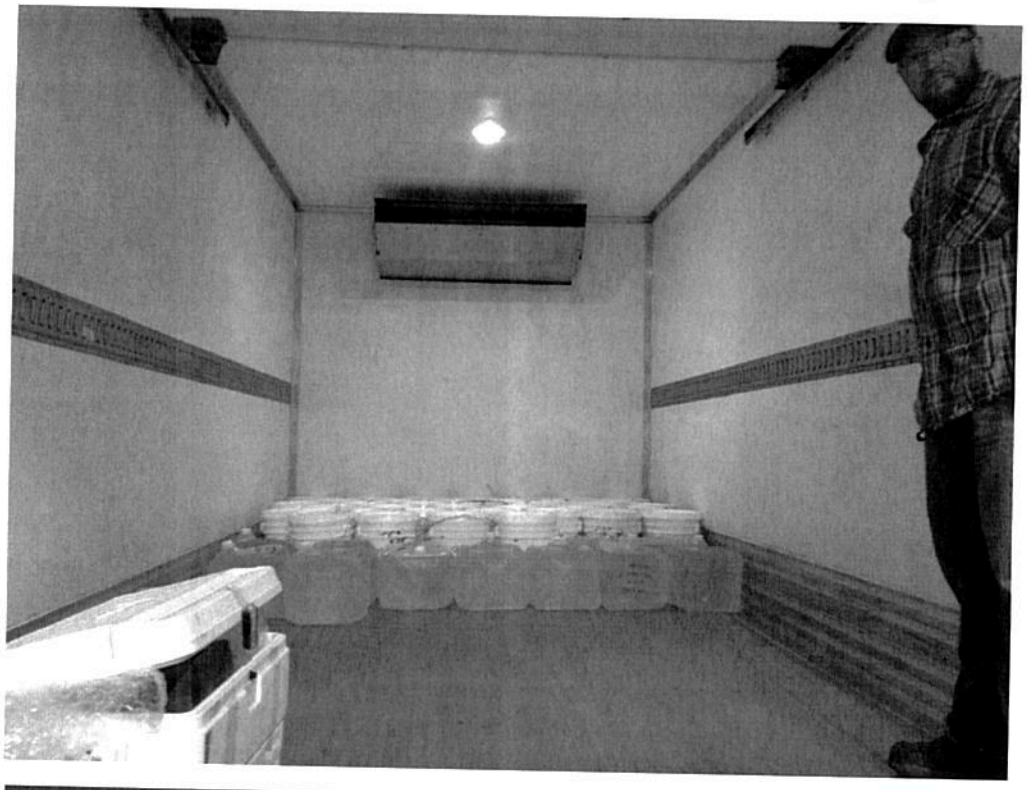
E-KB16-RS

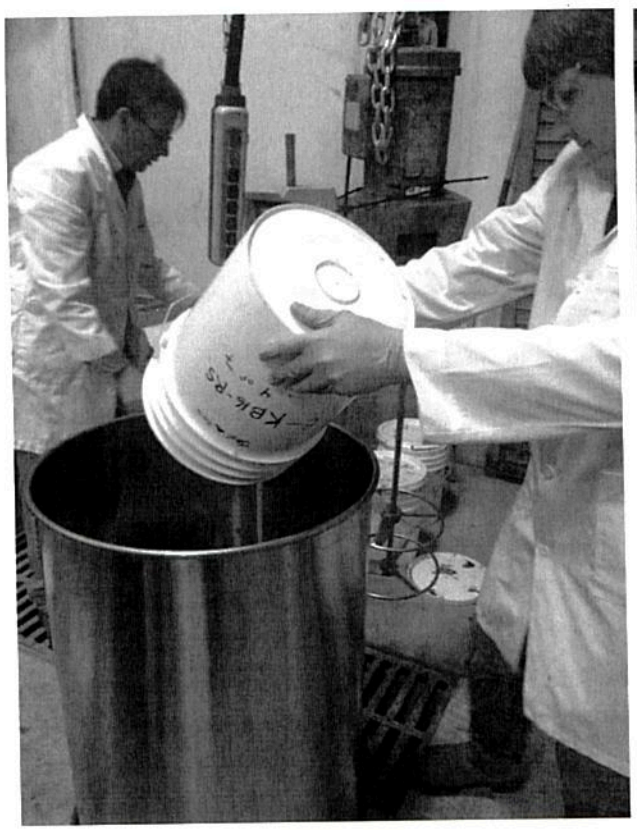


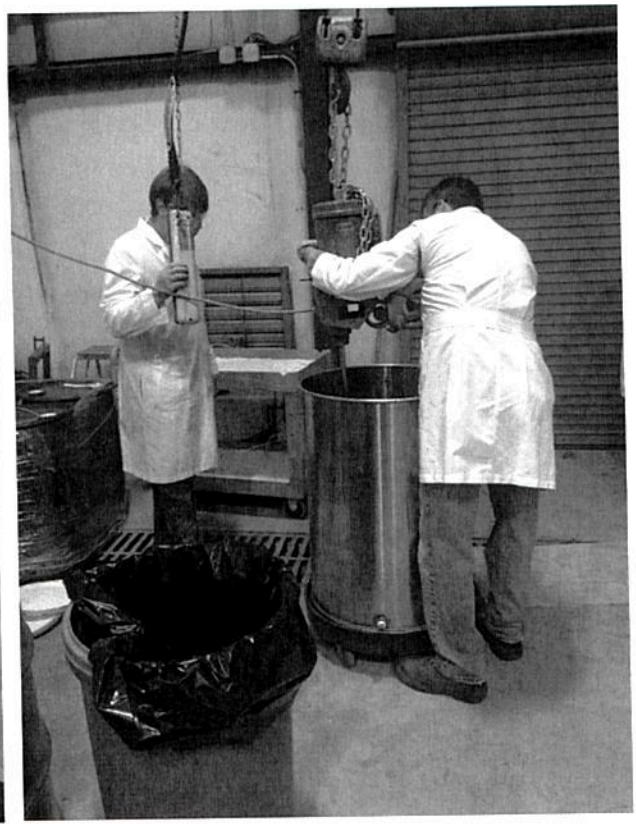
Delivery and cold room at ERDC-EL Laboratory

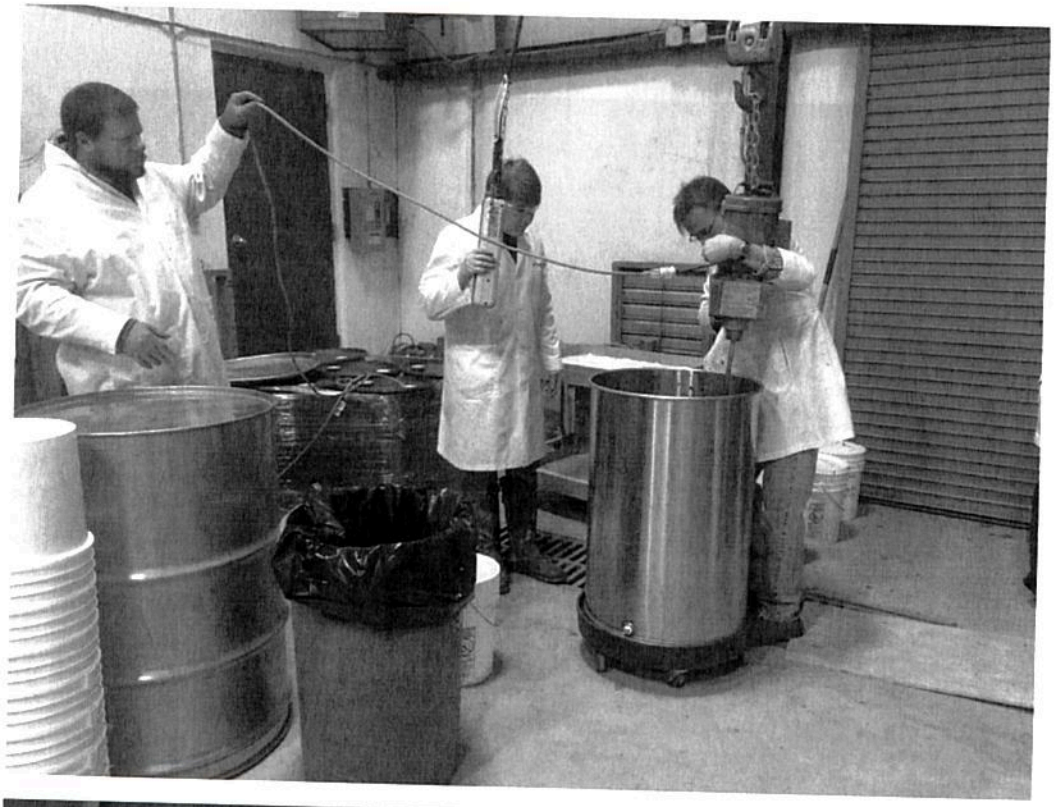


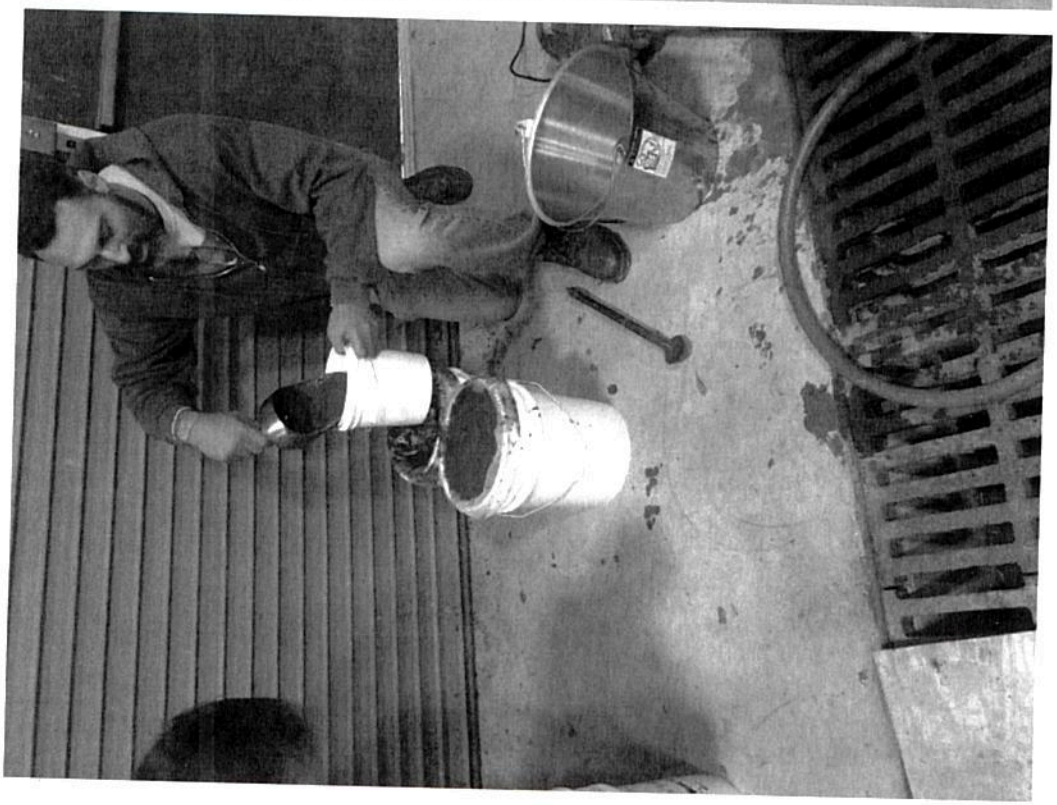
Laboratory compositing, homogenization and sediment pictures

General homogenization







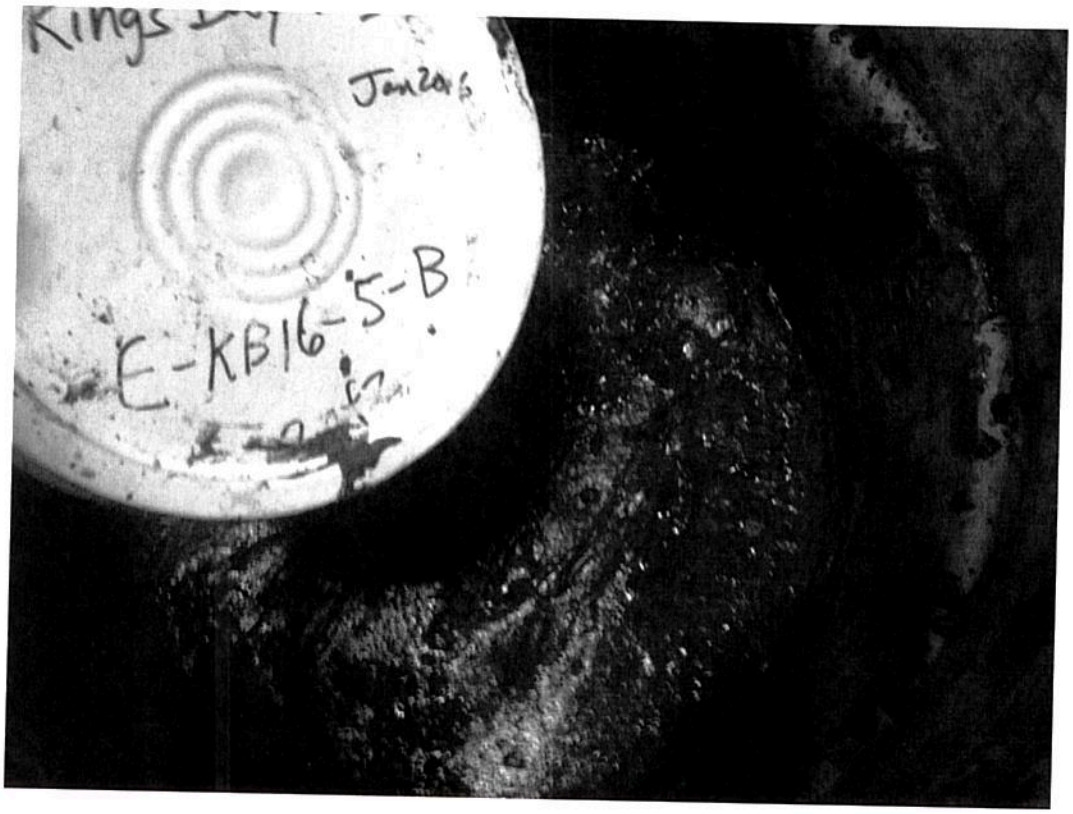


E-KB16-RS

E-KB16-1

E-KB16-4

E-KB16-5



U.S. Army Corps of Engineers

Chain of Custody Record

(ER 1110-1-263)

Proj. No.

Project Name: Kings Bay 103 Sampling

Sampler : (Signature) David Perkey

Date	Time	Pres.	Grab	Comp	Site Code/Sample Number	Number of Containers								Remarks:
1/12/16	1345-1615				E-KB16-1-A	2								Bucket #1 = Vibracores Bucket #2 = Boxcore 42°C
1/12/16	1218-1244				E-KB16-1-B	2								Boxcore
1/12/16	1000-1102				E-KB16-1-C	2								Boxcore
1/12/16	1120-1150				E-KB16-1-D	2								Boxcore
1/12/16	1254-1311				E-KB16-1-E	2								Boxcore
1/13/16	0920-0946				E-KB16-4-A	2								Boxcore 48
1/13/16	0954-1035				E-KB16-4-B	2								Box Core
1/13/16	1046-1130				E-KB16-4-E	2								Box Core
1/13/16	1133-1155				E-KB16-5B	2								Box Core
1/13/16	1212-1245				E-KB16-5-D	2								Box Core

Sampler Relinquished by: [signature]	Date/Time 1/15 20:00	Received by: (Sig.) [signature]	Date/Time 1/15 20:00	Hazards Associated with Samples
Relinquished by: (Sig.)	Date/Time	Received by: (Sig.)	Date/Time	
Relinquished by: (Sig)	Date/Time	Received for Laboratory by: (Sig.)	Date/Time	Remarks at time of receipt:
Custody Seal No.		Lab case No.:		

ENG Form 5021-R, Oct 90

Proponent: CEMP-RT

U.S. Army Corps of Engineers

Chain of Custody Record
(ER 1110-1-263)

Proj. No.

Project Name: Kings Bay 103 Sampling

Sampler : (Signature)

Date	Time	Pres.	Grab	Comp	Site Code/Sample Number	Number of Containers	Chemistry							Remarks:
1/13/16	1310-1500				E-KB16-RS	7								Box Core 4.3°C
1/14/16	1120-1220				E-KB16-5-C	2								Vibra Core
1/14/16	0903-1103				E-KB16-5-E	2								Vibra core
1/14/16	1243-1352				E-KB16-5-A	2								Lexane core liner may be in one of buckets Vibracore 5.7°C
1/14/16	1358-1505				E-KB16-4-D	2								Lexane core liner maybe in one of buckets Vibra core
1/14/16	1526-1600				E-KB16-4-C	2								Vibracore
1/14/16	1526-1700				E-KB16-SW	11								Same location as E-KB16-4-C 5-gallon cubecontainers
1/14/16	1526-1700				E-KB16-SW	6								Glass Amber Bottles 3.4°C 4.2°C
1/14/16	1526-1700				E-KB16-SW	3								250ml Plastic bottles
1/14/16	1526-1700				E-KB16-SW		X							6X 1 L Bottles 1X 125mL Bottle 1X 250mL Bottles

Sampler Relinquished by:	Date/Time 1/15/16 2:00	Received by: (Sig.)	Date/Time 1/15/16 2:00
Relinquished by: (Sig.)	Date/Time	Received by: (Sig.)	Date/Time
Relinquished by: (Sig)	Date/Time	Received for Laboratory by: (Sig.)	Date/Time
Custody Seal No.		Lab case No.:	

Hazards Associated with Samples

Remarks at time of receipt:

Proponent: CEMP-RT

ENG Form 5021-R, Oct 90

U.S. Army Corps of Engineers

Chain of Custody Record

(ER 1110-1-263)

Proj. No.	Project Name													
Sampler : (Signature)														
Date	Time	Pres.	Grab	Comp	Site Code/Sample Number	Number of Containers	Chemistry							Remarks:
1/18/16	1100			X	E-KB16-RS	2	X							
1/18/16	1100			X	E-KB16-1	2	X							
1/18/16	1100			X	E-KB16-4	2	X							
1/18/16	1100			X	E-KB16-5	2	X							
1/18/16	1100			X	E-KB16-SW	9	X							6-1L 1-125mL 2-250mL

Sampler Relinquished by: [signature]	Date/Time 1/18 1100	Received by: (Sig.) [signature]	Date/Time 1/18 1100	Hazards Associated with Samples
Relinquished by: (Sig.)	Date/Time	Received by: (Sig.)	Date/Time	
Relinquished by: (Sig)	Date/Time	Received for Laboratory by: (Sig.)	Date/Time	Remarks at time of receipt:
Custody Seal No.		Lab case No.:		

ENG Form 5021-R, Oct 90

Proponent: CEMP-RT

U.S. Army Corps of Engineers

Chain of Custody Record

(ER 1110-1-263)

Proj. No. KB-16

Project Name King's Bay

Sampler : (Signature)

Date	Time	Pres.	Grab	Comp	Site Code/Sample Number	Number of Containers	Chemistry							Remarks:
1/19/16	1300			X	E-KB-16-1	2	X							Elutriate analysis
1/19/16	1300			X	E-KB-16-1-Dup	2	X							"
1/19/16	1300			X	E-KB-16-4	2	X							"
1/19/16	1300			X	E-KB-16-5	2	X							"

Sampler Relinquished by:	Date/Time 1/19 1300	Received by: (Sig.)	Date/Time 1/19 13:53	Hazards Associated with Samples
Relinquished by: (Sig.)	Date/Time	Received by: (Sig.)	Date/Time	
Relinquished by: (Sig)	Date/Time	Received for Laboratory by: (Sig.)	Date/Time	Remarks at time of receipt:
Custody Seal No.		Lab case No.:		

ENG Form 5021-R, Oct 90

Proponent: CEMP-RT

1614

CHAIN OF CUSTODY

ENVIRON

Shipping: 4770 NE View Dr. Mailing: P.O. Box 216
Port Gamble, WA. 98364
Tel: (360) 297-6045, Fax: (360)297-6901

Destination: ERDC
Destination Contact: James Biedenbach
Date: 11/16/15
Turn-Around-Time: NA
Project Name: Sequim Bay Reference
Contract/PO:

Sample Originator (Organization): Ramboll Environ
PERSON WHO COLLECTED SAMPLE: Collin Ray
Address:
Phone:
Fax:
E-mail:

Report Results To: NA
Contact Name:
Address:
Phone:
Fax:
Email:

Analyses:

Invoicing To:
Comments or Special Instructions:

No.	Sample ID	Matrix	Volume & Type of Container	Date & Time	Preservation	Sample Temp Upon Receipt	LAB ID
1	Sequim Bay Reference	SS	5gal polybag	11/14/15 1200	On ice		
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Relinquished by:	Recieved by:	Relinquished by:	Recieved by:
Print Name: Collin Ray	Print Name: James Biedenbach	Print Name:	Print Name:
Signature: Collin Ray	Signature:	Signature:	Signature:
Affiliation: Ramboll Environ	Affiliation: USACE	Affiliation:	Affiliation:
Date/Time: 11/16/15 1010	Date/Time: 11/17/2015 10:30	Date/Time:	Date/Time:

Matrix Codes
FW = Fresh Water
SB = Salt & Brackish Water
SS = Soil & Sediment

Version 1.0, Effective 7/1/14

AIR WATER & SOIL LABORATORIES, INC.

1941 Reymet Road ● Richmond, Virginia 23237 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Laboratory Order ID 16A0394

Client Name:	Army Corp of Engineers Civil Works-Subcontracting ERDC Contracting Office, 3909 Halls Ferry Road Vicksburg, MS 39180	Date Received:	January 21, 2016 14:47
		Date Issued:	February 12, 2016 16:12
		Project Number:	Kingsbay
Submitted To:	Amber Russell	Purchase Order:	
Client Site I.D.:	Kingsbay		

Enclosed are the results of analyses for samples received by the laboratory on 01/21/2016 14:47. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars

Ted Soyars
Laboratory Manager

End Notes:

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

This report shall not be reproduced except in full without the expressed and written approval of an authorized representative of Air Water & Soil Laboratories, Inc.

ACCREDITED IN ACCORDANCE WITH nelac
Commonwealth of Virginia, DCLS
Accreditation # 460021

NWBOC
EDWOSB CERTIFIED

CERTIFIED SWaM Small, Women and Minority-Owned
Supplier Diversity Strengthens the Commonwealth
by the Virginia Department of Minority Business Enterprise

AIR WATER SOIL LABORATORIES, INC.

1941 Reymet Road ● Richmond, Virginia 23230 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Client Name:	Army Corp of Engineers Civil Works-Subcontr ERDC Contracting Office, 3909 Ha Vicksburg MS, 39180	Date Issued:	2/12/2016 16:12
Submitted To:	Amber Russell	Project Number:	Kingsbay
Client Site I.D.:	Kingsbay	Purchase Order:	

ANALYTICAL REPORT FOR SAMPLES

Laboratory Order ID 16A0394

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
6012003-01 (E-KB-16-RS)	16A0394-01	Soil/Sediment	01/15/2016 00:00	01/21/2016 14:47
6012003-02 (E-KB-16-1)	16A0394-02	Soil/Sediment	01/15/2016 00:00	01/21/2016 14:47
6012003-03 (E-KB-16-4)	16A0394-03	Soil/Sediment	01/15/2016 00:00	01/21/2016 14:47
6012003-04 (E-KB-16-5)	16A0394-04	Soil/Sediment	01/15/2016 00:00	01/21/2016 14:47

Analysis for Specific Gravity, Particle Size, and Atterberg Limits was subcontracted to Geotechnical Testing Services. The subcontracted results are attached at the end of this Certificate of Analysis.

AIR WATER & SOIL LABORATORIES, INC.

1941 Reymet Road ● Richmond, Virginia 23230 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Client Name:	Army Corp of Engineers Civil Works-Subcontr ERDC Contracting Office, 3909 Ha Vicksburg MS, 39180	Date Issued:	2/12/2016 16:12
Submitted To:	Amber Russell	Project Number:	Kingsbay
Client Site I.D.:	Kingsbay	Purchase Order:	

Laboratory Order ID: 16A0394

Analytical Results

Sample I.D. 6012003-01 (E-KB-16-RS) **Laboratory Sample ID:** 16A0394-01

Date/Time Sampled: 01/15/2016 00:00

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
Subcontracted Analysis									
Atterberg Limits	01	ASTM 4318D	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A
Grain size sieve & Hydrometer	01	varies	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A
Specific Gravity	01	ASTM-D854	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A

AIR WATER & SOIL LABORATORIES, INC.

1941 Reymet Road ● Richmond, Virginia 23230 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Client Name:	Army Corp of Engineers Civil Works-Subcontr ERDC Contracting Office, 3909 Ha Vicksburg MS, 39180	Date Issued:	2/12/2016 16:12
Submitted To:	Amber Russell	Project Number:	Kingsbay
Client Site I.D.:	Kingsbay	Purchase Order:	

Laboratory Order ID: 16A0394

Analytical Results

Sample I.D. 6012003-02 (E-KB-16-1) **Laboratory Sample ID:** 16A0394-02

Date/Time Sampled: 01/15/2016 00:00

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
Subcontracted Analysis									
Atterberg Limits	02	ASTM 4318D	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A
Grain size sieve & Hydrometer	02	varies	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A
Specific Gravity	02	ASTM-D854	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A

AIR WATER SOIL LABORATORIES, INC.

1941 Reymet Road ● Richmond, Virginia 23230 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Client Name:	Army Corp of Engineers Civil Works-Subcontr ERDC Contracting Office, 3909 Ha Vicksburg MS, 39180	Date Issued:	2/12/2016 16:12
Submitted To:	Amber Russell	Project Number:	Kingsbay
Client Site I.D.:	Kingsbay	Purchase Order:	

Laboratory Order ID: 16A0394

Analytical Results

Sample I.D. 6012003-03 (E-KB-16-4) **Laboratory Sample ID:** 16A0394-03

Date/Time Sampled: 01/15/2016 00:00

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
Subcontracted Analysis									
Atterberg Limits	03	ASTM 4318D	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A
Grain size sieve & Hydrometer	03	varies	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A
Specific Gravity	03	ASTM-D854	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A

AIR WATER & SOIL LABORATORIES, INC.

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Certificate of Analysis

Final Report

Client Name:	Army Corp of Engineers Civil Works-Subcontr ERDC Contracting Office, 3909 Ha Vicksburg MS, 39180	Date Issued:	2/12/2016 16:12
Submitted To:	Amber Russell	Project Number:	Kingsbay
Client Site I.D.:	Kingsbay	Purchase Order:	

Laboratory Order ID: 16A0394

Analytical Results

Sample I.D. 6012003-04 (E-KB-16-5) **Laboratory Sample ID:** 16A0394-04

Date/Time Sampled: 01/15/2016 00:00

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
Subcontracted Analysis									
Atterberg Limits	04	ASTM 4318D	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A
Grain size sieve & Hydrometer	04	varies	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A
Specific Gravity	04	ASTM-D854	Attached			1	02/03/16 12:56	02/03/16 13:20	N/A

Analytical Summary

Administrative **Preparation Method:**

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Subcontracted Analysis		**Preparation Method:**	**Subcontract**		
16A0394-01	1.00 mg / 1.00 mL	ASTM 4318D	BZB0078		
16A0394-02	1.00 mg / 1.00 mL	ASTM 4318D	BZB0078		
16A0394-03	1.00 mg / 1.00 mL	ASTM 4318D	BZB0078		
16A0394-04	1.00 mg / 1.00 mL	ASTM 4318D	BZB0078		
16A0394-01	1.00 mg / 1.00 mL	ASTM-D854	BZB0078		
16A0394-02	1.00 mg / 1.00 mL	ASTM-D854	BZB0078		
16A0394-03	1.00 mg / 1.00 mL	ASTM-D854	BZB0078		
16A0394-04	1.00 mg / 1.00 mL	ASTM-D854	BZB0078		
16A0394-01	1.00 mg / 1.00 mL	varies	BZB0078		
16A0394-02	1.00 mg / 1.00 mL	varies	BZB0078		
16A0394-03	1.00 mg / 1.00 mL	varies	BZB0078		
16A0394-04	1.00 mg / 1.00 mL	varies	BZB0078		

AIR WATER SOIL LABORATORIES, INC.

1941 Reymet Road ● Richmond, Virginia 23230 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Client Name:	Army Corp of Engineers Civil Works-Subcontr ERDC Contracting Office, 3909 Ha Vicksburg MS, 39180	Date Issued:	2/12/2016 16:12
Submitted To:	Amber Russell	Project Number:	Kingsbay
Client Site I.D.:	Kingsbay	Purchase Order:	

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual

AIR WATER & SOIL LABORATORIES, INC.

1941 Reymet Road ● Richmond, Virginia 23230 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Client Name:	Army Corp of Engineers Civil Works-Subcontr ERDC Contracting Office, 3909 Ha Vicksburg MS, 39180	Date Issued:	2/12/2016 16:12
Submitted To:	Amber Russell	Project Number:	Kingsbay
Client Site I.D.:	Kingsbay	Purchase Order:	

Certified Analyses included in this Report

Analyte **Certifications**

Code	Description	Lab Number	Expires
VELAP	NELAC-Virginia Certificate #8177	460021	06/15/2016

AIR WATER SOIL LABORATORIES, INC.

1941 Reymet Road ● Richmond, Virginia 23230 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Client Name:	Army Corp of Engineers Civil Works-Subcontr ERDC Contracting Office, 3909 Ha Vicksburg MS, 39180	Date Issued:	2/12/2016 16:12
Submitted To:	Amber Russell	Project Number:	Kingsbay
Client Site I.D.:	Kingsbay	Purchase Order:	

Summary of Data Qualifiers

Attached	Attached
RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
D.F.	Dilution Factor. Please also see the Preparation Factor in the Analysis Summary section.
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library . A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.

SUBCONTRACT ORDER

ERDC-EL-EP-C

6012003-04-

SENDING LABORATORY:

ERDC-EL-EP-C
3909 Halls Ferry Road , Building 3299
Vicksburg, MS 39180
Phone: 601-634-4826
Fax: 601-634-2742
Project Manager: Allyson Holman

RECEIVING LABORATORY:

AWS
1941 Reymet Road
Richmond, VA 23237
Phone :(804) 358-8295
Fax:

Bill using PR&C Order ID:

Analysis	Due	Expires	Laboratory ID	Comments
Sample Name: E-KB-16-RS				
Sample ID: 6012003-01	**Soil/Sedim**	**Sampled: 15-Jan-2016 00:00**		
Atterberg Limits	21-Jan-2016 00:00	14-Feb-2016 00:00		
Particle Size - Hydrometer	21-Jan-2016 00:00	14-Feb-2016 00:00		
Particle Size - Sieve	21-Jan-2016 00:00	14-Feb-2016 00:00		
Specific Gravity	21-Jan-2016 00:00	14-Feb-2016 00:00		
Containers Supplied:				
Sample Name: E-KB-16-1				
Sample ID: 6012003-02	**Soil/Sedim**	**Sampled: 15-Jan-2016 00:00**		
Atterberg Limits	21-Jan-2016 00:00	14-Feb-2016 00:00		
Particle Size - Hydrometer	21-Jan-2016 00:00	14-Feb-2016 00:00		
Particle Size - Sieve	21-Jan-2016 00:00	14-Feb-2016 00:00		
Specific Gravity	21-Jan-2016 00:00	14-Feb-2016 00:00		
Containers Supplied:				
Sample Name: E-KB-16-4				
Sample ID: 6012003-03	**Soil/Sedim**	**Sampled: 15-Jan-2016 00:00**		
Atterberg Limits	21-Jan-2016 00:00	14-Feb-2016 00:00		
Particle Size - Hydrometer	21-Jan-2016 00:00	14-Feb-2016 00:00		
Particle Size - Sieve	21-Jan-2016 00:00	14-Feb-2016 00:00		
Specific Gravity	21-Jan-2016 00:00	14-Feb-2016 00:00		
Containers Supplied:				

MILAM.JENIFER.M.1513506607

Digitally signed by MILAM.JENIFER.M.1513506607
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=MILAM.JENIFER.M.1513506607
Date: 2016.01.26 13:23:28 -06'00'

Released By	Date	Received By	Date
Released By	Date	Received By	Date

SUBCONTRACT ORDER

ERDC-EL-EP-C

6012003-04-

Analysis	Due	Expires	Laboratory ID	Comments
Sample Name: E-KB-16-5				
Sample ID: 6012003-04	**Soil/Sedim**	**Sampled: 15-Jan-2016 00:00**		
Atterberg Limits	21-Jan-2016 00:00	14-Feb-2016 00:00		
Particle Size - Hydrometer	21-Jan-2016 00:00	14-Feb-2016 00:00		
Particle Size - Sieve	21-Jan-2016 00:00	14-Feb-2016 00:00		
Specific Gravity	21-Jan-2016 00:00	14-Feb-2016 00:00		
Containers Supplied:				

Released By	Date	Received By	Date
Released By	Date	Received By	Date

SPECIFIC GRAVITY OF SOILS - AASHTO T-100

Client: Air Water & Soil Laboratories, Inc.
Client Project: ERDC-EL-EP-C 6012003-004
Project No.: 36956

Lab Sample No.	Boring	Depth	Sample	Replicate No.	Material Used	Passing #4 Sieve	Pycnometer Id.	Pre-test Pycnometer Check Weight (gm) Mp	Weight Pycnometer +Soil+Water (gm) Mpws,t	Test Temp. (°C) Tt	Tare No.	Weight Tare+ Dry Soil (gm)	Tare Weight (gm)	Weight Dry Soil (gm) Mds	Test Water Density (gm/ml) ρw,t	Weight Pycnometer +Water at Test Temp (gm) Mpw,t	Average Calibrated Pycnometer Dry Weight (gm) Mp	Average Calibrated Volume of Pycnometer (ml) Vp	Specific Gravity of Soil at Test Temp (g/cc) Gt	Conversion Factor For Temp Tb-K	Specific Gravity of Soil at 20°C (g/cc) G20°C
					Sieve	%		TEST PARAMETERS									CALIBRATION PARAMETERS		SPECIFIC GRAVITY		
36956001	6012003-01	1/15/2016	E-KB-16-RS	1	-#10	NA	B	160.02	689.93	23.6	975	153.51	102.38	51.13	0.9974	658.29	160.00	499.58	2.624	0.9992	2.62
				2	-#10	NA	C	161.1	690.34	23.8	823	160.83	110.49	50.34	0.9973	659.20	161.12	499.41	2.621	0.9991	2.62
																				Average	2.62
36956002	6012003-02	1/15/2016	E-KB-16-1	1	-#10	NA	J	159.84	689.35	23.5	902	148.53	98.28	50.25	0.9974	658.31	159.84	499.76	2.616	0.9992	2.61
				2	-#10	NA	R	164.26	693.68	23.6	921	148.26	98.16	50.1	0.9974	662.57	164.25	499.62	2.638	0.9992	2.64
																				Average	2.63
36956003	6012003-03	1/15/2016	E-KB-16-4	1	-#10	NA	L	164.86	694.12	23.6	837	151.83	101.75	50.08	0.9974	663.22	164.84	499.69	2.610	0.9992	2.61
				2	-#10	NA	F	162.17	691.59	24.6	842	152.59	102.3	50.29	0.9971	660.43	162.17	499.68	2.629	0.9989	2.63
																				Average	2.62
36956004	6012003-04	1/15/2016	E-KB-16-5	1	-#10	NA	S	167.04	696.16	23.6	968	152.97	102.85	50.12	0.9974	664.80	167.04	499.05	2.672	0.9992	2.67
				2	-#10	NA	K	164.55	693.78	24.6	1002	238.39	188.19	50.2	0.9971	662.83	164.53	499.72	2.608	0.9989	2.61
																				Average	2.64

Input Validation: tmp

Reviewed By: SVG

Date: 1/27/2016

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PARTICLE-SIZE ANALYSIS OF SOILS - AASHTO T288

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-01
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-RS
		Lab Sample	36956001

Sample Color: VERY DARK GREENISH GRAY
USCS Group Name: CLAYEY SAND
USCS Group Symbol: SC USDA: SANDY LOAM AASHTO: A-7-6 (5)

MECHANICAL SIEVE

As-Received Water Content not requested

Sieve Size	Nominal Opening, mm	Dry Wt, gm	Split Normalized % Retained	Split Normalized % Finer	Project Specifications
3"	75	0	0.0	100.0	
2-1/2"	63	0	0.0	100.0	
2"	50	0	0.0	100.0	
1-1/2"	37.5	0	0.0	100.0	
1"	25	0	0.0	100.0	
3/4"	19	0	0.0	100.0	
1/2"	12.5	0	0.0	100.0	
3/8"	9.5	0	0.0	100.0	
No. 4	4.75	0	0.0	100.0	
No. 10	2	0	0.0	100.0	
No. 20	0.85	1.23	2.5	97.5	
No. 40	0.425	1.29	2.6	95.0	
No. 60	0.25	2.09	4.2	90.8	
No. 140	0.106	18.6	37.2	53.6	
No. 200	0.075	5.88	11.8	41.8	

Hygroscopic WC (-#10)

Tare No.	429
Tare + WS., gm	22.84
Tare + DS., gm	22.84
Tare, gm	10.61
Hygroscopic WC	0.00
-#10 Hydro/Sieve air dry wt.	50.02
Wt. of +#200 Sample, gm	29.09

HYDROMETER (-#10)

Split Air Dry Wt	50.02	Specific Gravity	2.62
Hygroscopic WC	0.00		Tested
Corrected Dry wt	50.0	*a Factor*	*1.0070*

-#10 Dispersed 1min in Hamilton Beach Mixer

Elapsed Time (min.)	R Measured	Temp *C	Composite Correction	R Corrected	K Factor	Percent Finer (%)	Particle Diameter (mm)	Adjusted % Finer (%)
2	21	20.9	5.0	16.0	0.0137	32.2	0.0345	32.2
5	17.5	20.9	5.0	12.5	0.0137	25.2	0.0223	25.2
15	17	21	5.0	12.0	0.0136	24.2	0.0129	24.2
30	16	21.2	4.9	11.1	0.0136	22.3	0.0092	22.3
60	14.5	21.6	4.8	9.7	0.0135	19.5	0.0065	19.5
250	11.5	22.8	4.4	7.1	0.0133	14.3	0.0032	14.3
1440	9	24	4.0	5.0	0.0132	10.1	0.0013	10.1

USCS SOIL CLASSIFICATION

Corrected For 100% Passing a 3" Sieve

% Gravel (-3" +#4)	0.0	Silt=24.1 Clay=17.6	
Coarse=0; Fine=0		D60, mm	NA
% Sand (-#4 +#200)	58.2	D30, mm	NA
Coarse=0; Medium=5; Fine=53.1		D10, mm	NA
% Fines (-#200)	41.8	Cc	NA
% Plus #200 (-3")	58.2	Cu	NA

USCS Description
CLAYEY SAND

USCS Group Symbol	Atterberg Limits Group Symbol
SC	CL - LEAN CLAY

Auxiliary Information	Wt Ret, gm	Retained	Finer
12" Sieve - 300 mm	0	0.0	100.0
6" Sieve - 150 mm	0	0.0	100.0
3" Sieve - 75 mm	0	0.0	100.0

USDA CLASSIFICATION

Particle Size (mm)	Percent Finer ( )	Percent of Each Component (Material)	( )	Corrected Percent of -2.0 mm Material for USDA
100	100			
		Gravel	0.0	0
2	100.0			
		Sand	63.2	63.2
0.05	36.8			
		Silt	24.8	24.8
0.002	12.0			
		Clay	12.0	12.0

USDA Classification
SANDY LOAM

Input Validation YES Reviewed By: SVG Date Tested 1/25/2016

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LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS
AASHTO T89/T90

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-01
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-RS
		Lab Sample	36956001

Soil Description: VERY DARK GREENISH GRAY LEAN CLAY
(-#40 Fraction)

AS-RECEIVED W.C.

SAMPLE SUMMARY

Activity Index = 1.83; Liquidity Index = -1.

Liquid Limit (LL),	44
Plastic Limit (PL),	22
Plasticity Index (PI)	22
USCS Group Symbol (-#40 Fraction)	CL
USCS Group Name (-#40 Fraction)	LEAN CLAY
Sample Color:	VERY DARK GREENISH GRAY

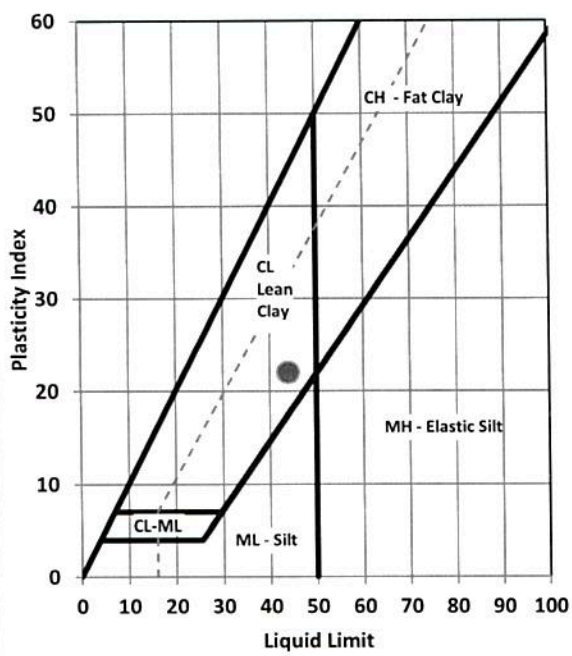
PLASTIC LIMIT

Points Run	3 Points		
Tare Number	235	228	242
Wt. Tare & WS, gm	22.55	22.95	22.15
Wt. Tare & DS, gm	21.39	21.73	21.09
Wt. Tare, gm	16.10	16.06	16.07
Water Content,	21.9	21.5	21.1

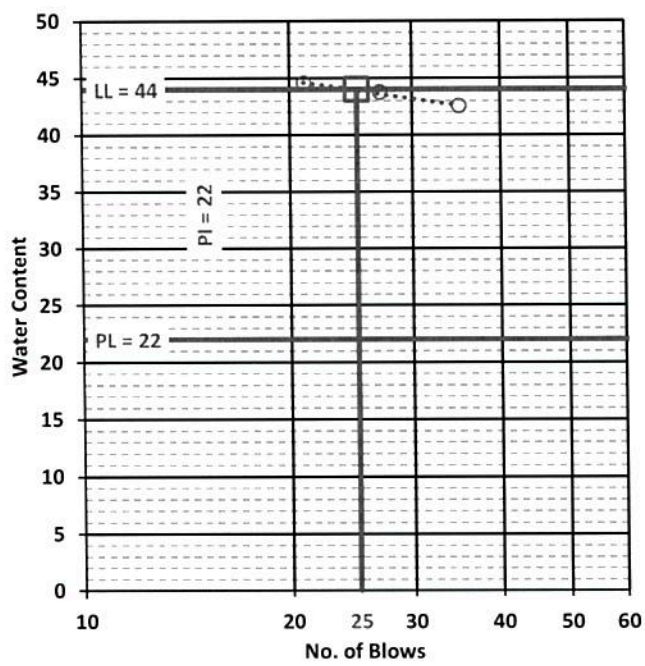
LIQUID LIMIT

	3 Points		
	220	265	264
	25.48	24.48	25.08
	22.58	21.93	22.37
	16.07	16.10	16.00
	44.5	43.7	42.5
# of Blows	21	27	35

PLASTICITY CHART



FLOW CURVE



Input Validation: Yes Reviewed By: SVG Date Tested: 1/25/2016

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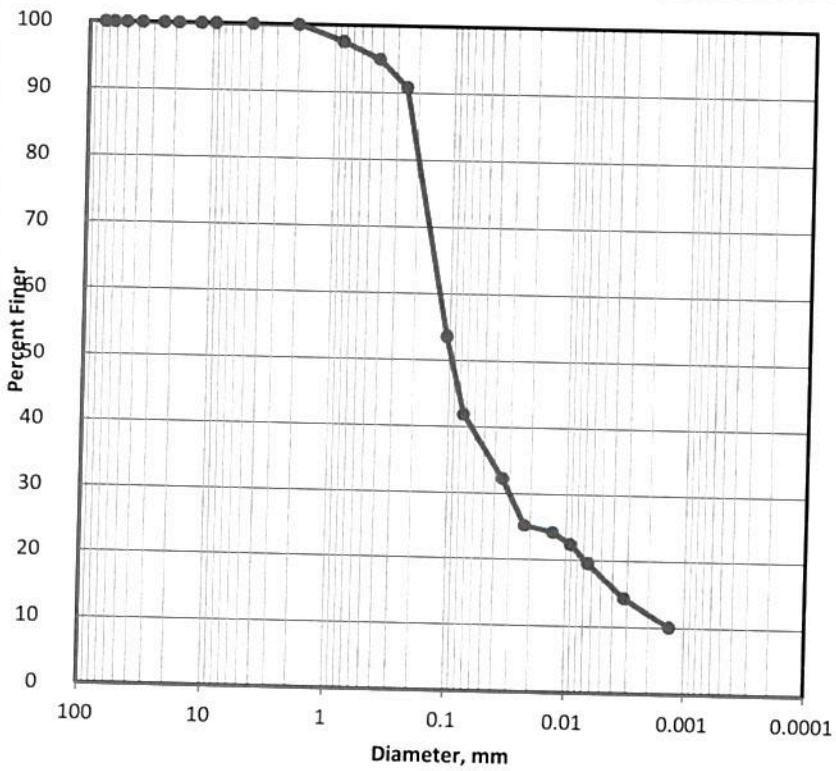
PARTICLE-SIZE ANALYSIS OF SOILS - AASHTO T288

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-01
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-RS
		Lab Sample	36956001

Sample Color: VERY DARK GREENISH GRAY
USCS Group Name: CLAYEY SAND
USCS Group Symbol: SC USDA: SANDY LOAM AASHTO: A-7-6 (5)



US Std. Sieve Size	Particle Diameter (mm)	Percent Finer
3"	75	100.0%
2-1/2"	63	100.0%
2"	50	100.0%
1-1/2"	37.5	100.0%
1"	25	100.0%
3/4"	19	100.0%
1/2"	12.5	100.0%
3/8"	9.5	100.0%
No. 4	4.75	100.0%
No. 10	2	100.0%
No. 20	0.85	97.5%
No. 40	0.425	95.0%
No. 60	0.25	90.8%
No. 140	0.106	53.6%
No. 200	0.075	41.8%
NA	0.0345	32.2%
NA	0.0223	25.2%
NA	0.0129	24.2%
NA	0.0092	22.3%
NA	0.0065	19.5%
NA	0.0032	14.3%
NA	0.0013	10.1%

USCS SOIL CLASSIFICATION

Corrected For 100% Passing a 3" Sieve

% Gravel (-3" +#4)	0.0	Silt=24.1 Clay=17.6	
Coarse=0; Fine=0		D60, mm	NA
% Sand (-#4 +#200)	58.2	D30, mm	NA
Coarse=0; Medium=5; Fine=53.1		D10, mm	NA
% Fines (-#200)	41.8	Cc	NA
% Plus #200 (-3")	58.2	Cu	NA

USCS Description
CLAYEY SAND

USCS Group Symbol	Atterberg Limits Group Symbol
SC	CL - LEAN CLAY

Auxiliary Information	Wt Ret, gm	Retained	Finer
12" Sieve - 300 mm	0	0.0	100.0
6" Sieve - 150 mm	0	0.0	100.0
3" Sieve - 75 mm	0	0.0	100.0

USDA CLASSIFICATION

Particle Size (mm)	Percent Finer ( )	Percent of Each Component (Material)	( )	Corrected Percent of -2.0 mm Material for USDA
100	100			
2	100.0	Gravel	0.0	0
0.05	36.8	Sand	63.2	63.2
0.002	12.0	Silt	24.8	24.8
		Clay	12.0	12.0

USDA Classification
SANDY LOAM

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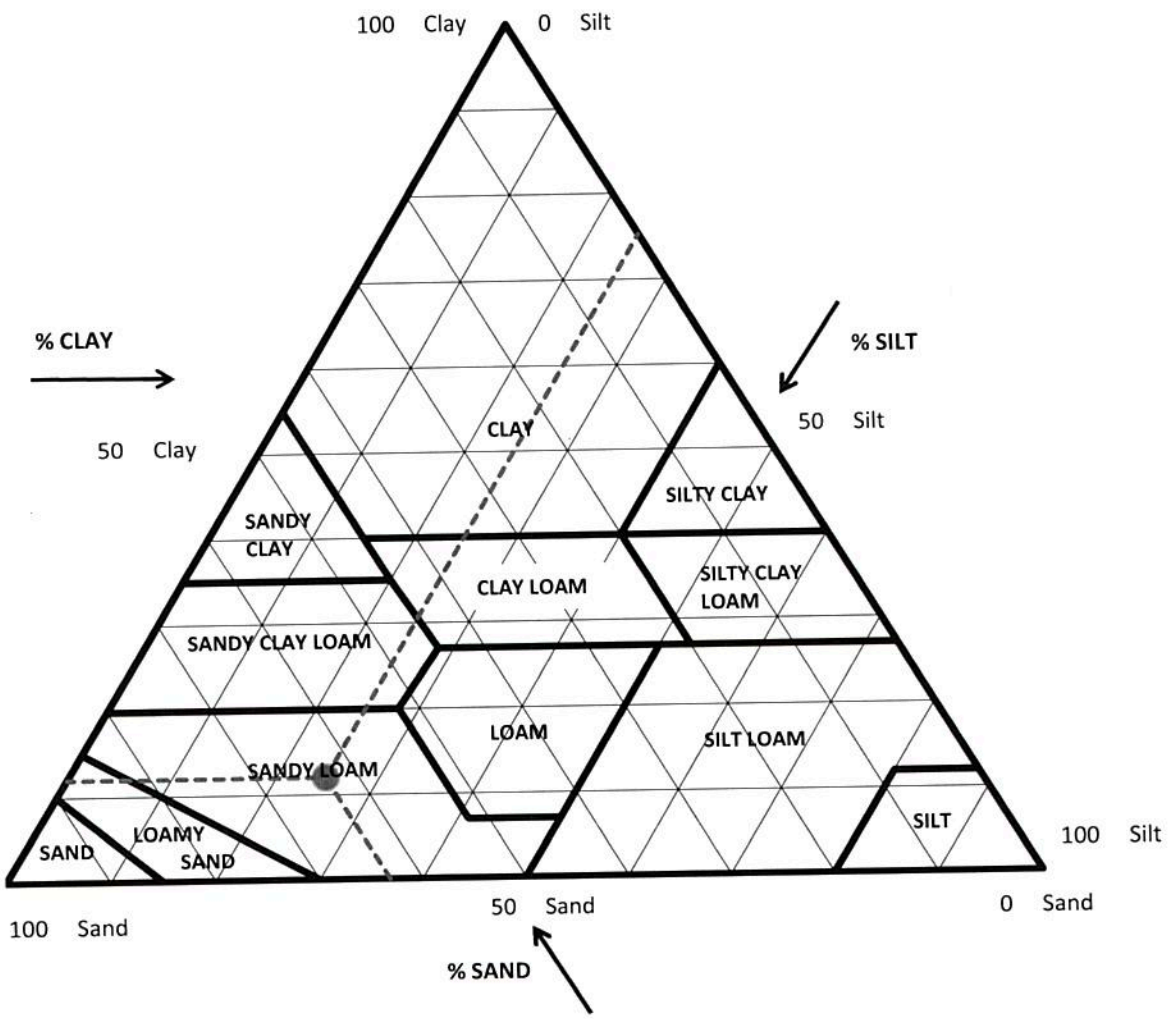
USDA CLASSIFICATION CHART

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-01
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-RS
		Lab Sample	36956001

Sample Color: VERY DARK GREENISH GRAY
USCS Group Name: CLAYEY SAND
USCS Group Symbol: SC
USDA: SANDY LOAM
AASHTO: A-7-6 (5)

Corrected for 0% gravel	
Percent Gravel,	0.0
Percent Sand,	63.2
Percent Silt,	24.8
Percent Clay,	12.0

Sand Subsizes Corrected Percentages	
Very Coarse Sand; 2-1	2.0
Coarse Sand; 1-0.5	2.4
Medium Sand; 0.5-0.25	4.8
Fine Sand; 0.25-0.1	39.2
Very Fine Sand; 0.1-0.05	14.8
Total	**63.2**



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PARTICLE-SIZE ANALYSIS OF SOILS - AASHTO T288

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-02
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-1
		Lab Sample	36956002

Sample Color: DARK GRAY
USCS Group Name: POORLY GRADED SAND WITH SILT
USCS Group Symbol: SP-SM USDA: SAND AASHTO: A-2-4 (0)

MECHANICAL SIEVE

As-Received Water Content not requested

Sieve Size	Nominal Opening, mm	Dry Wt, gm	Split Normalized % Retained	Split Normalized % Finer	Project Specifications
3"	75	0	0.0	100.0	
2-1/2"	63	0	0.0	100.0	
2"	50	0	0.0	100.0	
1-1/2"	37.5	0	0.0	100.0	
1"	25	0	0.0	100.0	
3/4"	19	0	0.0	100.0	
1/2"	12.5	0	0.0	100.0	
3/8"	9.5	0	0.0	100.0	
No. 4	4.75	0	0.0	100.0	
No. 10	2	0	0.0	100.0	
No. 20	0.85	1.22	1.6	98.4	
No. 40	0.425	4.36	5.8	92.6	
No. 60	0.25	5.59	7.4	85.2	
No. 140	0.106	54.21	71.6	13.6	
No. 200	0.075	4.11	5.4	8.2	

Hygroscopic WC (-#10)

Tare No.	705
Tare + WS., gm	29.62
Tare + DS., gm	29.62
Tare, gm	11.32
Hygroscopic WC	0.00
-#10 Hydro/Sieve air dry wt.	75.71
Wt. of +#200 Sample, gm	69.49

HYDROMETER (-#10)

Split Air Dry Wt	75.71
Hygroscopic WC	0.00
Corrected Dry wt	75.7

Specific Gravity 2.63 Tested
a Factor *1.0046*

-#10 Dispersed 1min in Hamilton Beach Mixer

Elapsed Time (min.)	R Measured	Temp *C	Composite Correction	R Corrected	K Factor	Percent Finer (%)	Particle Diameter (mm)	Adjusted % Finer (%)
2	11	20.8	5.1	5.9	0.0136	7.8	0.0366	7.8
5	10.5	20.9	5.0	5.5	0.0136	7.3	0.0232	7.3
15	10.5	21	5.0	5.5	0.0136	7.3	0.0134	7.3
30	10	21.2	4.9	5.1	0.0136	6.8	0.0095	6.8
60	9.5	21.6	4.8	4.7	0.0135	6.2	0.0067	6.2
250	9	22.7	4.4	4.6	0.0133	6.1	0.0032	6.1
1440	7.5	24	4.0	3.5	0.0131	4.6	0.0013	4.6

USCS SOIL CLASSIFICATION

Corrected For 100% Passing a 3" Sieve

% Gravel (-3" +#4)	0.0	Silt=2 Clay=6.2	
Coarse=0; Fine=0		D60, mm	0.19
% Sand (-#4 +#200)	91.8	D30, mm	0.13
Coarse=0; Medium=7.4; Fine=84.4		D10, mm	0.08
% Fines (-#200)	8.2	Cc	1.07
% Plus #200 (-3")	91.8	Cu	2.20

USCS Description
POORLY GRADED SAND WITH SILT

USCS Group Symbol	Atterberg Limits Group Symbol
SP-SM	NP - NON PLASTIC

Auxiliary Information	Wt Ret, gm	Retained	Finer
12" Sieve - 300 mm	0	0.0	100.0
6" Sieve - 150 mm	0	0.0	100.0
3" Sieve - 75 mm	0	0.0	100.0

USDA CLASSIFICATION

Particle Size (mm)	Percent Finer ( )	Percent of Each Component (Material)	( )	Corrected Percent of -2.0 mm Material for USDA
100	100			
2	100.0	Gravel	0.0	0
0.05	8.0	Sand	92.0	92.0
0.002	5.3	Silt	2.7	2.7
		Clay	5.3	5.3

USDA Classification
SAND

Input Validation YES Reviewed By: SVG Date Tested 1/25/2016

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LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS
AASHTO T89/T90

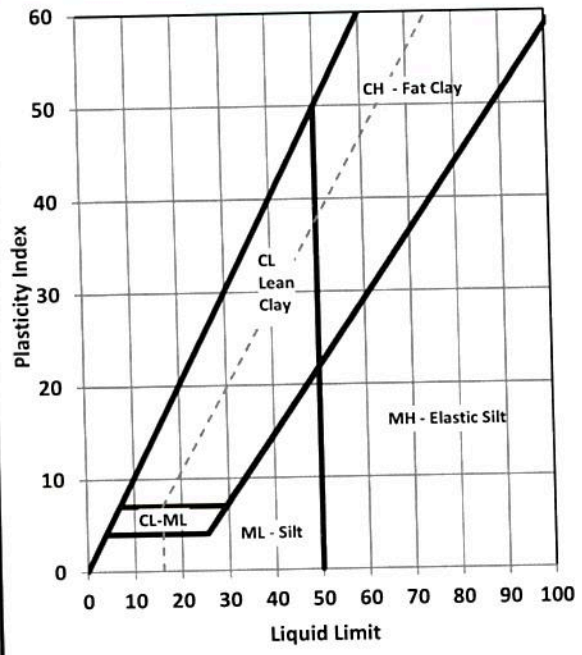
Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-02
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-1
		Lab Sample	36956002

Soil Description: DARK GRAY NON PLASTIC MATERIAL
(-#40 Fraction)

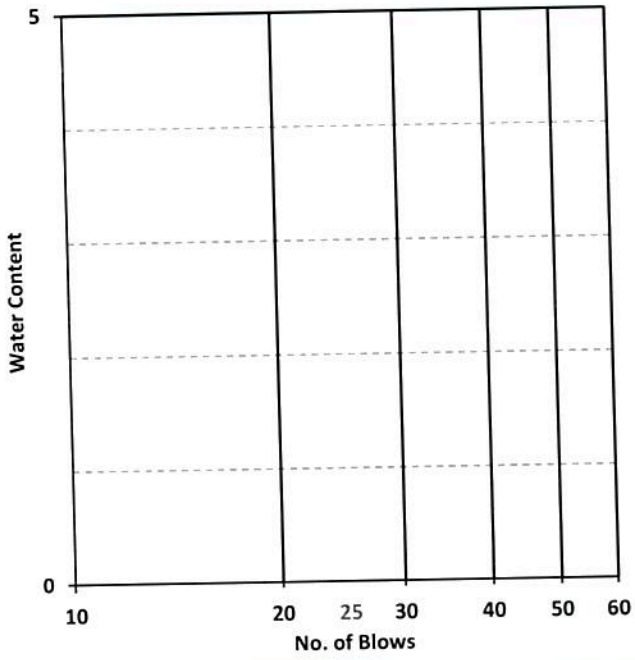
AS-RECEIVED W.C.	SAMPLE SUMMARY	
	#VALUE!	
	Liquid Limit (LL),	NA
	Plastic Limit (PL),	NA
	Plasticity Index (PI)	NA
	USCS Group Symbol (-#40 Fraction)	NP
	USCS Group Name (-#40 Fraction)	NON PLASTIC
	Sample Color:	DARK GRAY

PLASTIC LIMIT		LIQUID LIMIT
Points Run	0 Non-Plastic	0 Non-Plastic
Tare Number		
Wt. Tare & WS, gm		
Wt. Tare & DS, gm		
Wt. Tare, gm		
Water Content,		
		# of Blows

PLASTICITY CHART



FLOW CURVE



Input Validation: Yes Reviewed By: SVG Date Tested: 1/25/2016

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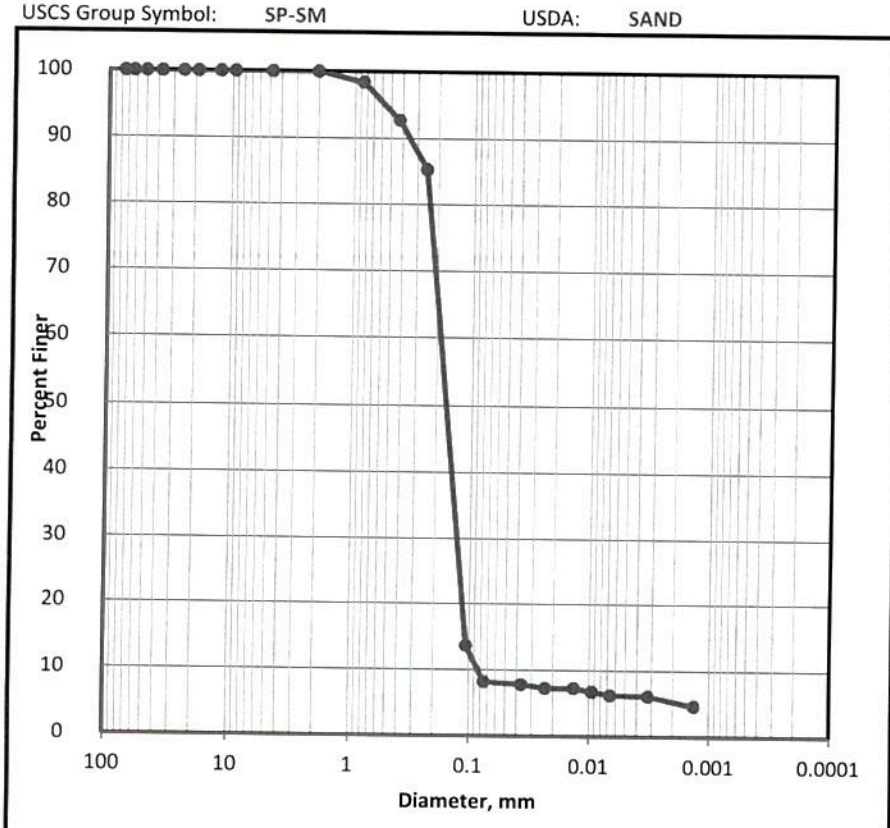
PARTICLE-SIZE ANALYSIS OF SOILS - AASHTO T288

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-02
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-1
		Lab Sample	36956002

Sample Color: DARK GRAY

USCS Group Name: POORLY GRADED SAND WITH SILT

USCS Group Symbol: SP-SM USDA: SAND AASHTO: A-2-4 (0)



US Std. Sieve Size	Particle Diameter (mm)	Percent Finer
3"	75	100.0%
2-1/2"	63	100.0%
2"	50	100.0%
1-1/2"	37.5	100.0%
1"	25	100.0%
3/4"	19	100.0%
1/2"	12.5	100.0%
3/8"	9.5	100.0%
No. 4	4.75	100.0%
No. 10	2	100.0%
No. 20	0.85	98.4%
No. 40	0.425	92.6%
No. 60	0.25	85.2%
No. 140	0.106	13.6%
No. 200	0.075	8.2%
NA	0.0366	7.8%
NA	0.0232	7.3%
NA	0.0134	7.3%
NA	0.0095	6.8%
NA	0.0067	6.2%
NA	0.0032	6.1%
NA	0.0013	4.6%

USCS SOIL CLASSIFICATION

Corrected For 100% Passing a 3" Sieve

% Gravel (-3" +#4)	0.0	Silt=2 Clay=6.2	
Coarse=0; Fine=0		D60, mm	0.185
% Sand (-#4 +#200)	91.8	D30, mm	0.129
Coarse=0; Medium=7.4; Fine=84.4		D10, mm	0.084
% Fines (-#200)	8.2	Cc	1.070
% Plus #200 (-3")	91.8	Cu	2.200

USCS Description

POORLY GRADED SAND WITH SILT

USCS Group Symbol	Atterberg Limits Group Symbol		
SP-SM	NP - NON PLASTIC		
Auxiliary Information	Wt Ret, gm	Retained	Finer
12" Sieve - 300 mm	0	0.0	100.0
6" Sieve - 150 mm	0	0.0	100.0
3" Sieve - 75 mm	0	0.0	100.0

USDA CLASSIFICATION

Particle Size (mm)	Percent Finer ( )	Percent of Each Component (Material)	( )	Corrected Percent of -2.0 mm Material for USDA
100	100			
		Gravel	0.0	0
2	100.0			
		Sand	92.0	92.0
0.05	8.0			
		Silt	2.7	2.7
0.002	5.3			
		Clay	5.3	5.3

USDA Classification

SAND

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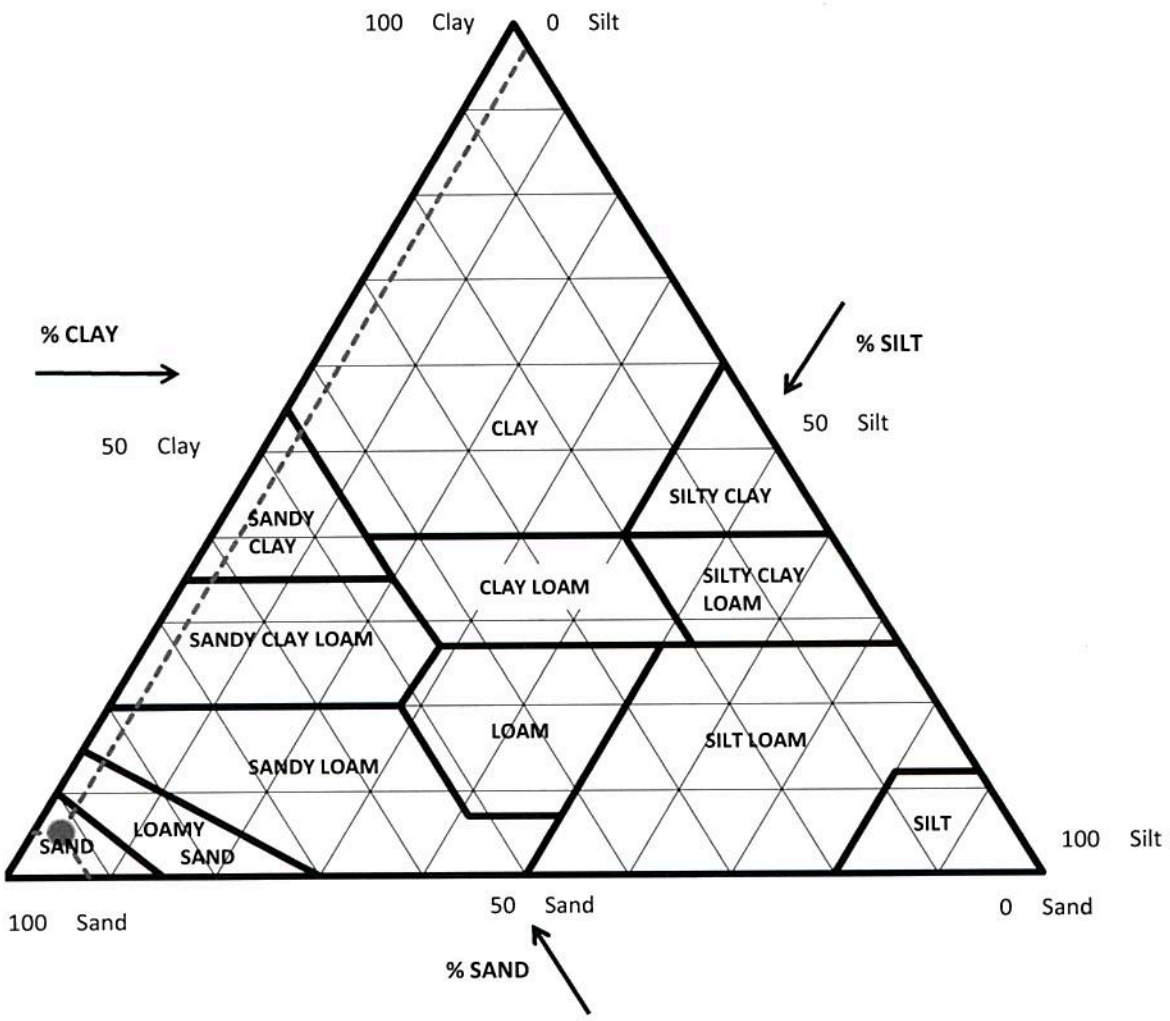
USDA CLASSIFICATION CHART

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-02
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-1
		Lab Sample	36956002

Sample Color: DARK GRAY
USCS Group Name: POORLY GRADED SAND WITH SILT
USCS Group Symbol: SP-SM USDA: SAND AASHTO: A-2-4 (0)

Corrected for 0% gravel	
Percent Gravel,	0.0
Percent Sand,	92.0
Percent Silt,	2.7
Percent Clay,	5.3

Sand Subsizes Corrected Percentages	
Very Coarse Sand; 2-1	1.3
Coarse Sand; 1-0.5	4.7
Medium Sand; 0.5-0.25	8.7
Fine Sand; 0.25-0.1	72.5
Very Fine Sand; 0.1-0.05	4.7
Total	**92.0**



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PARTICLE-SIZE ANALYSIS OF SOILS - AASHTO T288

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-03
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-4
		Lab Sample	36956003

Sample Color: VERY DARK GRAYISH BROWN
USCS Group Name: SILTY SAND
USCS Group Symbol: SM USDA: SANDY LOAM AASHTO: A-2-4 (0)

MECHANICAL SIEVE

As-Received Water Content not requested

Hygroscopic WC (-#10)	
Tare No.	436
Tare + WS., gm	23.38
Tare + DS., gm	23.38
Tare, gm	10.8
Hygroscopic WC	0.00
-#10 Hydro/Sieve air dry wt.	54.93
Wt. of +#200 Sample, gm	42.55

Sieve Size	Nominal Opening, mm	Dry Wt, gm	Split Normalized % Retained	Split Normalized % Finer	Project Specifications
3"	75	0	0.0	100.0	
2-1/2"	63	0	0.0	100.0	
2"	50	0	0.0	100.0	
1-1/2"	37.5	0	0.0	100.0	
1"	25	0	0.0	100.0	
3/4"	19	0	0.0	100.0	
1/2"	12.5	0	0.0	100.0	
3/8"	9.5	0	0.0	100.0	
No. 4	4.75	0	0.0	100.0	
No. 10	2	0	0.0	100.0	
No. 20	0.85	0.62	1.1	98.9	
No. 40	0.425	1.66	3.0	95.8	
No. 60	0.25	4.45	8.1	87.7	
No. 140	0.106	34.04	62.0	25.8	
No. 200	0.075	1.78	3.2	22.5	

HYDROMETER (-#10)

Split Air Dry Wt 54.93
Hygroscopic WC 0.00
Corrected Dry wt 54.9

-#10 Dispersed 1min in Hamilton Beach Mixer

Specific Gravity 2.62
Tested *a Factor* *1.0070*

Elapsed Time (min.)	R Measured	Temp *C	Composite Correction	R Corrected	K Factor	Percent Finer (%)	Particle Diameter (mm)	Adjusted % Finer (%)
2	17	20.6	5.1	11.9	0.0137	21.8	0.0355	21.8
5	16	20.6	5.1	10.9	0.0137	20.0	0.0226	20.0
15	15.5	20.7	5.1	10.4	0.0137	19.1	0.0131	19.1
30	14.5	21	5.0	9.5	0.0136	17.4	0.0093	17.4
60	13.5	21.4	4.9	8.6	0.0136	15.8	0.0066	15.8
250	11.5	22.7	4.4	7.1	0.0134	13.0	0.0032	13.0
1440	9.5	23.9	4.0	5.5	0.0132	10.1	0.0013	10.1

USCS SOIL CLASSIFICATION

Corrected For 100% Passing a 3" Sieve

% Gravel (-3" +#4)	0.0	Silt=7.8 Clay=14.7	
Coarse=0; Fine=0		D60, mm	NA
% Sand (-#4 +#200)	77.5	D30, mm	NA
Coarse=0; Medium=4.2; Fine=73.3		D10, mm	NA
% Fines (-#200)	22.5	Cc	NA
% Plus #200 (-3")	77.5	Cu	NA

USCS Description
SILTY SAND

USCS Group Symbol	Atterberg Limits Group Symbol
SM	NP - NON PLASTIC

Auxiliary Information	Wt Ret, gm	Retained	Finer
12" Sieve - 300 mm	0	0.0	100.0
6" Sieve - 150 mm	0	0.0	100.0
3" Sieve - 75 mm	0	0.0	100.0

USDA CLASSIFICATION

Particle Size (mm)	Percent Finer ( )
100	100
2	100.0
0.05	22.1
0.002	11.4

Percent of Each Component (Material)	( )	Corrected Percent of -2.0 mm Material for USDA
Gravel	0.0	0
Sand	77.9	77.9
Silt	10.7	10.7
Clay	11.4	11.4

USDA Classification
SANDY LOAM

Input Validation YES Reviewed By: SVG Date Tested 1/25/2016

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LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS
AASHTO T89/T90

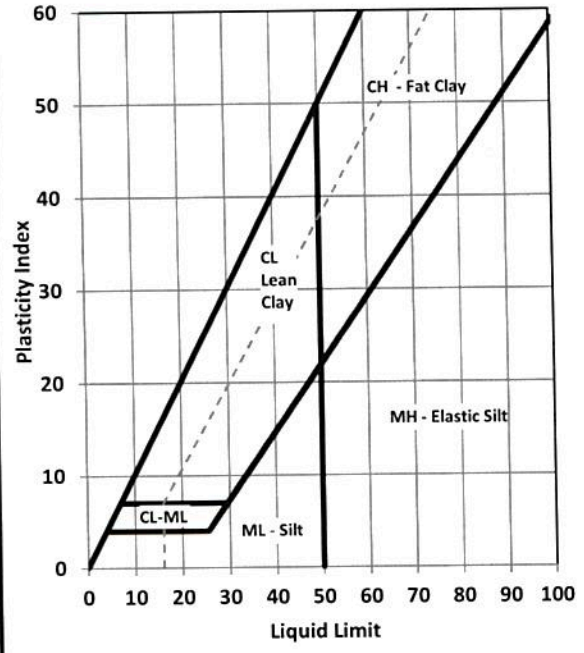
Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-03
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-4
		Lab Sample	36956003

Soil Description: VERY DARK GRAYISH BROWN NON PLASTIC MATERIAL
(-#40 Fraction)

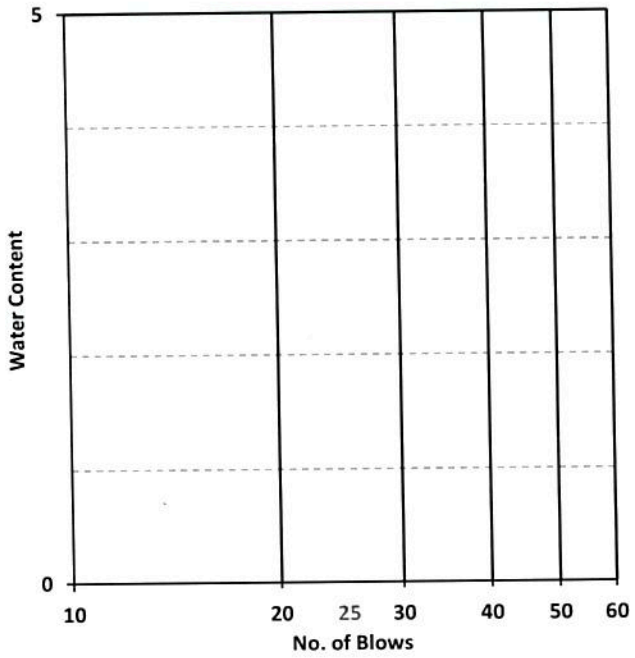
AS-RECEIVED W.C.	SAMPLE SUMMARY	
	#VALUE!	
	Liquid Limit (LL),	NA
	Plastic Limit (PL),	NA
	Plasticity Index (PI)	NA
	USCS Group Symbol (-#40 Fraction)	NP
	USCS Group Name (-#40 Fraction)	NON PLASTIC
	Sample Color:	VERY DARK GRAYISH BROWN

PLASTIC LIMIT		LIQUID LIMIT
Points Run	0 Non-Plastic	0 Non-Plastic
Tare Number		
Wt. Tare & WS, gm		
Wt. Tare & DS, gm		
Wt. Tare, gm		
Water Content,		
		# of Blows

PLASTICITY CHART



FLOW CURVE



Input Validation: Yes Reviewed By: SVG Date Tested: 1/25/2016

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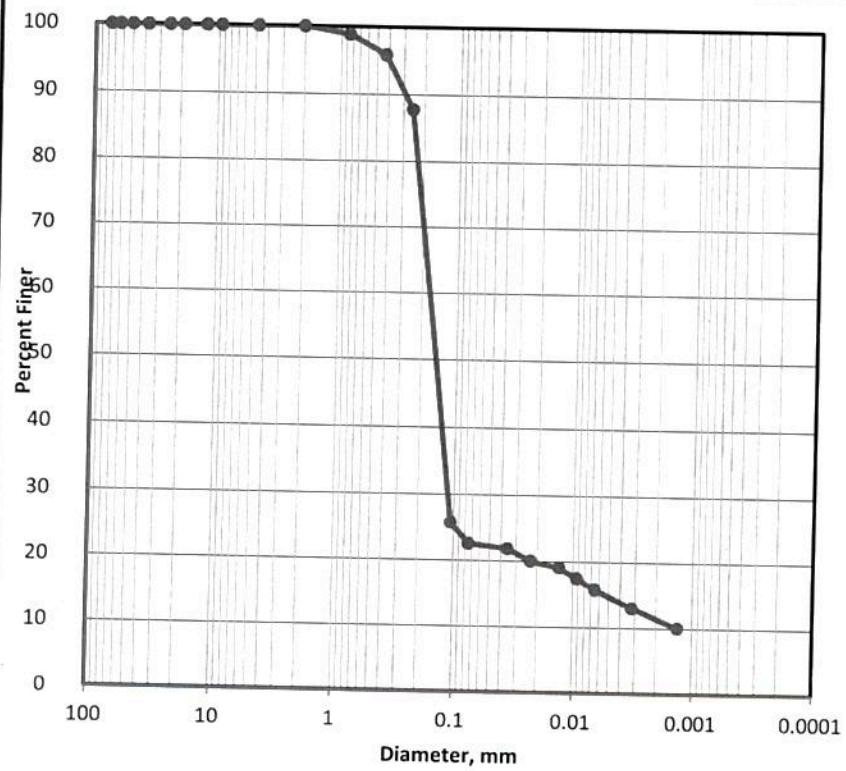
PARTICLE-SIZE ANALYSIS OF SOILS - AASHTO T288

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-03
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-4
		Lab Sample	36956003

Sample Color: VERY DARK GRAYISH BROWN
USCS Group Name: SILTY SAND
USCS Group Symbol: SM USDA: SANDY LOAM AASHTO: A-2-4 (0)



US Std. Sieve Size	Particle Diameter (mm)	Percent Finer
3"	75	100.0%
2-1/2"	63	100.0%
2"	50	100.0%
1-1/2"	37.5	100.0%
1"	25	100.0%
3/4"	19	100.0%
1/2"	12.5	100.0%
3/8"	9.5	100.0%
No. 4	4.75	100.0%
No. 10	2	100.0%
No. 20	0.85	98.9%
No. 40	0.425	95.8%
No. 60	0.25	87.7%
No. 140	0.106	25.8%
No. 200	0.075	22.5%
NA	0.0355	21.8%
NA	0.0226	20.0%
NA	0.0131	19.1%
NA	0.0093	17.4%
NA	0.0066	15.8%
NA	0.0032	13.0%
NA	0.0013	10.1%

USCS SOIL CLASSIFICATION

Corrected For 100% Passing a 3" Sieve

% Gravel (-3" +#4)	0.0	Silt=7.8 Clay=14.7	
Coarse=0; Fine=0		D60, mm	NA
% Sand (-#4 +#200)	77.5	D30, mm	NA
Coarse=0; Medium=4.2; Fine=73.3		D10, mm	NA
% Fines (-#200)	22.5	Cc	NA
% Plus #200 (-3")	77.5	Cu	NA

USCS Description
SILTY SAND

USCS Group Symbol	Atterberg Limits Group Symbol		
SM	NP - NON PLASTIC		
Auxiliary Information	Wt Ret, gm	Retained	Finer
12" Sieve - 300 mm	0	0.0	100.0
6" Sieve - 150 mm	0	0.0	100.0
3" Sieve - 75 mm	0	0.0	100.0

USDA CLASSIFICATION

Particle Size (mm)	Percent Finer ( )	Percent of Each Component (Material)	( )	Corrected Percent of -2.0 mm Material for USDA
100	100			
		Gravel	0.0	0
2	100.0			
		Sand	77.9	77.9
0.05	22.1			
		Silt	10.7	10.7
0.002	11.4			
		Clay	11.4	11.4

USDA Classification
SANDY LOAM

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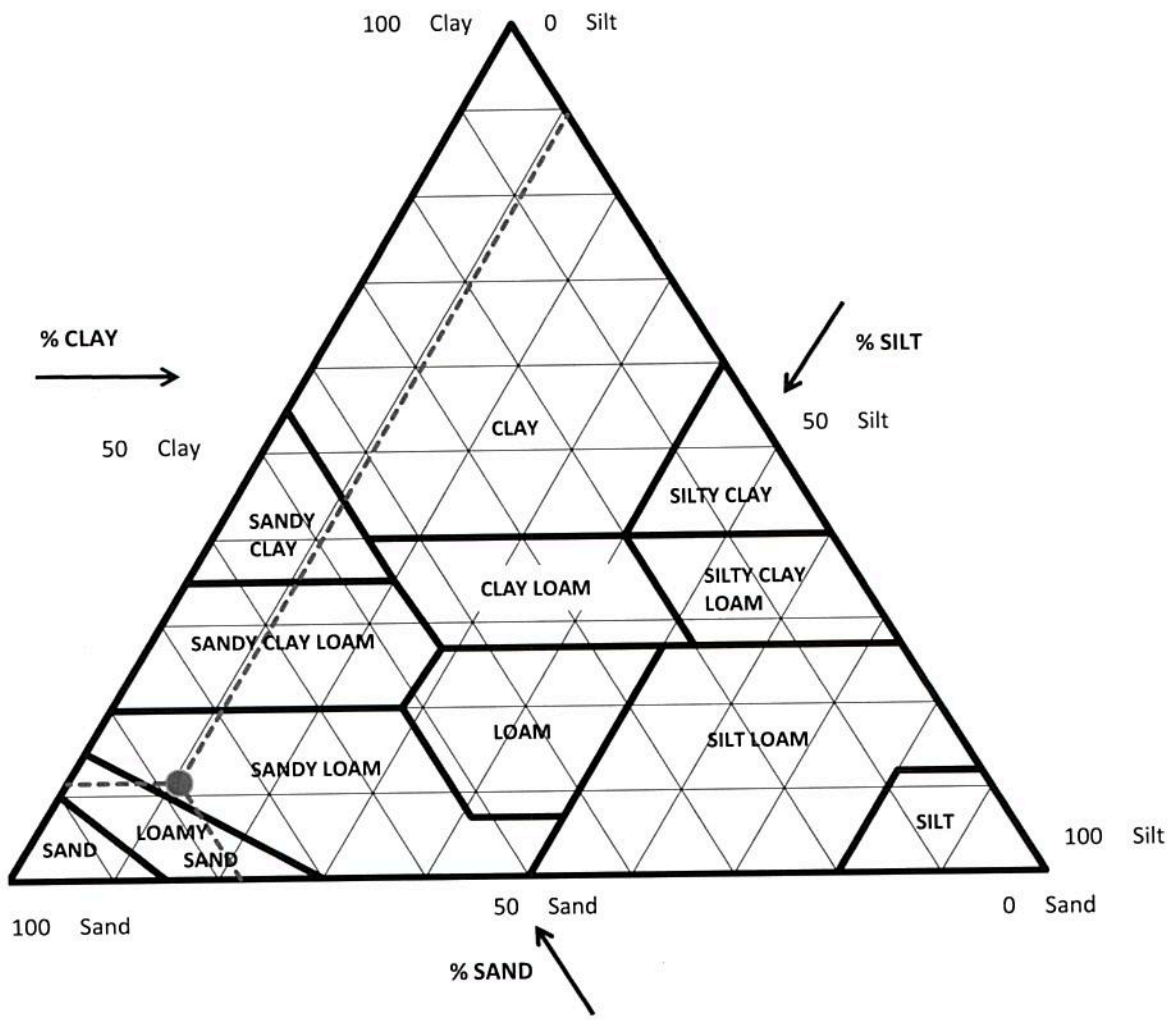
USDA CLASSIFICATION CHART

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-03
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-4
		Lab Sample	36956003

Sample Color: VERY DARK GRAYISH BROWN
USCS Group Name: SILTY SAND
USCS Group Symbol: SM
USDA: SANDY LOAM
AASHTO: A-2-4 (0)

Corrected for 0% gravel	
Percent Gravel,	0.0
Percent Sand,	77.9
Percent Silt,	10.7
Percent Clay,	11.4

Sand Subsizes Corrected Percentages	
Very Coarse Sand; 2-1	0.9
Coarse Sand; 1-0.5	2.5
Medium Sand; 0.5-0.25	8.8
Fine Sand; 0.25-0.1	62.5
Very Fine Sand; 0.1-0.05	3.1
Total	**77.9**



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PARTICLE-SIZE ANALYSIS OF SOILS - AASHTO T288

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-04
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-5
		Lab Sample	36956004

Sample Color: DARK OLIVE GRAY
USCS Group Name: CLAYEY SAND
USCS Group Symbol: SC USDA: SANDY LOAM AASHTO: A-7-6 (10)

MECHANICAL SIEVE

As-Received Water Content not requested

Sieve Size	Nominal Opening, mm	Dry Wt, gm	Split Normalized % Retained	Split Normalized % Finer	Project Specifications
3"	75	0	0.0	100.0	
2-1/2"	63	0	0.0	100.0	
2"	50	0	0.0	100.0	
1-1/2"	37.5	0	0.0	100.0	
1"	25	0	0.0	100.0	
3/4"	19	0	0.0	100.0	
1/2"	12.5	0	0.0	100.0	
3/8"	9.5	0	0.0	100.0	
No. 4	4.75	0	0.0	100.0	
No. 10	2	0	0.0	100.0	
No. 20	0.85	1.12	2.0	98.0	
No. 40	0.425	1.48	2.7	95.3	
No. 60	0.25	2.05	3.7	91.5	
No. 140	0.106	20.55	37.4	54.1	
No. 200	0.075	5.25	9.6	44.5	

Hygroscopic WC (-#10)

Tare No.	476
Tare + WS., gm	23.05
Tare + DS., gm	23.02
Tare, gm	10.81
Hygroscopic WC	0.25
-#10 Hydro/Sieve air dry wt.	54.90
Wt. of +#200 Sample, gm	30.45

HYDROMETER (-#10)

Split Air Dry Wt	55.03
Hygroscopic WC	0.25
Corrected Dry wt	54.9

Specific Gravity 2.64 Tested
a Factor *1.0023*

-#10 Dispersed 1min in Hamilton Beach Mixer

Elapsed Time (min.)	R Measured	Temp *C	Composite Correction	R Corrected	K Factor	Percent Finer (%)	Particle Diameter (mm)	Adjusted % Finer (%)
2	22.5	20.5	5.2	17.3	0.0136	31.6	0.0341	31.6
5	20	20.6	5.1	14.9	0.0136	27.2	0.0219	27.2
15	18.5	20.8	5.1	13.4	0.0136	24.5	0.0127	24.5
30	17.5	21	5.0	12.5	0.0136	22.8	0.0090	22.8
60	16	21.5	4.8	11.2	0.0135	20.4	0.0064	20.4
250	13.5	22.8	4.4	9.1	0.0133	16.6	0.0031	16.6
1440	11	23.9	4.0	7.0	0.0131	12.8	0.0013	12.8

USCS SOIL CLASSIFICATION

Corrected For 100% Passing a 3" Sieve

% Gravel (-3" +#4)	0.0	Silt=25.2 Clay=19.1	
Coarse=0; Fine=0		D60, mm	NA
% Sand (-#4 +#200)	55.5	D30, mm	NA
Coarse=0; Medium=4.7; Fine=50.7		D10, mm	NA
% Fines (-#200)	44.5	Cc	NA
% Plus #200 (-3")	55.5	Cu	NA

USCS Description
CLAYEY SAND

USCS Group Symbol	Atterberg Limits Group Symbol
SC	CH - FAT CLAY

Auxiliary Information	Wt Ret, gm	Retained	Finer
12" Sieve - 300 mm	0	0.0	100.0
6" Sieve - 150 mm	0	0.0	100.0
3" Sieve - 75 mm	0	0.0	100.0

USDA CLASSIFICATION

Particle Size (mm)	Percent Finer ( )
100	100
2	100.0
0.05	37.9
0.002	14.6

Percent of Each Component (Material)	( )	Corrected Percent of -2.0 mm Material for USDA
Gravel	0.0	0
Sand	62.1	62.1
Silt	23.2	23.2
Clay	14.6	14.6

USDA Classification
SANDY LOAM

Input Validation YES Reviewed By: SVG Date Tested 1/25/2016

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LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS
AASHTO T89/T90

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-04
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-5
		Lab Sample	36956004

Soil Description: DARK OLIVE GRAY FAT CLAY
(-#40 Fraction)

AS-RECEIVED W.C.

SAMPLE SUMMARY

Activity Index = 2.25; Liquidity Index = -.82

Liquid Limit (LL),	60
Plastic Limit (PL),	27
Plasticity Index (PI)	33
USCS Group Symbol (-#40 Fraction)	CH
USCS Group Name (-#40 Fraction)	FAT CLAY
Sample Color:	DARK OLIVE GRAY

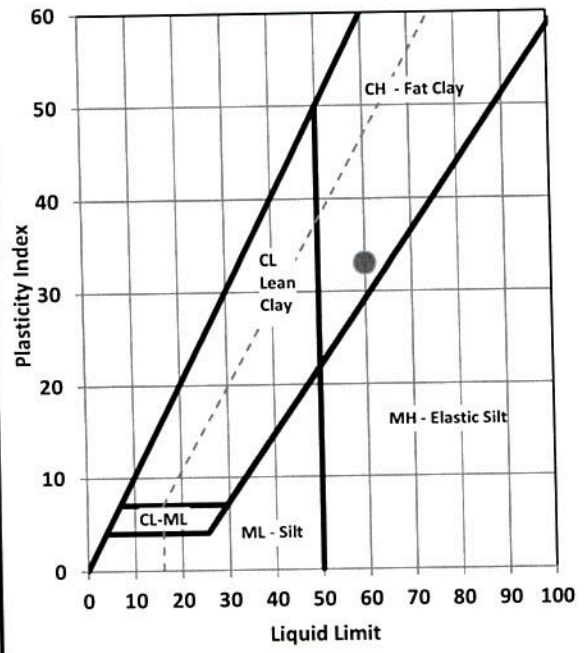
PLASTIC LIMIT

Points Run	3 Points		
Tare Number	244	221	265
Wt. Tare & WS, gm	22.30	22.40	22.55
Wt. Tare & DS, gm	20.91	21.03	21.22
Wt. Tare, gm	16.01	16.02	16.12
Water Content,	28.4	27.3	26.1

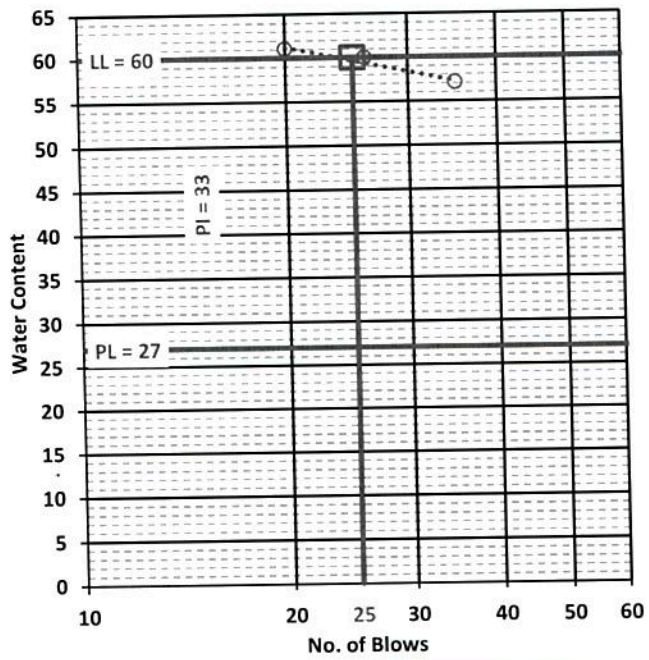
LIQUID LIMIT

	3 Points		
	209	264	236
	24.12	24.48	23.35
	21.11	21.30	20.70
	16.18	16.00	16.06
	61.1	60.0	57.1
# of Blows	20	26	35

PLASTICITY CHART



FLOW CURVE



Input Validation: Yes Reviewed By: SVG Date Tested: 1/25/2016

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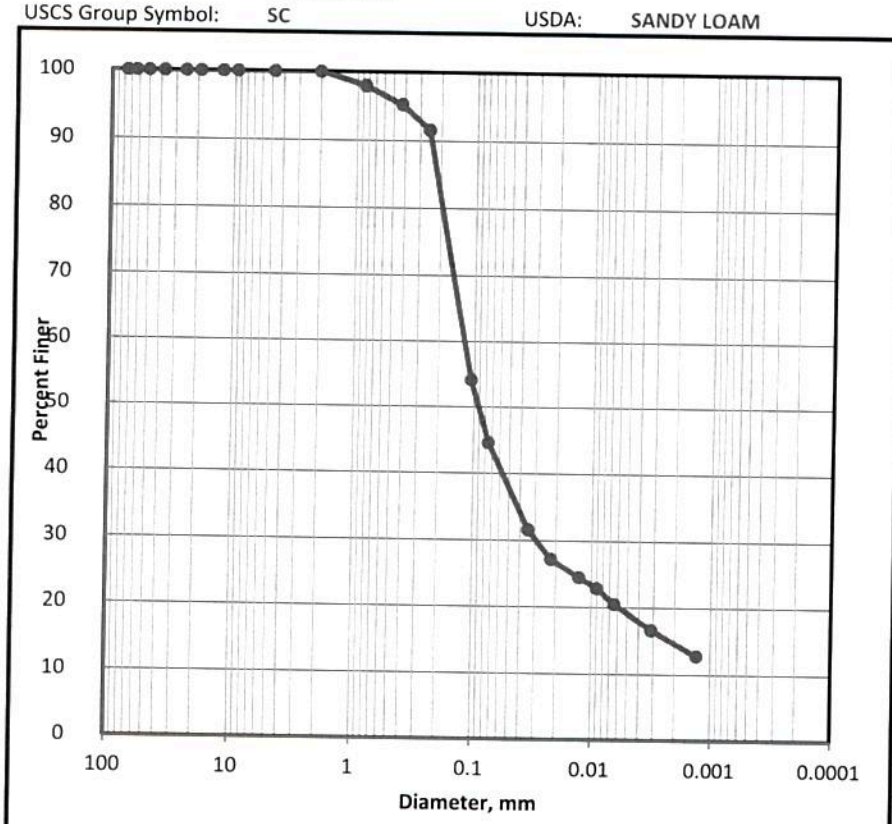
PARTICLE-SIZE ANALYSIS OF SOILS - AASHTO T288

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-04
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-5
		Lab Sample	36956004

Sample Color: DARK OLIVE GRAY
USCS Group Name: CLAYEY SAND
USCS Group Symbol: SC USDA: SANDY LOAM AASHTO: A-7-6 (10)



US Std. Sieve Size	Particle Diameter (mm)	Percent Finer
3"	75	100.0%
2-1/2"	63	100.0%
2"	50	100.0%
1-1/2"	37.5	100.0%
1"	25	100.0%
3/4"	19	100.0%
1/2"	12.5	100.0%
3/8"	9.5	100.0%
No. 4	4.75	100.0%
No. 10	2	100.0%
No. 20	0.85	98.0%
No. 40	0.425	95.3%
No. 60	0.25	91.5%
No. 140	0.106	54.1%
No. 200	0.075	44.5%
NA	0.0341	31.6%
NA	0.0219	27.2%
NA	0.0127	24.5%
NA	0.0090	22.8%
NA	0.0064	20.4%
NA	0.0031	16.6%
NA	0.0013	12.8%

USCS SOIL CLASSIFICATION

Corrected For 100% Passing a 3" Sieve

% Gravel (-3" +#4)	0.0	Silt=25.2 Clay=19.1	
Coarse=0; Fine=0		D60, mm	NA
% Sand (-#4 +#200)	55.5	D30, mm	NA
Coarse=0; Medium=4.7; Fine=50.7		D10, mm	NA
% Fines (-#200)	44.5	Cc	NA
% Plus #200 (-3")	55.5	Cu	NA

USCS Description
CLAYEY SAND

USCS Group Symbol	Atterberg Limits Group Symbol
SC	CH - FAT CLAY

Auxiliary Information	Wt Ret, gm	Retained	Finer
12" Sieve - 300 mm	0	0.0	100.0
6" Sieve - 150 mm	0	0.0	100.0
3" Sieve - 75 mm	0	0.0	100.0

USDA CLASSIFICATION

Particle Size (mm)	Percent Finer ( )
100	100
2	100.0
0.05	37.9
0.002	14.6

Percent of Each Component (Material)	( )	Corrected Percent of -2.0 mm Material for USDA
Gravel	0.0	0
Sand	62.1	62.1
Silt	23.2	23.2
Clay	14.6	14.6

USDA Classification
SANDY LOAM

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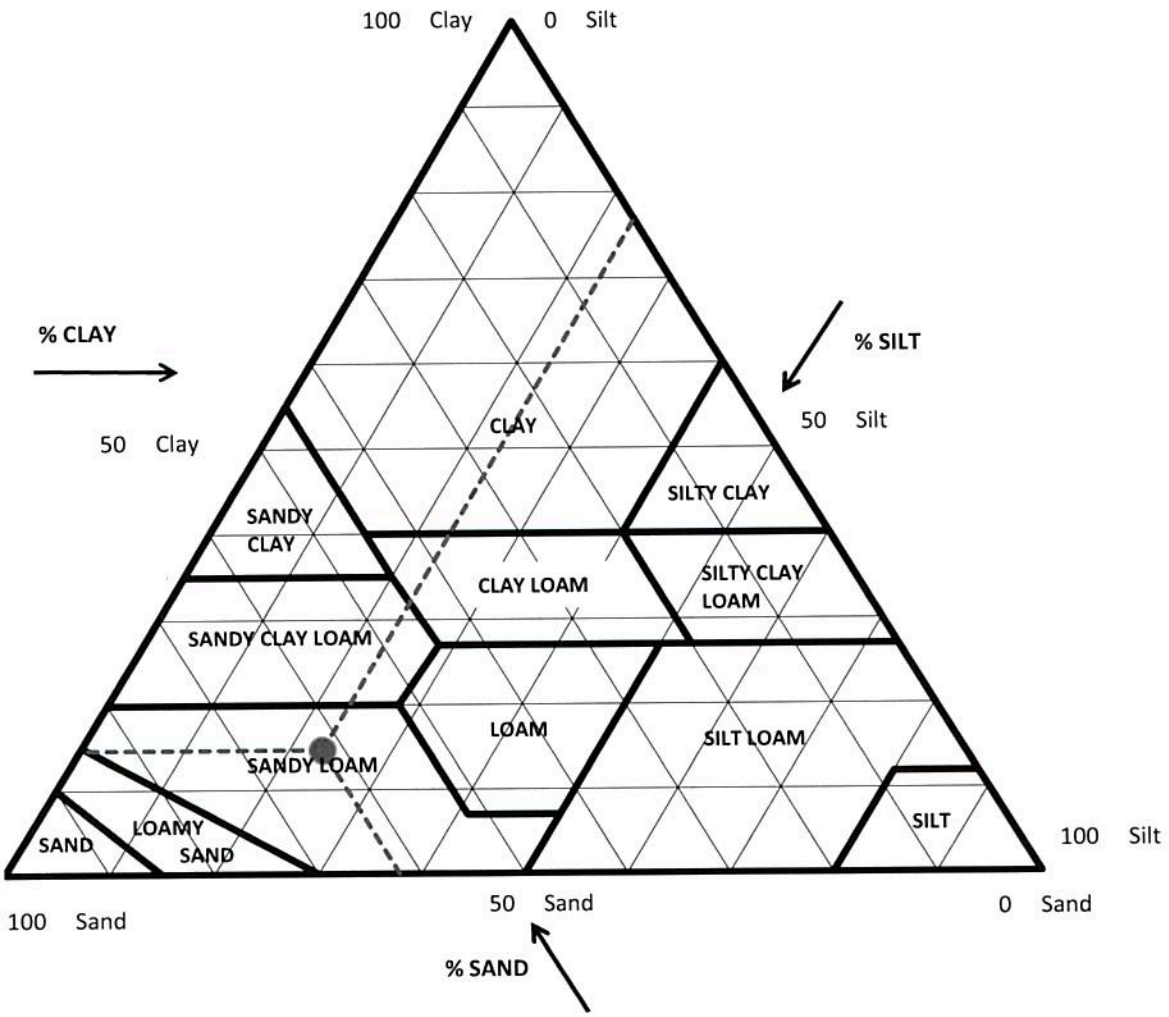
USDA CLASSIFICATION CHART

Client	Air Water & Soil Laboratories, Inc.	Boring	6012003-04
Client Project	ERDC-EL-EP-C 6012003-004	Depth	1-15-2016
Project No.	36956	Sample	E-KB-16-5
		Lab Sample	36956004

Sample Color: DARK OLIVE GRAY
USCS Group Name: CLAYEY SAND
USCS Group Symbol: SC USDA: SANDY LOAM AASHTO: A-7-6 (10)

Corrected for 0% gravel	
Percent Gravel,	0.0
Percent Sand,	62.1
Percent Silt,	23.2
Percent Clay,	14.6

Sand Subsizes Corrected Percentages	
Very Coarse Sand; 2-1	1.7
Coarse Sand; 1-0.5	2.5
Medium Sand; 0.5-0.25	4.4
Fine Sand; 0.25-0.1	39.0
Very Fine Sand; 0.1-0.05	14.6
Total	**62.1**



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USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

24 March 2016

Al Kennedy
ERDC -- Vicksburg (EL)
ERDC, 3909 Halls Ferry Road
Vicksburg, MS 39180
RE: Kennedy-King's Bay

Enclosed are the results of analyses for samples received by the laboratory on 18-Jan-2016-19-Jan-2016. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jenifer Milam For Allyson Holman
Biologist

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

WORK ORDER SUMMARY

Sample ID	Laboratory ID	Matrix	Date Sampled	Date of Work Order
E-KB-16-RS	6011801-01	Soil/Sediment	15-Jan-2016	18-Jan-2016
E-KB-16-1	6011801-02	Soil/Sediment	15-Jan-2016	18-Jan-2016
E-KB-16-4	6011801-03	Soil/Sediment	15-Jan-2016	18-Jan-2016
E-KB-16-5	6011801-04	Soil/Sediment	15-Jan-2016	18-Jan-2016
E-KB-16-SW	6011801-05	Water	15-Jan-2016	18-Jan-2016
E-KB-16-1	6011901-01	Water	19-Jan-2016	19-Jan-2016
E-KB-16-4	6011901-03	Water	19-Jan-2016	19-Jan-2016
E-KB-16-5	6011901-04	Water	19-Jan-2016	19-Jan-2016

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Case Narrative

Sedimentis samples were received in good condition, buti at 9C. Surfface watiers were received in good condition ati 4C.

Pentiachlorophenol- Due tio problems witih tihe spike, tihe sedimenti samples required reextiraction and analysis. Re-extiraction occurred on day 16 ffrom tihe day off compositing. Datia ffrom tihe extiraction tihati was witihin holding time and datia ffrom tihe seti extiraction days outiside off holding time are reportied.

Acid Volatile Sulffdes: Sample 1 was used as tihe matirix spike ffor tihe AVS batich. We were unable tio recover tihe matirix spike in tihe initial analytical run and tiwo subsequenti analytical runs due tio a matirix effecti. Since tihe ffrsti analysis was conductied witihin holding time and tihe dup and laboratiory contirol samples were witihin acceptiable limitis ffor AVS, tihati datia ffrom tihe ffrsti analytical run was reportied.

Silver by ICP-MS and Graphitie Furnace: Initial watier and elutiriatie analyses ffor silver by ICP-MS ffollowing metihod 6020 resultied in acceptiable matirix spike recovery values yeti carryover contiamination in sample tiubing was observed likely due tio high levels off chloride. Thereffore, reanalysis by Graphitie Furnace ffollowing metihod 7010 was perfformed and resultied in slightily low matirix spike recoveries buti no carryover issues. All otiher QC was acceptiable, and tihereffore tihe 7010 datia is reportied tio eliminatie ffalse positive values.

Case Narrative

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Notes and Definitions

Z-03	See case narrative.
U	Analyte included in the analysis, but not detected
RPD-06	RPD exceeds acceptance limit.
RPD-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
RPD-01	Analyses are not controlled on RPD values from sample concentrations less than the reporting limit.
-Results a	[Undefined]
QM-08	Spike or surrogate was inadvertently left out of this sample.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
Q	Value is outside of acceptance limits.
M2	Sample was diluted due to matrix interference.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
H	This sample was extracted and/or analyzed outside of the EPA recommended holding time.
Cl	Residual Chlorine or other oxidizing agent was detected in the container used to analyze this sample.
4	[Undefined]
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-RS

6011801-01 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Classical Chemistry Parameters								
% Solids	**57.4**			[blank]	20-Jan-2016	20-Jan-2016	% Calculation	
Metals by EPA 6000/7000 Series Methods								
Mercury	**0.0277**	0.00185	0.00185	mg/kg	28-Jan-2016	28-Jan-2016	EPA 7474	
Silver	**0.0223**	0.0062	0.0125	mg/kg	22-Feb-2016	22-Feb-2016	EPA 7000	
Arsenic-75 [1]	**6.49**	0.0249	0.125	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Cadmium-114 [2]	**0.102**	0.0249	0.125	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	J
Chromium-52 [2]	**16.6**	0.0249	0.125	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Copper-63 [2]	**3.10**	0.0249	0.125	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Lead-206 [1]	**8.28**	0.0249	0.125	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Nickel-62 [2]	**5.18**	0.0249	0.125	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Selenium-77 [1]	**1.24**	0.0249	0.125	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Zinc-68 [1]	**16.9**	0.0249	0.125	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Organochlorine Pesticides by EPA Method 8081A								
4,4'-DDD	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
4,4'-DDE	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
4,4'-DDT	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Aldrin	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-BHC	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-Chlordane	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
beta-BHC	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
cis-Nonachlor	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
delta-BHC	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Dieldrin	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan I	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan II	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan sulfate	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin aldehyde	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin ketone	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-BHC (Lindane)	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-Chlordane	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor epoxide	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Hexachlorobenzene	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-RS

6011801-01 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Organochlorine Pesticides by EPA Method 8081A								
Methoxychlor	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Oxychlordane	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Toxaphene	ND	12.0	34.2	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
trans-Nonachlor	ND	0.57	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**9.62**		*70.3 %*	*40-125*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Surrogate: Dibutyl Chlorendate	**9.55**		*69.8 %*	*45-135*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	18.0	51.4	ug/kg dry	28-Jan-2016	02-Feb-2016	EPA 8270C	U
Surrogate: 2-Fluorobiphenyl	**180**		*86.7 %*	*40-120*	*28-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**170**		*84.3 %*	*40-120*	*28-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Nutrients								
Ammonia as N	**3.93**	0.00861	0.0287	mg/kg	26-Jan-2016	26-Jan-2016	EPA 350.1	
Polychlorinated Biphenyls (as Congeners) by EPA Method 8082								
PCB 101	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 105	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 118	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 126	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 128	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 138	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 153	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 156	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 169	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 170	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 18	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 180	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 183	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 184	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 187	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 195	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 206	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 209	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 28	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 44	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 49	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-RS

6011801-01 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Polychlorinated Biphenyls (as Congeners) by EPA Method 8082								
PCB 52	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 66	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 77	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 8	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 87	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**6.71**		*49.0 %*	*30-150*	*28-Jan-2016*	*10-Feb-2016*	*EPA 8082*	
Surrogate: Dibutyl Chlorendate	**14.2**		*104 %*	*30-150*	*28-Jan-2016*	*10-Feb-2016*	*EPA 8082*	
Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring								
1-Methylnaphthalene	ND	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
2-Methylnaphthalene	ND	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Acenaphthene	ND	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Acenaphthylene	ND	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Anthracene	ND	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (a) anthracene	**5.63**	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Benzo (a) pyrene	ND	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (b) fluoranthene	**7.12**	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Benzo (g,h,i) perylene	**5.81**	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Benzo (k) fluoranthene	**5.72**	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Chrysene	**6.18**	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Dibenz (a,h) anthracene	ND	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Fluoranthene	**11.7**	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Fluorene	ND	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Indeno (1,2,3-cd) pyrene	ND	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Naphthalene	ND	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Phenanthrene	**6.77**	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Pyrene	**14.1**	5.14	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Surrogate: 2-Fluorobiphenyl	**130**		*64.2 %*	*40-105*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**190**		*91.7 %*	*30-125*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8270C*	

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

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6011801-01 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
AVS and SEM Metals by EPA 6000/7000 Series Methods								
Acid Volatile Sulfide	**4.04**	0.100	0.200	mg/kg	21-Jan-2016	21-Jan-2016	EPA 9030	
Organotins by Krone et al.								
Dibutyltin	ND	0.0029	5.2	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Monobutyltin	ND	0.0029	5.2	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Tetrabutyltin	ND	0.0029	5.2	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Tributyltin	ND	0.0029	5.2	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Surrogate: Tripentyltin	**ND**		*97 %*	*27-135*		*01-Feb-2016*	*EPA3550BM*	
Wet Chemistry Analysis								
TOC	**6930**	400	500	mg/kg dry	12-Feb-2016	12-Feb-2016	SW9060A	

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

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6011801-01RE1 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	18.0	51.4	ug/kg dry	03-Feb-2016	05-Feb-2016	EPA 8270C	H, Z-03, U
Surrogate: 2-Fluorobiphenyl	**160**		*79.8 %*	*40-120*	*03-Feb-2016*	*05-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**180**		*86.8 %*	*40-120*	*03-Feb-2016*	*05-Feb-2016*	*EPA 8270C*	
N-Hexane Extractable Material by Extraction and Gravimetry								
Oil and Grease	**529**	24.8	74.3	mg/kg dry wt. dry	04-Feb-2016	09-Feb-2016	EPA 9071B	

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

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6011801-02 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Classical Chemistry Parameters								
% Solids	**73.3**			[blank]	20-Jan-2016	20-Jan-2016	% Calculation	
Metals by EPA 6000/7000 Series Methods								
Mercury	**0.00597**	0.00174	0.00174	mg/kg	28-Jan-2016	28-Jan-2016	EPA 7474	
Silver	ND	0.0062	0.0125	mg/kg	22-Feb-2016	22-Feb-2016	EPA 7000	
Arsenic-75 [1]	**1.32**	0.0216	0.108	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Cadmium-114 [2]	**0.0237**	0.0216	0.108	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	J
Chromium-52 [2]	**3.26**	0.0216	0.108	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Copper-63 [2]	**0.740**	0.0216	0.108	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Lead-206 [1]	**2.52**	0.0216	0.108	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Nickel-62 [2]	**1.20**	0.0216	0.108	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Selenium-77 [1]	**0.312**	0.0216	0.108	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Zinc-68 [1]	**3.86**	0.0216	0.108	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Organochlorine Pesticides by EPA Method 8081A								
4,4'-DDD	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
4,4'-DDE	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
4,4'-DDT	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Aldrin	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-BHC	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-Chlordane	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
beta-BHC	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
cis-Nonachlor	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
delta-BHC	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Dieldrin	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan I	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan II	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan sulfate	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin aldehyde	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin ketone	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-BHC (Lindane)	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-Chlordane	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor epoxide	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Hexachlorobenzene	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Methoxychlor	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-1

6011801-02 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Organochlorine Pesticides by EPA Method 8081A								
Oxychlordane	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Toxaphene	ND	9.20	26.3	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
trans-Nonachlor	ND	0.43	1.31	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**7.17**		*68.2 %*	*40-125*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Surrogate: Dibutyl Chlorendate	**8.46**		*80.5 %*	*45-135*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	13.8	39.4	ug/kg dry	28-Jan-2016	02-Feb-2016	EPA 8270C	U
Surrogate: 2-Fluorobiphenyl	**150**		*97.7 %*	*40-120*	*28-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**150**		*96.0 %*	*40-120*	*28-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Nutrients								
Ammonia as N	**2.10**	0.00671	0.0224	mg/kg	26-Jan-2016	26-Jan-2016	EPA 350.1	
Polychlorinated Biphenyls (as Congeners) by EPA Method 8082								
PCB 101	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 105	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 118	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 126	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 128	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 138	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 153	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 156	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 169	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 170	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 18	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 180	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 183	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 184	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 187	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 195	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 206	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 209	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 28	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 44	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 49	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 52	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U

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USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-1

6011801-02 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Polychlorinated Biphenyls (as Congeners) by EPA Method 8082								
PCB 66	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 77	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 8	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 87	ND	0.2	0.5	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**5.12**		*48.7 %*	*30-150*	*28-Jan-2016*	*10-Feb-2016*	*EPA 8082*	
Surrogate: Dibutyl Chlorendate	**14.9**		*142 %*	*30-150*	*28-Jan-2016*	*10-Feb-2016*	*EPA 8082*	
Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring								
1-Methylnaphthalene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
2-Methylnaphthalene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Acenaphthene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Acenaphthylene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Anthracene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (a) anthracene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (a) pyrene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (b) fluoranthene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (g,h,i) perylene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (k) fluoranthene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Chrysene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Dibenz (a,h) anthracene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Fluoranthene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Fluorene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Indeno (1,2,3-cd) pyrene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Naphthalene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Phenanthrene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Pyrene	ND	3.94	11.8	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Surrogate: 2-Fluorobiphenyl	**110**		*71.6 %*	*40-105*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**150**		*93.8 %*	*30-125*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8270C*	

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-1

6011801-02 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
AVS and SEM Metals by EPA 6000/7000 Series Methods								
Acid Volatile Sulfide	**0.692**	0.100	0.200	mg/kg	21-Jan-2016	21-Jan-2016	EPA 9030	
Organotins by Krone et al.								
Dibutyltin	ND	0.0029	4.1	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Monobutyltin	ND	0.0029	4.1	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Tetrabutyltin	ND	0.0029	4.1	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Tributyltin	ND	0.0029	4.1	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Surrogate: Tripentyltin	**ND**		*97 %*	*27-135*		*01-Feb-2016*	*EPA3550BM*	
Wet Chemistry Analysis								
TOC	**1400**	80.0	100	mg/kg dry	12-Feb-2016	12-Feb-2016	SW9060A	

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-1

6011801-02RE1 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	13.8	39.4	ug/kg dry	03-Feb-2016	05-Feb-2016	EPA 8270C	H, Z-03, U
Surrogate: 2-Fluorobiphenyl	**140**		*85.8 %*	*40-120*	*03-Feb-2016*	*05-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**130**		*80.0 %*	*40-120*	*03-Feb-2016*	*05-Feb-2016*	*EPA 8270C*	
N-Hexane Extractable Material by Extraction and Gravimetry								
Oil and Grease	**549**	24.8	74.3	mg/kg dry wt. dry	04-Feb-2016	09-Feb-2016	EPA 9071B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-4

6011801-03 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Classical Chemistry Parameters								
% Solids	**56.3**			[blank]	20-Jan-2016	20-Jan-2016	% Calculation	
Metals by EPA 6000/7000 Series Methods								
Mercury	**0.0182**	0.00181	0.00181	mg/kg	28-Jan-2016	28-Jan-2016	EPA 7474	
Silver	**0.0184**	0.0062	0.0125	mg/kg	22-Feb-2016	22-Feb-2016	EPA 7000	
Arsenic-75 [1]	**3.42**	0.0244	0.122	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Cadmium-114 [2]	ND	0.0244	0.122	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	U
Chromium-52 [2]	**9.19**	0.0244	0.122	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Copper-63 [2]	**1.78**	0.0244	0.122	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Lead-206 [1]	**9.35**	0.0244	0.122	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Nickel-62 [2]	**3.03**	0.0244	0.122	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Selenium-77 [1]	**0.739**	0.0244	0.122	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Zinc-68 [1]	**9.52**	0.0244	0.122	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Organochlorine Pesticides by EPA Method 8081A								
4,4'-DDD	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
4,4'-DDE	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
4,4'-DDT	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Aldrin	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-BHC	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-Chlordane	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
beta-BHC	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
cis-Nonachlor	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
delta-BHC	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Dieldrin	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan I	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan II	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan sulfate	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin aldehyde	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin ketone	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-BHC (Lindane)	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-Chlordane	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor epoxide	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Hexachlorobenzene	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Methoxychlor	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-4

6011801-03 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Organochlorine Pesticides by EPA Method 8081A								
Oxychlordane	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Toxaphene	ND	12.0	34.2	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
trans-Nonachlor	ND	0.56	1.71	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**8.40**		*61.5 %*	*40-125*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Surrogate: Dibutyl Chlorendate	**11.1**		*81.5 %*	*45-135*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	17.9	51.2	ug/kg dry	28-Jan-2016	02-Feb-2016	EPA 8270C	U
Surrogate: 2-Fluorobiphenyl	**150**		*74.0 %*	*40-120*	*28-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**160**		*77.8 %*	*40-120*	*28-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Nutrients								
Ammonia as N	**24.8**	0.00864	0.0288	mg/kg	26-Jan-2016	26-Jan-2016	EPA 350.1	
Polychlorinated Biphenyls (as Congeners) by EPA Method 8082								
PCB 101	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 105	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 118	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 126	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 128	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 138	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 153	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 156	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 169	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 170	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 18	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 180	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 183	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 184	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 187	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 195	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 206	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 209	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 28	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 44	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 49	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 52	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-4

6011801-03 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Polychlorinated Biphenyls (as Congeners) by EPA Method 8082								
PCB 66	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 77	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 8	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 87	ND	0.3	0.7	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**6.83**		*50.0 %*	*30-150*	*28-Jan-2016*	*10-Feb-2016*	*EPA 8082*	
Surrogate: Dibutyl Chlorendate	**12.0**		*87.5 %*	*30-150*	*28-Jan-2016*	*10-Feb-2016*	*EPA 8082*	
Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring								
1-Methylnaphthalene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
2-Methylnaphthalene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Acenaphthene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Acenaphthylene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Anthracene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (a) anthracene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (a) pyrene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (b) fluoranthene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (g,h,i) perylene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (k) fluoranthene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Chrysene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Dibenz (a,h) anthracene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Fluoranthene	**7.23**	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Fluorene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Indeno (1,2,3-cd) pyrene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Naphthalene	ND	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Phenanthrene	**5.33**	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Pyrene	**7.12**	5.12	15.4	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Surrogate: 2-Fluorobiphenyl	**120**		*56.4 %*	*40-105*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**120**		*60.1 %*	*30-125*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8270C*	

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-4

6011801-03 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
AVS and SEM Metals by EPA 6000/7000 Series Methods								
Acid Volatile Sulfide	**14.3**	0.100	0.200	mg/kg	21-Jan-2016	21-Jan-2016	EPA 9030	
Organotins by Krone et al.								
Dibutyltin	ND	0.0029	5.3	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Monobutyltin	ND	0.0029	5.3	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Tetrabutyltin	ND	0.0029	5.3	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Tributyltin	ND	0.0029	5.3	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Surrogate: Tripentyltin	**ND**		*105 %*	*27-135*		*01-Feb-2016*	*EPA3550BM*	
Wet Chemistry Analysis								
TOC	**4700**	400	500	mg/kg dry	12-Feb-2016	12-Feb-2016	SW9060A	

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

E-KB-16-4

6011801-03RE1 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	17.9	51.2	ug/kg dry	03-Feb-2016	05-Feb-2016	EPA 8270C	H, Z-03, U
Surrogate: 2-Fluorobiphenyl	**170**		*83.8 %*	*40-120*	*03-Feb-2016*	*05-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**190**		*92.7 %*	*40-120*	*03-Feb-2016*	*05-Feb-2016*	*EPA 8270C*	
N-Hexane Extractable Material by Extraction and Gravimetry								
Oil and Grease	**864**	24.7	74.0	mg/kg dry wt. dry	04-Feb-2016	09-Feb-2016	EPA 9071B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

E-KB-16-5

6011801-04 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Classical Chemistry Parameters								
% Solids	**46.3**			[blank]	20-Jan-2016	20-Jan-2016	% Calculation	
Metals by EPA 6000/7000 Series Methods								
Mercury	**0.0232**	0.00199	0.00199	mg/kg	28-Jan-2016	28-Jan-2016	EPA 7474	
Silver	**0.0312**	0.0062	0.0125	mg/kg	22-Feb-2016	22-Feb-2016	EPA 7000	
Arsenic-75 [1]	**7.05**	0.0249	0.124	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Cadmium-114 [2]	**0.0776**	0.0249	0.124	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	J
Chromium-52 [2]	**16.6**	0.0249	0.124	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Copper-63 [2]	**3.03**	0.0249	0.124	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Lead-206 [1]	**7.49**	0.0249	0.124	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Nickel-62 [2]	**5.06**	0.0249	0.124	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Selenium-77 [1]	**1.36**	0.0249	0.124	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Zinc-68 [1]	**16.7**	0.0249	0.124	mg/kg	22-Jan-2016	10-Feb-2016	SW 846/6020	
Organochlorine Pesticides by EPA Method 8081A								
4,4'-DDD	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
4,4'-DDE	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
4,4'-DDT	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Aldrin	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-BHC	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-Chlordane	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
beta-BHC	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
cis-Nonachlor	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
delta-BHC	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Dieldrin	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan I	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan II	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan sulfate	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin aldehyde	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin ketone	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-BHC (Lindane)	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-Chlordane	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor epoxide	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Hexachlorobenzene	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Methoxychlor	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-5

6011801-04 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Organochlorine Pesticides by EPA Method 8081A								
Oxychlordane	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Toxaphene	ND	14.7	42.1	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
trans-Nonachlor	ND	0.70	2.11	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8081A	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**10.7**		*63.2 %*	*40-125*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Surrogate: Dibutyl Chlorendate	**13.2**		*78.3 %*	*45-135*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	22.1	63.2	ug/kg dry	28-Jan-2016	02-Feb-2016	EPA 8270C	U
Surrogate: 2-Fluorobiphenyl	**190**		*74.0 %*	*40-120*	*28-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**200**		*77.8 %*	*40-120*	*28-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Nutrients								
Ammonia as N	**24.7**	0.00841	0.0280	mg/kg	26-Jan-2016	26-Jan-2016	EPA 350.1	
Polychlorinated Biphenyls (as Congeners) by EPA Method 8082								
PCB 101	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 105	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 118	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 126	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 128	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 138	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 153	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 156	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 169	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 170	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 18	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 180	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 183	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 184	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 187	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 195	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 206	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 209	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 28	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 44	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 49	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 52	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-5

6011801-04 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Polychlorinated Biphenyls (as Congeners) by EPA Method 8082								
PCB 66	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 77	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 8	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
PCB 87	ND	0.3	0.8	ug/kg dry	28-Jan-2016	10-Feb-2016	EPA 8082	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**9.06**		*53.8 %*	*30-150*	*28-Jan-2016*	*10-Feb-2016*	*EPA 8082*	
Surrogate: Dibutyl Chlorendate	**21.0**		*125 %*	*30-150*	*28-Jan-2016*	*10-Feb-2016*	*EPA 8082*	
Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring								
1-Methylnaphthalene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
2-Methylnaphthalene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Acenaphthene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Acenaphthylene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Anthracene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (a) anthracene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (a) pyrene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (b) fluoranthene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (g,h,i) perylene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Benzo (k) fluoranthene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Chrysene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Dibenz (a,h) anthracene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Fluoranthene	**11.0**	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Fluorene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Indeno (1,2,3-cd) pyrene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Naphthalene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Phenanthrene	ND	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	U
Pyrene	**10.9**	6.32	19.0	ug/kg dry	28-Jan-2016	08-Feb-2016	EPA 8270C	J
Surrogate: 2-Fluorobiphenyl	**140**		*55.3 %*	*40-105*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**250**		*100 %*	*30-125*	*28-Jan-2016*	*08-Feb-2016*	*EPA 8270C*	

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

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6011801-04 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
AVS and SEM Metals by EPA 6000/7000 Series Methods								
Acid Volatile Sulfide	**34.9**	0.100	0.200	mg/kg	21-Jan-2016	21-Jan-2016	EPA 9030	
Organotins by Krone et al.								
Dibutyltin	ND	0.0029	6.5	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Monobutyltin	ND	0.0029	6.5	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Tetrabutyltin	ND	0.0029	6.5	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Tributyltin	ND	0.0029	6.5	ug/kg dry		01-Feb-2016	EPA3550BM	-Results a
Surrogate: Tripentyltin	**ND**		*93 %*	*27-135*		*01-Feb-2016*	*EPA3550BM*	
Wet Chemistry Analysis								
TOC	**7920**	400	500	mg/kg dry	12-Feb-2016	12-Feb-2016	SW9060A	

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

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6011801-04RE1 (Soil/Sediment)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	22.1	63.2	ug/kg dry	03-Feb-2016	05-Feb-2016	EPA 8270C	H, Z-03, U
Surrogate: 2-Fluorobiphenyl	**170**		*67.2 %*	*40-120*	*03-Feb-2016*	*05-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**230**		*90.5 %*	*40-120*	*03-Feb-2016*	*05-Feb-2016*	*EPA 8270C*	
N-Hexane Extractable Material by Extraction and Gravimetry								
Oil and Grease	**1330**	24.4	73.1	mg/kg dry wt. dry	04-Feb-2016	09-Feb-2016	EPA 9071B	

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-SW

6011801-05 (Water)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Metals by EPA 6000/7000 Series Methods								
Arsenic	ND	4.0E-5	0.0010	mg/L	17-Feb-2016	17-Feb-2016	GF-AAS 7000	U
Mercury	**0.000008**	0.000005	0.00001	mg/L	28-Jan-2016	28-Jan-2016	EPA 7474	J
Selenium	ND	0.0005	0.0012	mg/L	17-Feb-2016	17-Feb-2016	GF-AAS 7000 Series	
Silver	ND	0.0020	0.0040	mg/L	17-Feb-2016	17-Feb-2016	EPA 7000	
Cadmium-111 [1]	ND	0.0005	0.0010	mg/L	22-Jan-2016	22-Jan-2016	SW 846/6020	U
Chromium-52 [1]	**0.0009**	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	J
Copper-65 [2]	**0.0016**	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	
Lead-206 [1]	**0.0008**	0.0005	0.0010	mg/L	22-Jan-2016	22-Jan-2016	SW 846/6020	J
Nickel-60 [1]	**0.0010**	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	J
Zinc-68 [1]	**0.0243**	0.0005	0.0010	mg/L	22-Jan-2016	10-Feb-2016	SW 846/6020	
Organochlorine Pesticides by EPA Method 8081A								
4,4'-DDT	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Aldrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-Chlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
cis-Nonachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Dieldrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan I	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan II	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-BHC (Lindane)	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-Chlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor epoxide	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Oxychlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Toxaphene	ND	0.060	0.200	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
trans-Nonachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**0.147**		*61.3 %*	*25-140*	*21-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Surrogate: Dibutyl Chlorendate	**0.184**		*76.7 %*	*45-135*	*21-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-SW

6011801-05 (Water)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	1.20	4.00	ug/L	21-Jan-2016	02-Feb-2016	EPA 8270C	U
Surrogate: 2-Fluorobiphenyl	**2.4**		*67.4 %*	*0-200*	*21-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**2.8**		*77.9 %*	*0-200*	*21-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Nutrients								
Ammonia as N	**0.109**	0.00200	0.0100	mg/L	21-Jan-2016	21-Jan-2016	EPA 350.1	
Organotins by Krone et al.								
Dibutyltin	ND	0.0029	0.0029	ug/L		25-Jan-2016	EPA3550BM	
Monobutyltin	ND	0.0029	0.0029	ug/L		25-Jan-2016	EPA3550BM	
Tetrabutyltin	ND	0.0029	0.0029	ug/L		25-Jan-2016	EPA3550BM	
Tributyltin	ND	0.0029	0.0029	ug/L		25-Jan-2016	EPA3550BM	
Surrogate: Tripentyltin	**ND**		*21 %*	*19-121*		*25-Jan-2016*	*EPA3550BM*	
Wet Chemistry Analysis								
Cyanide	<0.010	0.010	0.010	mg/L	26-Jan-2016	26-Jan-2016	SM22 4500CNE-2011	

ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

E-KB-16-1

6011901-01 (Water)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Metals by EPA 6000/7000 Series Methods								
Arsenic	ND	4.0E-5	0.0010	mg/L	17-Feb-2016	17-Feb-2016	GF-AAS 7000	U
Chromium (VI)	ND	0.001	0.002	mg/L	21-Jan-2016	21-Jan-2016	EPA 6020	H, U
Mercury	ND	0.000005	0.00001	mg/L	28-Jan-2016	28-Jan-2016	EPA 7474	U
Selenium	ND	0.0005	0.0012	mg/L	17-Feb-2016	17-Feb-2016	GF-AAS 7000 Series	
Silver	ND	0.0020	0.0040	mg/L	17-Feb-2016	17-Feb-2016	EPA 7000	
Cadmium-111 [1]	ND	0.0005	0.0010	mg/L	22-Jan-2016	22-Jan-2016	SW 846/6020	U
Chromium-52 [1]	ND	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	U
Copper-65 [2]	**0.0006**	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	J
Lead-206 [1]	ND	0.0005	0.0010	mg/L	22-Jan-2016	22-Jan-2016	SW 846/6020	U
Nickel-60 [1]	**0.0011**	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	
Zinc-68 [1]	**0.0456**	0.0005	0.0010	mg/L	22-Jan-2016	10-Feb-2016	SW 846/6020	
Organochlorine Pesticides by EPA Method 8081A								
4,4'-DDT	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Aldrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-Chlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
cis-Nonachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Dieldrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan I	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan II	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-BHC (Lindane)	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-Chlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor epoxide	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Oxychlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Toxaphene	ND	0.060	0.200	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
trans-Nonachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**0.143**		*59.7 %*	*30-150*	*21-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Surrogate: Dibutyl Chlorendate	**0.178**		*74.3 %*	*30-150*	*21-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

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6011901-01 (Water)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	1.20	4.00	ug/L	21-Jan-2016	02-Feb-2016	EPA 8270C	U
Surrogate: 2-Fluorobiphenyl	**2.6**		*71.1 %*	*30-150*	*21-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**2.8**		*77.6 %*	*30-150*	*21-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Nutrients								
Ammonia as N	**0.791**	0.00200	0.0100	mg/L	21-Jan-2016	21-Jan-2016	EPA 350.1	
Organotins by Krone et al.								
Dibutyltin	ND	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Monobutyltin	**0.010**	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Tetrabutyltin	ND	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Tributyltin	ND	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Surrogate: Tripentyltin	**ND**		*86 %*	*19-121*		*29-Jan-2016*	*EPA3550BM*	
Wet Chemistry Analysis								
Cyanide	<0.010	0.010	0.010	mg/L	29-Jan-2016	29-Jan-2016	SM22 4500CNE-20 11	CI

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-4

6011901-03 (Water)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Metals by EPA 6000/7000 Series Methods								
Arsenic	ND	4.0E-5	0.0010	mg/L	17-Feb-2016	17-Feb-2016	GF-AAS 7000	U
Chromium (VI)	ND	0.001	0.002	mg/L	21-Jan-2016	21-Jan-2016	EPA 6020	H, U
Mercury	ND	0.000005	0.00001	mg/L	28-Jan-2016	28-Jan-2016	EPA 7474	U
Selenium	ND	0.0005	0.0012	mg/L	17-Feb-2016	17-Feb-2016	GF-AAS 7000 Series	
Silver	ND	0.0020	0.0040	mg/L	17-Feb-2016	17-Feb-2016	EPA 7000	
Cadmium-111 [1]	ND	0.0005	0.0010	mg/L	22-Jan-2016	22-Jan-2016	SW 846/6020	U
Chromium-52 [1]	ND	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	U
Copper-65 [2]	ND	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	U
Lead-206 [1]	ND	0.0005	0.0010	mg/L	22-Jan-2016	22-Jan-2016	SW 846/6020	U
Nickel-60 [1]	**0.0009**	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	J
Zinc-68 [1]	**0.0512**	0.0005	0.0010	mg/L	22-Jan-2016	10-Feb-2016	SW 846/6020	
Organochlorine Pesticides by EPA Method 8081A								
4,4´-DDT	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Aldrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-Chlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
cis-Nonachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Dieldrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan I	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan II	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-BHC (Lindane)	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-Chlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor epoxide	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Oxychlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Toxaphene	ND	0.060	0.200	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
trans-Nonachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**0.149**		*62.0 %*	*30-150*	*21-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Surrogate: Dibutyl Chlorendate	**0.174**		*72.7 %*	*30-150*	*21-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	

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USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-4

6011901-03 (Water)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	1.20	4.00	ug/L	21-Jan-2016	02-Feb-2016	EPA 8270C	U
Surrogate: 2-Fluorobiphenyl	**2.6**		*71.9 %*	*30-150*	*21-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**3.0**		*82.8 %*	*30-150*	*21-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Nutrients								
Ammonia as N	**10.0**	0.00200	0.0100	mg/L	21-Jan-2016	21-Jan-2016	EPA 350.1	
Organotins by Krone et al.								
Dibutyltin	**0.012**	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Monobutyltin	**0.029**	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Tetrabutyltin	ND	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Tributyltin	ND	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Surrogate: Tripentyltin	**ND**		*118 %*	*19-121*		*29-Jan-2016*	*EPA3550BM*	
Wet Chemistry Analysis								
Cyanide	<0.010	0.010	0.010	mg/L	29-Jan-2016	29-Jan-2016	SM22 4500CNE-20 11	Cl

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-5

6011901-04 (Water)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Metals by EPA 6000/7000 Series Methods								
Arsenic	ND	4.0E-5	0.0010	mg/L	17-Feb-2016	17-Feb-2016	GF-AAS 7000	U
Chromium (VI)	ND	0.001	0.002	mg/L	21-Jan-2016	21-Jan-2016	EPA 6020	H, U
Mercury	ND	0.000005	0.00001	mg/L	28-Jan-2016	28-Jan-2016	EPA 7474	U
Selenium	ND	0.0005	0.0012	mg/L	17-Feb-2016	17-Feb-2016	GF-AAS 7000 Series	
Silver	ND	0.0020	0.0040	mg/L	17-Feb-2016	17-Feb-2016	EPA 7000	
Cadmium-111 [1]	ND	0.0005	0.0010	mg/L	22-Jan-2016	22-Jan-2016	SW 846/6020	U
Chromium-52 [1]	ND	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	U
Copper-65 [2]	ND	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	U
Lead-206 [1]	ND	0.0005	0.0010	mg/L	22-Jan-2016	22-Jan-2016	SW 846/6020	U
Nickel-60 [1]	**0.0011**	0.0005	0.0010	mg/L	22-Jan-2016	25-Jan-2016	SW 846/6020	
Zinc-68 [1]	**0.0403**	0.0005	0.0010	mg/L	22-Jan-2016	10-Feb-2016	SW 846/6020	
Organochlorine Pesticides by EPA Method 8081A								
4,4´-DDT	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Aldrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
alpha-Chlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
cis-Nonachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Dieldrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan I	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endosulfan II	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Endrin	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-BHC (Lindane)	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
gamma-Chlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Heptachlor epoxide	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Oxychlordane	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Toxaphene	ND	0.060	0.200	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
trans-Nonachlor	ND	0.006	0.020	ug/L	21-Jan-2016	08-Feb-2016	EPA 8081A	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	**0.142**		*59.3 %*	*30-150*	*21-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	
Surrogate: Dibutyl Chlorendate	**0.168**		*70.0 %*	*30-150*	*21-Jan-2016*	*08-Feb-2016*	*EPA 8081A*	

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

E-KB-16-5

6011901-04 (Water)

Analyte	Result	Detection Limit	Reporting Limit	Units	Prepared	Analyzed	Method	Notes
			ERDC-EL-EP-C					
Pentachlorophenol by GC/MS with Selected Ion Monitoring								
Pentachlorophenol	ND	1.20	4.00	ug/L	21-Jan-2016	02-Feb-2016	EPA 8270C	U
Surrogate: 2-Fluorobiphenyl	**2.6**		*72.6 %*	*30-150*	*21-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Surrogate: Terphenyl-dl4	**2.4**		*65.6 %*	*30-150*	*21-Jan-2016*	*02-Feb-2016*	*EPA 8270C*	
Nutrients								
Ammonia as N	**9.72**	0.00200	0.0100	mg/L	21-Jan-2016	21-Jan-2016	EPA 350.1	
Organotins by Krone et al.								
Dibutyltin	**0.0062**	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Monobutyltin	**0.016**	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Tetrabutyltin	ND	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Tributyltin	ND	0.0029	0.0029	ug/L		29-Jan-2016	EPA3550BM	
Surrogate: Tripentyltin	**ND**		*103 %*	*19-121*		*29-Jan-2016*	*EPA3550BM*	
Wet Chemistry Analysis								
Cyanide	<0.010	0.010	0.010	mg/L	29-Jan-2016	29-Jan-2016	SM22 4500CNE-2011	C1

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Metals by EPA 6000/7000 Series Methods - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601058 - Default Prep Metals											
Blank (B601058-BLK1)					Prepared & Analyzed: 22-Jan-2016						
Cadmium-111 [1]	ND	0.0001	0.0002	mg/L							U
Chromium-52 [1]	ND	0.0001	0.0002	mg/L							U
Copper-65 [2]	ND	0.0001	0.0002	mg/L							U
Lead-206 [1]	ND	0.0001	0.0002	mg/L							U
Nickel-60 [1]	ND	0.0001	0.0002	mg/L							U
Zinc-68 [1]	ND	0.0001	0.0002	mg/L							U
LCS (B601058-BS1)					Prepared & Analyzed: 22-Jan-2016						
Cadmium-111 [1]	0.0224	0.0001	0.0002	mg/L	0.02000		112	70-130			
Chromium-52 [1]	0.0215	0.0001	0.0002	mg/L	0.02000		107	70-130			
Copper-65 [2]	0.0208	0.0001	0.0002	mg/L	0.02000		104	70-130			
Lead-206 [1]	0.0220	0.0001	0.0002	mg/L	0.02000		110	70-130			
Nickel-60 [1]	0.0217	0.0001	0.0002	mg/L	0.02000		108	70-130			
Zinc-68 [1]	0.0223	0.0001	0.0002	mg/L	0.02000		111	70-130			
Duplicate (B601058-DUP1)		**Source: 6011801-05**			Prepared & Analyzed: 22-Jan-2016						
Cadmium-111 [1]	ND	0.0005	0.0010	mg/L		ND				30	U
Chromium-52 [1]	0.00083	0.0005	0.0010	mg/L		0.0009			8.94	30	J
Copper-65 [2]	0.0011	0.0005	0.0010	mg/L		0.0016			40.5	30	RPD-01
Lead-206 [1]	ND	0.0005	0.0010	mg/L		0.0008				30	U
Nickel-60 [1]	0.0007	0.0005	0.0010	mg/L		0.0010			35.2	30	RPD-01, J
Zinc-68 [1]	0.0201	0.0005	0.0010	mg/L		0.0243			19.0	30	
Duplicate (B601058-DUP2)		**Source: 6011901-01**			Prepared & Analyzed: 22-Jan-2016						
Cadmium-111 [1]	ND	0.0005	0.0010	mg/L		ND				30	U
Chromium-52 [1]	ND	0.0005	0.0010	mg/L		ND				30	U
Copper-65 [2]	0.0005	0.0005	0.0010	mg/L		0.0006			12.5	30	J
Lead-206 [1]	ND	0.0005	0.0010	mg/L		ND				30	U
Nickel-60 [1]	0.0012	0.0005	0.0010	mg/L		0.0011			8.28	30	
Zinc-68 [1]	0.0508	0.0005	0.0010	mg/L		0.0456			10.9	30	

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Metals by EPA 6000/7000 Series Methods - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601058 - Default Prep Metals											
Matrix Spike (B601058-MS1)		**Source: 6011801-05**			Prepared & Analyzed: 22-Jan-2016						
Cadmium-111 [1]	0.0936	0.0005	0.0010	mg/L	0.1000	ND	93.6	70-130			
Chromium-52 [1]	0.101	0.0005	0.0010	mg/L	0.1000	0.0009	100	70-130			
Copper-65 [2]	0.0989	0.0005	0.0010	mg/L	0.1000	0.0016	97.2	70-130			
Lead-206 [1]	0.103	0.0005	0.0010	mg/L	0.1000	0.0008	102	70-130			
Nickel-60 [1]	0.0917	0.0005	0.0010	mg/L	0.1000	0.0010	90.8	70-130			
Zinc-68 [1]	0.108	0.0005	0.0010	mg/L	0.1000	0.0243	83.5	70-130			
Matrix Spike (B601058-MS2)		**Source: 6011901-01**			Prepared & Analyzed: 22-Jan-2016						
Cadmium-111 [1]	0.0944	0.0005	0.0010	mg/L	0.1000	ND	94.4	70-130			
Chromium-52 [1]	0.117	0.0005	0.0010	mg/L	0.1000	ND	117	70-130			
Copper-65 [2]	0.112	0.0005	0.0010	mg/L	0.1000	0.0006	111	70-130			
Lead-206 [1]	0.102	0.0005	0.0010	mg/L	0.1000	ND	102	70-130			
Nickel-60 [1]	0.107	0.0005	0.0010	mg/L	0.1000	0.0011	106	70-130			
Zinc-68 [1]	0.126	0.0005	0.0010	mg/L	0.1000	0.0456	80.9	70-130			
Reference (B601058-SRM1)					Prepared: 22-Jan-2016 Analyzed: 22-Feb-2016						
Cadmium-111 [1]	0.411	0.0040	0.0200	mg/L	0.4170		98.6	70-130			
Chromium-52 [1]	0.132	0.0040	0.0200	mg/L	0.1310		101	70-130			
Copper-65 [2]	0.896	0.0040	0.0200	mg/L	0.8940		100	70-130			
Lead-206 [1]	0.294	0.0040	0.0200	mg/L	0.2850		103	70-130			
Nickel-60 [1]	1.35	0.0040	0.0200	mg/L	1.340		101	70-130			
Zinc-68 [1]	0.683	0.0040	0.0200	mg/L	0.6850		99.7	70-130			
Batch B601059 - Default Prep Metals											
Blank (B601059-BLK1)					Prepared: 22-Jan-2016 Analyzed: 10-Feb-2016						
Arsenic-75 [1]	ND	0.0500	0.250	mg/kg							U
Cadmium-114 [2]	ND	0.0500	0.250	mg/kg							U
Chromium-52 [2]	0.0639	0.0500	0.250	mg/kg							J
Copper-63 [2]	ND	0.0500	0.250	mg/kg							U
Lead-206 [1]	ND	0.0500	0.250	mg/kg							U
Nickel-62 [2]	ND	0.0500	0.250	mg/kg							U
Selenium-77 [1]	ND	0.0500	0.250	mg/kg							U
Zinc-68 [1]	ND	0.0500	0.250	mg/kg							U

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Metals by EPA 6000/7000 Series Methods - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601059 - Default Prep Metals											
LCS (B601059-BS1)					Prepared: 22-Jan-2016 Analyzed: 10-Feb-2016						
Arsenic-75 [1]	52.3	0.100	0.500	mg/kg	50.00		105	70-130			
Cadmium-114 [2]	55.0	0.100	0.500	mg/kg	50.00		110	70-130			
Chromium-52 [2]	103	0.100	0.500	mg/kg	100.0		103	70-130			
Copper-63 [2]	98.0	0.100	0.500	mg/kg	100.0		98.0	70-130			
Lead-206 [1]	110	0.100	0.500	mg/kg	100.0		110	70-130			
Nickel-62 [2]	101	0.100	0.500	mg/kg	100.0		101	70-130			
Selenium-77 [1]	54.6	0.100	0.500	mg/kg	50.00		109	70-130			
Zinc-68 [1]	216	0.100	0.500	mg/kg	200.0		108	70-130			
Calibration Check (B601059-CCV1)					Prepared: 22-Jan-2016 Analyzed: 10-Feb-2016						
Arsenic-75 [1]	0.0490	0.0001	0.0005	mg/kg	0.05000		98.1	90-110			
Cadmium-114 [2]	0.0489	0.0001	0.0005	mg/kg	0.05000		97.8	90-110			
Chromium-52 [2]	0.0469	0.0001	0.0005	mg/kg	0.05000		93.8	90-110			
Copper-63 [2]	0.0483	0.0001	0.0005	mg/kg	0.05000		96.5	90-110			
Lead-206 [1]	0.0495	0.0001	0.0005	mg/kg	0.05000		99.0	90-110			
Nickel-62 [2]	0.0488	0.0001	0.0005	mg/kg	0.05000		97.7	90-110			
Selenium-77 [1]	0.0505	0.0001	0.0005	mg/kg	0.05000		101	90-110			
Zinc-68 [1]	0.0468	0.0001	0.0005	mg/kg	0.05000		93.7	90-110			
Calibration Check (B601059-CCV2)					Prepared: 22-Jan-2016 Analyzed: 10-Feb-2016						
Arsenic-75 [1]	0.0497	0.0001	0.0005	mg/kg	0.05000		99.3	90-110			
Cadmium-114 [2]	0.0486	0.0001	0.0005	mg/kg	0.05000		97.1	90-110			
Chromium-52 [2]	0.0479	0.0001	0.0005	mg/kg	0.05000		95.7	90-110			
Copper-63 [2]	0.0485	0.0001	0.0005	mg/kg	0.05000		97.1	90-110			
Lead-206 [1]	0.0503	0.0001	0.0005	mg/kg	0.05000		101	90-110			
Nickel-62 [2]	0.0500	0.0001	0.0005	mg/kg	0.05000		100	90-110			
Selenium-77 [1]	0.0502	0.0001	0.0005	mg/kg	0.05000		100	90-110			
Zinc-68 [1]	0.0474	0.0001	0.0005	mg/kg	0.05000		94.7	90-110			

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Metals by EPA 6000/7000 Series Methods - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601059 - Default Prep Metals											
Duplicate (B601059-DUP1)		**Source: 6011801-01**			Prepared: 22-Jan-2016 Analyzed: 10-Feb-2016						
Cadmium-114 [2]	0.105	0.0249	0.125	mg/kg		0.102			2.78	30	J
Chromium-52 [2]	17.2	0.0249	0.125	mg/kg		16.6			3.15	30	
Copper-63 [2]	3.15	0.0249	0.125	mg/kg		3.10			1.59	30	
Lead-206 [1]	9.82	0.0249	0.125	mg/kg		8.28			17.0	30	
Nickel-62 [2]	5.39	0.0249	0.125	mg/kg		5.18			3.98	30	
Selenium-77 [1]	1.21	0.0249	0.125	mg/kg		1.24			2.44	30	
Zinc-68 [1]	17.1	0.0249	0.125	mg/kg		16.9			0.847	30	
Matrix Spike (B601059-MS1)		**Source: 6011801-01**			Prepared: 22-Jan-2016 Analyzed: 10-Feb-2016						
Cadmium-114 [2]	25.6	0.0499	0.249	mg/kg	24.94	0.102	102	70-130			
Chromium-52 [2]	71.0	0.0499	0.249	mg/kg	49.88	16.6	109	70-130			
Copper-63 [2]	45.7	0.0499	0.249	mg/kg	49.88	3.10	85.4	70-130			
Lead-206 [1]	64.9	0.0499	0.249	mg/kg	49.88	8.28	113	70-130			
Nickel-62 [2]	53.0	0.0499	0.249	mg/kg	49.88	5.18	96.0	70-130			
Selenium-77 [1]	23.8	0.0499	0.249	mg/kg	24.94	1.24	90.4	70-130			
Zinc-68 [1]	111	0.0499	0.249	mg/kg	99.75	16.9	94.5	70-130			
Reference (B601059-SRM1)					Prepared: 22-Jan-2016 Analyzed: 22-Feb-2016						
Cadmium.	184	0.0048	0.0238	mg/kg	152.0		121	70-130			
Chromium	209	0.0048	0.0238	mg/kg	209.0		100	70-130			
Copper	68.5	0.0048	0.0238	mg/kg	71.27		96.2	70-130			
Lead	219	0.0048	0.0238	mg/kg	229.0		95.5	70-130			
Nickel	260	0.0048	0.0238	mg/kg	249.9		104	70-130			
Zinc	610	0.0048	0.0238	mg/kg	565.4		108	70-130			
Batch B601098 - Default Prep Metals											
Blank (B601098-BLK1)					Prepared & Analyzed: 28-Jan-2016						
Mercury	ND	0.00400	0.00400	mg/kg							U

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Metals by EPA 6000/7000 Series Methods - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601098 - Default Prep Metals											
LCS (B601098-BS1)					Prepared & Analyzed: 28-Jan-2016						
Mercury	0.0812	0.00400	0.00400	mg/kg	0.08000		102	75-125			
Calibration Blank (B601098-CCB1)					Prepared & Analyzed: 28-Jan-2016						
Mercury	-0.00900	0.004	0.004	mg/kg							U
Calibration Check (B601098-CCV1)					Prepared & Analyzed: 28-Jan-2016						
Mercury	0.0810	0.00400	0.00400	mg/kg	0.08000		101	90-110			
Duplicate (B601098-DUP1)		**Source: 6011801-01**			Prepared & Analyzed: 28-Jan-2016						
Mercury	0.0290	0.00183	0.00183	mg/kg		0.0277			4.62	25	
Matrix Spike (B601098-MS1)		**Source: 6011801-01**			Prepared & Analyzed: 28-Jan-2016						
Mercury	0.0725	0.00191	0.00191	mg/kg	0.04768	0.0277	93.9	75-125			
Matrix Spike Dup (B601098-MSD1)		**Source: 6011801-01**			Prepared & Analyzed: 28-Jan-2016						
Mercury	0.0696	0.00188	0.00188	mg/kg	0.04706	0.0277	89.2	75-125	5.21	25	
Reference (B601098-SRM1)					Prepared & Analyzed: 28-Jan-2016						
Mercury	21.1	0.00194	0.00194	mg/kg	24.33		86.8	70-130			
Batch B601106 - Default Prep Metals											
Blank (B601106-BLK1)					Prepared & Analyzed: 28-Jan-2016						
Mercury	ND	0.000005	0.00001	mg/L							U
LCS (B601106-BS1)					Prepared & Analyzed: 28-Jan-2016						
Mercury	0.000156	0.000005	0.00001	mg/L	2.000E-4		78.0	70-130			

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Metals by EPA 6000/7000 Series Methods - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601106 - Default Prep Metals											
Calibration Blank (B601106-CCB1)					Prepared & Analyzed: 28-Jan-2016						
Mercury	0.00400	0.000005	0.00001	mg/L							
Calibration Check (B601106-CCV1)					Prepared & Analyzed: 28-Jan-2016						
Mercury	0.000755	0.000005	0.00001	mg/L	8.000E-4		94.4	90-110			
Duplicate (B601106-DUP1)		**Source: 6011801-05**			Prepared & Analyzed: 28-Jan-2016						
Mercury	6.50E-6	0.000005	0.00001	mg/L		0.000008			20.7	25	J
Matrix Spike (B601106-MS1)		**Source: 6011801-05**			Prepared & Analyzed: 28-Jan-2016						
Mercury	0.000296	0.000005	0.00001	mg/L	2.500E-4	0.000008	115	70-130			
Matrix Spike Dup (B601106-MSD1)		**Source: 6011801-05**			Prepared & Analyzed: 28-Jan-2016						
Mercury	0.000288	0.000005	0.00001	mg/L	2.500E-4	0.000008	112	70-130	2.82	25	
Batch B602050 - Default Prep Metals											
Blank (B602050-BLK1)					Prepared & Analyzed: 17-Feb-2016						
Arsenic	ND	1.0E-5	0.00025	mg/L							U
LCS (B602050-BS1)					Prepared & Analyzed: 17-Feb-2016						
Arsenic	0.0247	1.0E-5	0.00025	mg/L	0.02500		98.8	80-120			
Duplicate (B602050-DUP1)		**Source: 6011901-01**			Prepared & Analyzed: 17-Feb-2016						
Arsenic	ND	4.0E-5	0.0010	mg/L		ND				20	U
Matrix Spike (B602050-MS1)		**Source: 6011901-01**			Prepared & Analyzed: 17-Feb-2016						
Arsenic	0.0423	4.0E-5	0.0010	mg/L	0.04000	ND	106	80-120			

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Metals by EPA 6000/7000 Series Methods - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B602050 - Default Prep Metals											
Reference (B602050-SRM1)					Prepared & Analyzed: 17-Feb-2016						
Arsenic	0.621	1.0E-5	0.00025	mg/L	0.6030		103	70-130			
Batch B602051 - Default Prep Metals											
Blank (B602051-BLK1)					Prepared & Analyzed: 17-Feb-2016						
Selenium	ND	0.0001	0.00025	mg/L							
LCS (B602051-BS1)					Prepared & Analyzed: 17-Feb-2016						
Selenium	0.0252	0.0001	0.00025	mg/L	0.02500		101	80-120			
Duplicate (B602051-DUP1)		**Source: 6011901-01**			Prepared & Analyzed: 17-Feb-2016						
Selenium	ND	0.0005	0.0012	mg/L		ND				20	
Matrix Spike (B602051-MS1)		**Source: 6011901-01**			Prepared & Analyzed: 17-Feb-2016						
Selenium	0.0468	0.0005	0.0012	mg/L	0.05000	ND	93.6	80-120			
Reference (B602051-SRM1)					Prepared & Analyzed: 17-Feb-2016						
Selenium	0.989	0.0001	0.00025	mg/L	1.000		98.9	70-130			
Batch B602053 - Default Prep Metals											
Blank (B602053-BLK1)					Prepared & Analyzed: 17-Feb-2016						
Silver	ND	0.0005	0.0010	mg/L							
LCS (B602053-BS1)					Prepared & Analyzed: 17-Feb-2016						
Silver	0.0262	0.0005	0.0010	mg/L	0.02500		105	70-130			

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USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Metals by EPA 6000/7000 Series Methods - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B602053 - Default Prep Metals											
Duplicate (B602053-DUP1)		**Source: 6011901-01**			Prepared & Analyzed: 17-Feb-2016						
Silver	ND	0.0020	0.0040	mg/L		ND				30	
Matrix Spike (B602053-MS1)		**Source: 6011901-01**			Prepared & Analyzed: 17-Feb-2016						
Silver	0.0270	0.0020	0.0040	mg/L	0.04000	ND	67.4	70-130			QM-07, Z-03
Reference (B602053-SRM1)					Prepared & Analyzed: 17-Feb-2016						
Silver	0.0471	0.0005	0.0010	mg/L	0.05300		88.8	70-130			
Batch B602055 - Default Prep Metals											
Blank (B602055-BLK1)					Prepared & Analyzed: 21-Jan-2016						
Chromium (VI)	ND	0.001	0.002	mg/L							U
LCS (B602055-BS1)					Prepared & Analyzed: 21-Jan-2016						
Chromium (VI)	0.055	0.001	0.002	mg/L	0.05000		110	70-130			
Duplicate (B602055-DUP1)		**Source: 6011901-01**			Prepared & Analyzed: 21-Jan-2016						
Chromium (VI)	ND	0.001	0.002	mg/L		ND				20	H, U
Matrix Spike (B602055-MS1)		**Source: 6011901-01**			Prepared & Analyzed: 21-Jan-2016						
Chromium (VI)	0.050	0.001	0.002	mg/L	0.05000	ND	100	70-130			H
Batch B602075 - Default Prep Metals											
Blank (B602075-BLK1)					Prepared & Analyzed: 22-Feb-2016						
Silver	0.0080	0.0062	0.0125	mg/kg							J

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Metals by EPA 6000/7000 Series Methods - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B602075 - Default Prep Metals											
LCS (B602075-BS1)					Prepared & Analyzed: 22-Feb-2016						
Silver	37.0	0.0062	0.0125	mg/kg	50.00		74.0	70-130			
Duplicate (B602075-DUP1)		**Source: 6011801-01**			Prepared & Analyzed: 22-Feb-2016						
Silver	0.0300	0.0062	0.0125	mg/kg		0.0223			29.4	30	
Matrix Spike (B602075-MS1)		**Source: 6011801-01**			Prepared & Analyzed: 22-Feb-2016						
Silver	17.8	0.0062	0.0125	mg/kg	24.65	0.0223	72.0	70-130			
Reference (B602075-SRM1)					Prepared & Analyzed: 22-Feb-2016						
Silver	85.8	0.0062	0.0125	mg/kg	91.22		94.1	70-130			

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Organochlorine Pesticides by EPA Method 8081A - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601055 - EPA 3535A											
Blank (B601055-BLK1)					Prepared: 21-Jan-2016 Analyzed: 08-Feb-2016						
4,4'-DDT	ND	0.006	0.020	ug/L							U
Aldrin	ND	0.006	0.020	ug/L							U
alpha-Chlordane	ND	0.006	0.020	ug/L							U
cis-Nonachlor	ND	0.006	0.020	ug/L							U
Dieldrin	ND	0.006	0.020	ug/L							U
Endosulfan I	ND	0.006	0.020	ug/L							U
Endosulfan II	ND	0.006	0.020	ug/L							U
Endrin	ND	0.006	0.020	ug/L							U
gamma-BHC (Lindane)	ND	0.006	0.020	ug/L							U
gamma-Chlordane	ND	0.006	0.020	ug/L							U
Heptachlor	ND	0.006	0.020	ug/L							U
Heptachlor epoxide	ND	0.006	0.020	ug/L							U
Oxychlordane	ND	0.006	0.020	ug/L							U
Toxaphene	ND	0.060	0.200	ug/L							U
trans-Nonachlor	ND	0.006	0.020	ug/L							U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*0.163*			*ug/L*	*0.2400*		*67.8*	*30-150*			
Surrogate: Dibutyl Chlorendate	*0.217*			*ug/L*	*0.2400*		*90.5*	*30-150*			
LCS (B601055-BS1)					Prepared: 21-Jan-2016 Analyzed: 08-Feb-2016						
4,4'-DDT	0.094	0.006	0.020	ug/L	0.1200		78.0	50-150			
Aldrin	0.075	0.006	0.020	ug/L	0.1200		62.3	50-150			
alpha-Chlordane	0.080	0.006	0.020	ug/L	0.1200		66.3	50-150			
cis-Nonachlor	0.090	0.006	0.020	ug/L	0.1200		74.7	50-150			
Dieldrin	0.088	0.006	0.020	ug/L	0.1200		73.3	50-150			
Endosulfan I	0.083	0.006	0.020	ug/L	0.1200		69.3	50-150			
Endrin	0.090	0.006	0.020	ug/L	0.1200		74.7	50-150			
gamma-BHC (Lindane)	0.080	0.006	0.020	ug/L	0.1200		66.3	50-150			
gamma-Chlordane	0.078	0.006	0.020	ug/L	0.1200		65.3	50-150			
Heptachlor	0.080	0.006	0.020	ug/L	0.1200		66.3	50-150			
Heptachlor epoxide	0.082	0.006	0.020	ug/L	0.1200		68.7	50-150			
Oxychlordane	0.083	0.006	0.020	ug/L	0.1200		69.0	50-150			
trans-Nonachlor	0.083	0.006	0.020	ug/L	0.1200		69.3	50-150			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*0.156*			*ug/L*	*0.2400*		*65.0*	*30-150*			
Surrogate: Dibutyl Chlorendate	*0.228*			*ug/L*	*0.2400*		*94.8*	*30-150*			

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Organochlorine Pesticides by EPA Method 8081A - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601055 - EPA 3535A											
LCS (B601055-BS3)					Prepared: 21-Jan-2016 Analyzed: 08-Feb-2016						
Toxaphene	1.10	0.060	0.200	ug/L	1.500		73.1	50-150			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*0.143*			*ug/L*	*0.2400*		*59.5*	*30-150*			
Surrogate: Dibutyl Chlorendate	*0.211*			*ug/L*	*0.2400*		*88.0*	*30-150*			
LCS Dup (B601055-BSD3)					Prepared: 21-Jan-2016 Analyzed: 08-Feb-2016						
Toxaphene	1.32	0.060	0.200	ug/L	1.500		87.7	50-150	18.2	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*0.166*			*ug/L*	*0.2400*		*69.2*	*30-150*			
Surrogate: Dibutyl Chlorendate	*0.235*			*ug/L*	*0.2400*		*97.8*	*30-150*			
Duplicate (B601055-DUP1)		**Source: 6011901-01**			Prepared: 21-Jan-2016 Analyzed: 08-Feb-2016						
4,4'-DDT	ND	0.001	0.005	ug/L		ND				30	U
Aldrin	ND	0.001	0.005	ug/L		ND				30	U
alpha-Chlordane	ND	0.001	0.005	ug/L		ND				30	U
cis-Nonachlor	ND	0.001	0.005	ug/L		ND				30	U
Dieldrin	ND	0.001	0.005	ug/L		ND				30	U
Endosulfan I	ND	0.001	0.005	ug/L		ND				30	U
Endosulfan II	ND	0.001	0.005	ug/L		ND				30	U
Endrin	ND	0.001	0.005	ug/L		ND				30	U
gamma-BHC (Lindane)	ND	0.001	0.005	ug/L		ND				30	U
gamma-Chlordane	ND	0.001	0.005	ug/L		ND				30	U
Heptachlor	ND	0.001	0.005	ug/L		ND				30	U
Heptachlor epoxide	ND	0.001	0.005	ug/L		ND				30	U
Oxychlordane	ND	0.001	0.005	ug/L		ND				30	U
Toxaphene	ND	0.001	0.200	ug/L		ND				30	U
trans-Nonachlor	ND	0.001	0.005	ug/L		ND				30	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*0.144*			*ug/L*	*0.2400*		*60.2*	*30-150*			
Surrogate: Dibutyl Chlorendate	*0.186*			*ug/L*	*0.2400*		*77.3*	*30-150*			

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Organochlorine Pesticides by EPA Method 8081A - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601055 - EPA 3535A											
Matrix Spike (B601055-MS1)		**Source: 6011901-01**			Prepared: 21-Jan-2016 Analyzed: 08-Feb-2016						
4,4'-DDT	0.100	0.006	0.020	ug/L	0.1200	ND	83.7	50-150			
Aldrin	0.084	0.006	0.020	ug/L	0.1200	ND	69.7	50-150			
alpha-Chlordane	0.088	0.006	0.020	ug/L	0.1200	ND	73.0	50-150			
cis-Nonachlor	0.098	0.006	0.020	ug/L	0.1200	ND	82.0	30-150			
Dieldrin	0.095	0.006	0.020	ug/L	0.1200	ND	79.3	50-150			
Endosulfan I	0.090	0.006	0.020	ug/L	0.1200	ND	75.0	50-150			
Endrin	0.096	0.006	0.020	ug/L	0.1200	ND	80.3	50-150			
gamma-BHC (Lindane)	0.092	0.006	0.020	ug/L	0.1200	ND	76.7	50-150			
gamma-Chlordane	0.086	0.006	0.020	ug/L	0.1200	ND	71.7	50-150			
Heptachlor	0.087	0.006	0.020	ug/L	0.1200	ND	72.7	50-150			
Heptachlor epoxide	0.087	0.006	0.020	ug/L	0.1200	ND	72.7	50-150			
Oxychlordane	0.091	0.006	0.020	ug/L	0.1200	ND	75.7	50-150			
trans-Nonachlor	0.092	0.006	0.020	ug/L	0.1200	ND	76.3	50-150			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*0.154*			*ug/L*	*0.2400*		*64.3*	*30-150*			
Surrogate: Dibutyl Chlorendate	*0.229*			*ug/L*	*0.2400*		*95.3*	*30-150*			
Matrix Spike Dup (B601055-MSD1)		**Source: 6011901-01**			Prepared: 21-Jan-2016 Analyzed: 08-Feb-2016						
4,4'-DDT	0.103	0.006	0.020	ug/L	0.1200	ND	85.7	50-150	2.36	30	
Aldrin	0.082	0.006	0.020	ug/L	0.1200	ND	68.0	50-150	2.42	30	
alpha-Chlordane	0.087	0.006	0.020	ug/L	0.1200	ND	72.3	50-150	0.917	30	
cis-Nonachlor	0.097	0.006	0.020	ug/L	0.1200	ND	81.0	30-150	1.23	30	
Dieldrin	0.094	0.006	0.020	ug/L	0.1200	ND	78.7	50-150	0.844	30	
Endosulfan I	0.088	0.006	0.020	ug/L	0.1200	ND	73.7	50-150	1.79	30	
Endrin	0.096	0.006	0.020	ug/L	0.1200	ND	80.0	50-150	0.416	30	
gamma-BHC (Lindane)	0.091	0.006	0.020	ug/L	0.1200	ND	75.7	50-150	1.31	30	
gamma-Chlordane	0.089	0.006	0.020	ug/L	0.1200	ND	74.3	50-150	3.65	30	
Heptachlor	0.088	0.006	0.020	ug/L	0.1200	ND	73.7	50-150	1.37	30	
Heptachlor epoxide	0.086	0.006	0.020	ug/L	0.1200	ND	71.3	50-150	1.85	30	
Oxychlordane	0.090	0.006	0.020	ug/L	0.1200	ND	75.0	50-150	0.885	30	
trans-Nonachlor	0.091	0.006	0.020	ug/L	0.1200	ND	75.7	50-150	0.877	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*0.159*			*ug/L*	*0.2400*		*66.3*	*30-150*			
Surrogate: Dibutyl Chlorendate	*0.234*			*ug/L*	*0.2400*		*97.7*	*30-150*			

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Organochlorine Pesticides by EPA Method 8081A - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
Blank (B601092-BLK1)					Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
4,4'-DDD	ND	0.33	1.00	ug/kg wet							U
4,4'-DDE	ND	0.33	1.00	ug/kg wet							U
4,4'-DDT	ND	0.33	1.00	ug/kg wet							U
Aldrin	ND	0.33	1.00	ug/kg wet							U
alpha-BHC	ND	0.33	1.00	ug/kg wet							U
alpha-Chlordane	ND	0.33	1.00	ug/kg wet							U
beta-BHC	ND	0.33	1.00	ug/kg wet							U
cis-Nonachlor	ND	0.33	1.00	ug/kg wet							U
delta-BHC	ND	0.33	1.00	ug/kg wet							U
Dieldrin	ND	0.33	1.00	ug/kg wet							U
Endosulfan I	ND	0.33	1.00	ug/kg wet							U
Endosulfan II	ND	0.33	1.00	ug/kg wet							U
Endosulfan sulfate	ND	0.33	1.00	ug/kg wet							U
Endrin	ND	0.33	1.00	ug/kg wet							U
Endrin aldehyde	ND	0.33	1.00	ug/kg wet							U
Endrin ketone	ND	0.33	1.00	ug/kg wet							U
gamma-BHC (Lindane)	ND	0.33	1.00	ug/kg wet							U
gamma-Chlordane	ND	0.33	1.00	ug/kg wet							U
Heptachlor	ND	0.33	1.00	ug/kg wet							U
Heptachlor epoxide	ND	0.33	1.00	ug/kg wet							U
Hexachlorobenzene	ND	0.33	1.00	ug/kg wet							U
Methoxychlor	ND	0.33	1.00	ug/kg wet							U
Oxychlordane	ND	0.33	1.00	ug/kg wet							U
Toxaphene	ND	7.00	20.0	ug/kg wet							U
trans-Nonachlor	ND	0.33	1.00	ug/kg wet							U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*4.36*			*ug/kg wet*	*8.000*		*54.5*	*40-125*			
Surrogate: Dibutyl Chlorendate	*5.72*			*ug/kg wet*	*8.000*		*71.5*	*45-135*			

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Organochlorine Pesticides by EPA Method 8081A - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
LCS (B601092-BS1)					Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
Toxaphene	49.6	7.00	20.0	ug/kg wet	66.67		74.4	50-125			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*4.20*			*ug/kg wet*	*8.000*		*52.5*	*40-125*			
Surrogate: Dibutyl Chlorendate	*6.50*			*ug/kg wet*	*8.000*		*81.2*	*50-125*			
LCS (B601092-BS2)					Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
4,4'-DDD	4.6	0.33	1.00	ug/kg wet	6.000		77.3	40-125			
4,4'-DDE	4.8	0.33	1.00	ug/kg wet	6.000		79.7	40-125			
4,4'-DDT	4.7	0.33	1.00	ug/kg wet	6.000		78.3	45-125			
Aldrin	3.9	0.33	1.00	ug/kg wet	6.000		65.0	45-125			
alpha-BHC	3.9	0.33	1.00	ug/kg wet	6.000		65.3	30-125			
alpha-Chlordane	4.3	0.33	1.00	ug/kg wet	6.000		72.3	40-120			
beta-BHC	3.9	0.33	1.00	ug/kg wet	6.000		64.7	40-100			
cis-Nonachlor	4.6	0.33	1.00	ug/kg wet	6.000		77.0	45-125			
delta-BHC	2.8	0.33	1.00	ug/kg wet	6.000		47.0	45-130			
Dieldrin	4.6	0.33	1.00	ug/kg wet	6.000		77.0	45-125			
Endosulfan I	4.2	0.33	1.00	ug/kg wet	6.000		70.0	30-130			
Endrin	4.7	0.33	1.00	ug/kg wet	6.000		78.3	45-125			
gamma-BHC (Lindane)	3.9	0.33	1.00	ug/kg wet	6.000		65.7	30-125			
gamma-Chlordane	4.2	0.33	1.00	ug/kg wet	6.000		70.0	45-125			
Heptachlor	4.2	0.33	1.00	ug/kg wet	6.000		70.0	45-125			
Heptachlor epoxide	4.2	0.33	1.00	ug/kg wet	6.000		69.3	40-125			
Methoxychlor	4.5	0.33	1.00	ug/kg wet	6.000		74.3	55-145			
Oxychlordane	4.4	0.33	1.00	ug/kg wet	6.000		72.7	45-125			
trans-Nonachlor	4.6	0.33	1.00	ug/kg wet	6.000		76.0	45-125			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*5.28*			*ug/kg wet*	*8.000*		*66.0*	*40-125*			
Surrogate: Dibutyl Chlorendate	*6.68*			*ug/kg wet*	*8.000*		*83.5*	*50-125*			
LCS Dup (B601092-BSD1)					Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
Toxaphene	44.8	7.00	20.0	ug/kg wet	66.67		67.2	50-125	10.2	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*4.24*			*ug/kg wet*	*8.000*		*53.0*	*40-125*			
Surrogate: Dibutyl Chlorendate	*6.04*			*ug/kg wet*	*8.000*		*75.5*	*50-125*			

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Organochlorine Pesticides by EPA Method 8081A - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
Duplicate (B601092-DUP1)		**Source: 6011801-03**			Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
4,4'-DDD	ND	0.57	1.71	ug/kg dry		ND				30	U
4,4'-DDE	ND	0.57	1.71	ug/kg dry		ND				30	U
4,4'-DDT	ND	0.57	1.71	ug/kg dry		ND				30	U
Aldrin	ND	0.57	1.71	ug/kg dry		ND				30	U
alpha-BHC	ND	0.57	1.71	ug/kg dry		ND				30	U
alpha-Chlordane	ND	0.57	1.71	ug/kg dry		ND				30	U
beta-BHC	ND	0.57	1.71	ug/kg dry		ND				30	U
cis-Nonachlor	ND	0.57	1.71	ug/kg dry		ND				30	U
delta-BHC	ND	0.57	1.71	ug/kg dry		ND				30	U
Dieldrin	ND	0.57	1.71	ug/kg dry		ND				30	U
Endosulfan I	ND	0.57	1.71	ug/kg dry		ND				30	U
Endosulfan II	ND	0.57	1.71	ug/kg dry		ND				30	U
Endosulfan sulfate	ND	0.57	1.71	ug/kg dry		ND				30	U
Endrin	ND	0.57	1.71	ug/kg dry		ND				30	U
Endrin aldehyde	ND	0.57	1.71	ug/kg dry		ND				30	U
Endrin ketone	ND	0.57	1.71	ug/kg dry		ND				30	U
gamma-BHC (Lindane)	ND	0.57	1.71	ug/kg dry		ND				30	U
gamma-Chlordane	ND	0.57	1.71	ug/kg dry		ND				30	U
Heptachlor	ND	0.57	1.71	ug/kg dry		ND				30	U
Heptachlor epoxide	ND	0.57	1.71	ug/kg dry		ND				30	U
Hexachlorobenzene	ND	0.57	1.71	ug/kg dry		ND				30	U
Methoxychlor	ND	0.57	1.71	ug/kg dry		ND				30	U
Oxychlordane	ND	0.57	1.71	ug/kg dry		ND				30	U
Toxaphene	ND	12.0	34.3	ug/kg dry		ND				30	U
trans-Nonachlor	ND	0.57	1.71	ug/kg dry		ND				200	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.97*			*ug/kg dry*	*13.70*		*72.7*	*40-125*			
Surrogate: Dibutyl Chlorendate	*8.97*			*ug/kg dry*	*13.70*		*65.5*	*45-135*			

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Organochlorine Pesticides by EPA Method 8081A - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
Matrix Spike (B601092-MS1)		**Source: 6011801-04**			Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
4,4´-DDD	10.8	0.68	2.07	ug/kg dry	12.43	ND	87.0	40-125			
4,4´-DDE	11.6	0.68	2.07	ug/kg dry	12.43	ND	93.3	40-125			
4,4´-DDT	9.1	0.68	2.07	ug/kg dry	12.43	ND	73.3	45-125			
Aldrin	7.6	0.68	2.07	ug/kg dry	12.43	ND	61.0	35-110			
alpha-BHC	10.2	0.68	2.07	ug/kg dry	12.43	ND	82.0	45-125			
alpha-Chlordane	9.8	0.68	2.07	ug/kg dry	12.43	ND	79.0	50-120			
beta-BHC	8.7	0.68	2.07	ug/kg dry	12.43	ND	70.0	40-100			
cis-Nonachlor	9.7	0.68	2.07	ug/kg dry	12.43	ND	78.0	40-110			
delta-BHC	10.6	0.68	2.07	ug/kg dry	12.43	ND	85.3	50-125			
Dieldrin	9.1	0.68	2.07	ug/kg dry	12.43	ND	73.3	55-125			
Endosulfan I	10.1	0.68	2.07	ug/kg dry	12.43	ND	81.0	10-135			
Endrin	9.8	0.68	2.07	ug/kg dry	12.43	ND	79.0	55-125			
gamma-BHC (Lindane)	9.0	0.68	2.07	ug/kg dry	12.43	ND	72.3	40-125			
gamma-Chlordane	9.7	0.68	2.07	ug/kg dry	12.43	ND	77.7	50-125			
Heptachlor	9.8	0.68	2.07	ug/kg dry	12.43	ND	78.7	50-125			
Heptachlor epoxide	8.9	0.68	2.07	ug/kg dry	12.43	ND	72.0	40-125			
Methoxychlor	9.1	0.68	2.07	ug/kg dry	12.43	ND	73.0	55-145			
Oxychlordane	9.0	0.68	2.07	ug/kg dry	12.43	ND	72.3	40-110			
trans-Nonachlor	10.4	0.68	2.07	ug/kg dry	12.43	ND	83.3	40-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*11.8*			*ug/kg dry*	*16.57*		*71.5*	*40-125*			
Surrogate: Dibutyl Chlorendate	*16.6*			*ug/kg dry*	*16.57*		*100*	*50-125*			
Matrix Spike Dup (B601092-MSD1)		**Source: 6011801-04**			Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
4,4´-DDD	12.1	0.70	2.12	ug/kg dry	12.74	ND	95.3	40-125	11.6	30	
4,4´-DDE	11.3	0.70	2.12	ug/kg dry	12.74	ND	88.7	40-125	2.67	30	
4,4´-DDT	10.5	0.70	2.12	ug/kg dry	12.74	ND	82.3	45-125	14.0	30	
Aldrin	8.4	0.70	2.12	ug/kg dry	12.74	ND	66.0	35-110	10.3	30	
alpha-BHC	9.5	0.70	2.12	ug/kg dry	12.74	ND	74.7	45-125	6.90	30	
alpha-Chlordane	10.7	0.70	2.12	ug/kg dry	12.74	ND	84.3	50-120	8.99	30	
beta-BHC	9.0	0.70	2.12	ug/kg dry	12.74	ND	71.0	40-100	3.88	30	
cis-Nonachlor	10.8	0.70	2.12	ug/kg dry	12.74	ND	85.0	40-110	11.0	30	
delta-BHC	10.7	0.70	2.12	ug/kg dry	12.74	ND	83.7	50-125	0.489	30	
Dieldrin	10.0	0.70	2.12	ug/kg dry	12.74	ND	78.7	55-125	9.47	30	
Endosulfan I	10.7	0.70	2.12	ug/kg dry	12.74	ND	84.0	10-135	6.10	30	
Endrin	10.7	0.70	2.12	ug/kg dry	12.74	ND	84.3	55-125	8.99	30	
gamma-BHC (Lindane)	8.4	0.70	2.12	ug/kg dry	12.74	ND	66.0	40-125	6.70	30	
gamma-Chlordane	10.6	0.70	2.12	ug/kg dry	12.74	ND	83.3	50-125	9.50	30	
Heptachlor	10.1	0.70	2.12	ug/kg dry	12.74	ND	79.7	50-125	3.72	30	
Heptachlor epoxide	9.9	0.70	2.12	ug/kg dry	12.74	ND	77.3	40-125	9.60	30	
Methoxychlor	9.9	0.70	2.12	ug/kg dry	12.74	ND	77.7	55-145	8.65	30	
Oxychlordane	9.8	0.70	2.12	ug/kg dry	12.74	ND	77.0	40-110	8.71	30	

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Organochlorine Pesticides by EPA Method 8081A - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
Matrix Spike Dup (B601092-MSD1)		**Source: 6011801-04**			Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
trans-Nonachlor	11.6	0.70	2.12	ug/kg dry	12.74	ND	91.0	40-110	11.3	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*10.3*			*ug/kg dry*	*16.98*		*60.8*	*40-125*			
Surrogate: Dibutyl Chlorendate	*16.4*			*ug/kg dry*	*16.98*		*96.5*	*50-125*			

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Pentachlorophenol by GC/MS with Selected Ion Monitoring - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601055 - EPA 3535A											
Blank (B601055-BLK1)					Prepared: 21-Jan-2016 Analyzed: 02-Feb-2016						
Pentachlorophenol	ND	1.20	4.00	ug/L							U
Surrogate: 2-Fluorobiphenyl	*2.7*			*ug/L*	*3.600*		*75.9*	*30-150*			
Surrogate: Terphenyl-dl4	*2.6*			*ug/L*	*3.600*		*71.8*	*30-150*			
LCS (B601055-BS2)					Prepared: 21-Jan-2016 Analyzed: 02-Feb-2016						
Pentachlorophenol	1.6	1.20	4.00	ug/L	3.000		52.0	30-150			J
Surrogate: 2-Fluorobiphenyl	*2.5*			*ug/L*	*3.600*		*68.3*	*30-150*			
Surrogate: Terphenyl-dl4	*2.9*			*ug/L*	*3.600*		*79.2*	*30-150*			
Duplicate (B601055-DUP1)		**Source: 6011901-01**			Prepared: 21-Jan-2016 Analyzed: 02-Feb-2016						
Pentachlorophenol	ND	1.20	4.00	ug/L		ND				30	U
Surrogate: 2-Fluorobiphenyl	*2.6*			*ug/L*	*3.600*		*71.2*	*30-150*			
Surrogate: Terphenyl-dl4	*3.1*			*ug/L*	*3.600*		*85.1*	*30-150*			
Matrix Spike (B601055-MS2)		**Source: 6011901-01**			Prepared: 21-Jan-2016 Analyzed: 02-Feb-2016						
Pentachlorophenol	1.4	1.20	4.00	ug/L	3.000	ND	45.9	30-150			J
Matrix Spike Dup (B601055-MSD1)		**Source: 6011901-01**			Prepared: 21-Jan-2016 Analyzed: 02-Feb-2016						
Surrogate: 2-Fluorobiphenyl	*2.9*			*ug/L*	*3.600*		*81.2*	*30-150*			
Surrogate: Terphenyl-dl4	*3.3*			*ug/L*	*3.600*		*91.3*	*30-150*			
Matrix Spike Dup (B601055-MSD2)		**Source: 6011901-01**			Prepared: 21-Jan-2016 Analyzed: 02-Feb-2016						
Pentachlorophenol	1.5	1.20	4.00	ug/L	3.000	ND	50.0	30-150	8.62	30	J
Batch B601092 - EPA 3545											
Blank (B601092-BLK1)					Prepared: 28-Jan-2016 Analyzed: 02-Feb-2016						
Pentachlorophenol	ND	10.5	30.0	ug/kg wet							U
Surrogate: 2-Fluorobiphenyl	*97*			*ug/kg wet*	*120.0*		*80.5*	*40-120*			
Surrogate: Terphenyl-dl4	*75*			*ug/kg wet*	*120.0*		*62.2*	*40-120*			

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Pentachlorophenol by GC/MS with Selected Ion Monitoring - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
LCS (B601092-BS3)					Prepared: 28-Jan-2016 Analyzed: 02-Feb-2016						
Pentachlorophenol	ND	10.5	30.0	ug/kg wet	20.00			25-130			QM-08, U
Surrogate: 2-Fluorobiphenyl	*120*			*ug/kg wet*	*120.0*		*97.0*	*40-120*			
Surrogate: Terphenyl-dl4	*96*			*ug/kg wet*	*120.0*		*79.7*	*40-120*			
Duplicate (B601092-DUP1)		**Source: 6011801-03**			Prepared: 28-Jan-2016 Analyzed: 02-Feb-2016						
Pentachlorophenol	ND	18.0	51.4	ug/kg dry		ND				30	U
Surrogate: 2-Fluorobiphenyl	*160*			*ug/kg dry*	*205.5*		*79.7*	*40-120*			
Surrogate: Terphenyl-dl4	*130*			*ug/kg dry*	*205.5*		*62.0*	*40-120*			
Matrix Spike (B601092-MS2)		**Source: 6011801-01**			Prepared: 28-Jan-2016 Analyzed: 02-Feb-2016						
Pentachlorophenol	54	18.2	51.9	ug/kg dry	173.0	ND	31.0	25-130			
Surrogate: 2-Fluorobiphenyl	*190*			*ug/kg dry*	*207.6*		*92.2*	*40-120*			
Surrogate: Terphenyl-dl4	*140*			*ug/kg dry*	*207.6*		*67.3*	*40-120*			
Matrix Spike Dup (B601092-MSD2)		**Source: 6011801-01**			Prepared: 28-Jan-2016 Analyzed: 02-Feb-2016						
Pentachlorophenol	23	17.6	50.3	ug/kg dry	167.8	ND	14.0	25-130	78.4	30	Q, RPD-06, J
Surrogate: 2-Fluorobiphenyl	*180*			*ug/kg dry*	*201.4*		*88.3*	*40-120*			
Surrogate: Terphenyl-dl4	*150*			*ug/kg dry*	*201.4*		*74.7*	*40-120*			
Batch B602037 - EPA 3545											
Blank (B602037-BLK1)					Prepared: 03-Feb-2016 Analyzed: 05-Feb-2016						
Pentachlorophenol	ND	10.5	30.0	ug/kg wet							U
Surrogate: 2-Fluorobiphenyl	*110*			*ug/kg wet*	*120.0*		*91.2*	*40-120*			
Surrogate: Terphenyl-dl4	*120*			*ug/kg wet*	*120.0*		*101*	*40-120*			
LCS (B602037-BS1)					Prepared: 03-Feb-2016 Analyzed: 05-Feb-2016						
Pentachlorophenol	44	10.5	30.0	ug/kg wet	100.0		43.8	25-130			
Surrogate: 2-Fluorobiphenyl	*110*			*ug/kg wet*	*120.0*		*90.5*	*40-120*			
Surrogate: Terphenyl-dl4	*110*			*ug/kg wet*	*120.0*		*88.8*	*40-120*			

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Pentachlorophenol by GC/MS with Selected Ion Monitoring - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B602037 - EPA 3545											
Matrix Spike (B602037-MS1)		**Source: 6011801-02**			Prepared: 03-Feb-2016 Analyzed: 05-Feb-2016						
Pentachlorophenol	85	13.8	39.4	ug/kg dry	131.4	ND	64.8	25-130			
Surrogate: 2-Fluorobiphenyl	*140*			*ug/kg dry*	*157.6*		*88.7*	*40-120*			
Surrogate: Terphenyl-dl4	*180*			*ug/kg dry*	*157.6*		*112*	*40-120*			
Matrix Spike Dup (B602037-MSD1)		**Source: 6011801-02**			Prepared: 03-Feb-2016 Analyzed: 05-Feb-2016						
Pentachlorophenol	79	14.3	40.7	ug/kg dry	135.8	ND	58.0	25-130	7.75	200	
Surrogate: 2-Fluorobiphenyl	*140*			*ug/kg dry*	*163.0*		*87.3*	*40-120*			
Surrogate: Terphenyl-dl4	*130*			*ug/kg dry*	*163.0*		*81.5*	*40-120*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Nutrients - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601063 - Default Prep Metals											
Blank (B601063-BLK1)					Prepared & Analyzed: 21-Jan-2016						
Ammonia as N	ND	0.00200	0.0100	mg/L							U
LCS (B601063-BS1)					Prepared & Analyzed: 21-Jan-2016						
Ammonia as N	0.123	0.00200	0.0100	mg/L	0.1200		102	80-120			
Calibration Check (B601063-CCV1)					Prepared & Analyzed: 21-Jan-2016						
Ammonia as N	0.509	0.00200	0.0100	mg/L	0.5000		102	90-110			
Duplicate (B601063-DUP1)		**Source: 6011801-05**			Prepared & Analyzed: 21-Jan-2016						
Ammonia as N	0.114	0.00200	0.0100	mg/L		0.109			4.48	30	
Matrix Spike (B601063-MS1)		**Source: 6011801-05**			Prepared & Analyzed: 21-Jan-2016						
Ammonia as N	0.228	0.00200	0.0100	mg/L	0.1200	0.109	99.2	80-120			
Batch B601064 - Default Prep Metals											
Blank (B601064-BLK1)					Prepared & Analyzed: 21-Jan-2016						
Ammonia as N	ND	0.00200	0.0100	mg/L							U
LCS (B601064-BS1)					Prepared & Analyzed: 21-Jan-2016						
Ammonia as N	0.123	0.00200	0.0100	mg/L	0.1200		102	80-120			
Calibration Check (B601064-CCV1)					Prepared & Analyzed: 21-Jan-2016						
Ammonia as N	0.510	0.00200	0.0100	mg/L	0.5000		102	90-110			
Duplicate (B601064-DUP1)		**Source: 6011901-01**			Prepared & Analyzed: 21-Jan-2016						
Ammonia as N	0.793	0.00200	0.0100	mg/L		0.791			0.253	30	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Nutrients - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601064 - Default Prep Metals											
Matrix Spike (B601064-MS1)		**Source: 6011901-01**			Prepared & Analyzed: 21-Jan-2016						
Ammonia as N	0.899	0.00200	0.0100	mg/L	0.1200	0.791	90.0	80-120			
Batch B601075 - Default Prep Metals											
Blank (B601075-BLK1)					Prepared & Analyzed: 26-Jan-2016						
Ammonia as N	ND	0.0300	0.100	mg/kg							U
LCS (B601075-BS1)					Prepared & Analyzed: 26-Jan-2016						
Ammonia as N	1.20	0.0300	0.100	mg/kg	1.200		100	80-120			
Calibration Blank (B601075-CCB1)					Prepared: 26-Jan-2016 Analyzed: 29-Jan-2016						
Ammonia as N	-5.43	0.03	0.1	mg/kg							U
Calibration Check (B601075-CCV1)					Prepared & Analyzed: 26-Jan-2016						
Ammonia as N	5.01	0.0300	0.100	mg/kg	5.000		100	0-200			J
Duplicate (B601075-DUP1)		**Source: 6011801-01**			Prepared & Analyzed: 26-Jan-2016						
Ammonia as N	3.44	0.00861	0.0287	mg/kg		3.93			13.2	20	
Matrix Spike (B601075-MS1)		**Source: 6011801-01**			Prepared & Analyzed: 26-Jan-2016						
Ammonia as N	10.7	0.00861	0.0287	mg/kg	6.886	3.93	97.9	80-120			

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Polychlorinated Biphenyls (as Congeners) by EPA Method 8082 - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
Blank (B601092-BLK1)					Prepared: 28-Jan-2016 Analyzed: 10-Feb-2016						
PCB 101	ND	0.2	0.4	ug/kg wet							U
PCB 105	ND	0.2	0.4	ug/kg wet							U
PCB 118	ND	0.2	0.4	ug/kg wet							U
PCB 126	ND	0.2	0.4	ug/kg wet							U
PCB 128	ND	0.2	0.4	ug/kg wet							U
PCB 138	ND	0.2	0.4	ug/kg wet							U
PCB 153	ND	0.2	0.4	ug/kg wet							U
PCB 156	ND	0.2	0.4	ug/kg wet							U
PCB 169	ND	0.2	0.4	ug/kg wet							U
PCB 170	ND	0.2	0.4	ug/kg wet							U
PCB 18	ND	0.2	0.4	ug/kg wet							U
PCB 180	ND	0.2	0.4	ug/kg wet							U
PCB 183	ND	0.2	0.4	ug/kg wet							U
PCB 184	ND	0.2	0.4	ug/kg wet							U
PCB 187	ND	0.2	0.4	ug/kg wet							U
PCB 195	ND	0.2	0.4	ug/kg wet							U
PCB 206	ND	0.2	0.4	ug/kg wet							U
PCB 209	ND	0.2	0.4	ug/kg wet							U
PCB 28	ND	0.2	0.4	ug/kg wet							U
PCB 44	ND	0.2	0.4	ug/kg wet							U
PCB 49	ND	0.2	0.4	ug/kg wet							U
PCB 52	ND	0.2	0.4	ug/kg wet							U
PCB 66	ND	0.2	0.4	ug/kg wet							U
PCB 77	ND	0.2	0.4	ug/kg wet							U
PCB 8	ND	0.2	0.4	ug/kg wet							U
PCB 87	ND	0.2	0.4	ug/kg wet							U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*3.00*			*ug/kg wet*	*8.000*		*37.5*	*30-150*			
Surrogate: Dibutyl Chlorendate	*8.48*			*ug/kg wet*	*8.000*		*106*	*30-150*			

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Polychlorinated Biphenyls (as Congeners) by EPA Method 8082 - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
LCS (B601092-BS4)					Prepared: 28-Jan-2016 Analyzed: 10-Feb-2016						
PCB 101	5.2	0.2	0.4	ug/kg wet	6.000		87.0	50-150			
PCB 138	6.3	0.2	0.4	ug/kg wet	6.000		105	50-150			
PCB 153	5.6	0.2	0.4	ug/kg wet	6.000		93.7	50-150			
PCB 170	7.5	0.2	0.4	ug/kg wet	6.000		125	50-150			
PCB 18	4.2	0.2	0.4	ug/kg wet	6.000		69.7	50-150			
PCB 180	6.7	0.2	0.4	ug/kg wet	6.000		111	50-150			
PCB 183	6.8	0.2	0.4	ug/kg wet	6.000		113	50-150			
PCB 187	5.9	0.2	0.4	ug/kg wet	6.000		99.0	50-150			
PCB 206	6.9	0.2	0.4	ug/kg wet	6.000		115	50-150			
PCB 44	4.6	0.2	0.4	ug/kg wet	6.000		77.0	50-150			
PCB 52	4.9	0.2	0.4	ug/kg wet	6.000		81.0	50-150			
PCB 66	5.0	0.2	0.4	ug/kg wet	6.000		82.7	50-150			
PCB 87	4.6	0.2	0.4	ug/kg wet	6.000		76.0	50-150			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*3.74*			*ug/kg wet*	*8.000*		*46.8*	*30-150*			
Surrogate: Dibutyl Chlorendate	*11.3*			*ug/kg wet*	*8.000*		*142*	*30-150*			
Duplicate (B601092-DUP1)		**Source: 6011801-03**			Prepared: 28-Jan-2016 Analyzed: 10-Feb-2016						
PCB 101	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 105	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 118	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 126	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 128	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 138	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 153	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 156	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 169	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 170	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 18	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 180	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 183	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 184	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 187	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 195	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 206	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 209	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 28	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 44	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 49	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 52	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 66	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 77	ND	0.3	0.7	ug/kg dry		ND				30	U

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Polychlorinated Biphenyls (as Congeners) by EPA Method 8082 - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
Duplicate (B601092-DUP1)		**Source: 6011801-03**			Prepared: 28-Jan-2016 Analyzed: 10-Feb-2016						
PCB 8	ND	0.3	0.7	ug/kg dry		ND				30	U
PCB 87	ND	0.3	0.7	ug/kg dry		ND				30	U
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*6.17*			*ug/kg dry*	*13.70*		*45.0*	*30-150*			
Surrogate: Dibutyl Chlorendate	*11.2*			*ug/kg dry*	*13.70*		*82.0*	*30-150*			
Matrix Spike (B601092-MS3)		**Source: 6011801-02**			Prepared: 28-Jan-2016 Analyzed: 10-Feb-2016						
PCB 101	6.6	0.2	0.5	ug/kg dry	8.042	ND	82.3	50-150			
PCB 138	8.4	0.2	0.5	ug/kg dry	8.042	ND	105	50-150			
PCB 153	7.5	0.2	0.5	ug/kg dry	8.042	ND	93.0	50-150			
PCB 170	10.2	0.2	0.5	ug/kg dry	8.042	ND	127	50-150			
PCB 18	4.9	0.2	0.5	ug/kg dry	8.042	ND	61.0	50-150			
PCB 180	8.6	0.2	0.5	ug/kg dry	8.042	ND	106	50-150			
PCB 183	8.4	0.2	0.5	ug/kg dry	8.042	ND	105	50-150			
PCB 187	7.8	0.2	0.5	ug/kg dry	8.042	ND	96.7	50-150			
PCB 206	8.3	0.2	0.5	ug/kg dry	8.042	ND	104	50-150			
PCB 44	7.6	0.2	0.5	ug/kg dry	8.042	ND	95.0	50-150			
PCB 52	5.9	0.2	0.5	ug/kg dry	8.042	ND	73.0	50-150			
PCB 66	6.5	0.2	0.5	ug/kg dry	8.042	ND	80.7	50-150			
PCB 87	6.1	0.2	0.5	ug/kg dry	8.042	ND	75.7	50-150			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*4.64*			*ug/kg dry*	*10.72*		*43.2*	*30-150*			
Surrogate: Dibutyl Chlorendate	*11.0*			*ug/kg dry*	*10.72*		*103*	*30-150*			
Matrix Spike Dup (B601092-MSD3)		**Source: 6011801-02**			Prepared: 28-Jan-2016 Analyzed: 10-Feb-2016						
PCB 101	6.7	0.2	0.5	ug/kg dry	8.026	ND	83.0	50-150	0.610	200	
PCB 138	8.3	0.2	0.5	ug/kg dry	8.026	ND	104	50-150	1.47	200	
PCB 153	7.3	0.2	0.5	ug/kg dry	8.026	ND	91.3	50-150	2.00	200	
PCB 170	10.0	0.2	0.5	ug/kg dry	8.026	ND	124	50-150	2.32	200	
PCB 18	4.7	0.2	0.5	ug/kg dry	8.026	ND	58.0	50-150	5.24	200	
PCB 180	8.3	0.2	0.5	ug/kg dry	8.026	ND	104	50-150	2.42	200	
PCB 183	8.3	0.2	0.5	ug/kg dry	8.026	ND	103	50-150	1.80	200	
PCB 187	7.5	0.2	0.5	ug/kg dry	8.026	ND	94.0	50-150	2.99	200	
PCB 206	8.3	0.2	0.5	ug/kg dry	8.026	ND	104	50-150	0.196	200	
PCB 44	5.7	0.2	0.5	ug/kg dry	8.026	ND	71.3	50-150	28.6	200	
PCB 52	5.7	0.2	0.5	ug/kg dry	8.026	ND	71.3	50-150	2.51	200	
PCB 66	6.6	0.2	0.5	ug/kg dry	8.026	ND	82.3	50-150	1.85	200	
PCB 87	5.9	0.2	0.5	ug/kg dry	8.026	ND	74.0	50-150	2.42	200	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*4.74*			*ug/kg dry*	*10.70*		*44.2*	*30-150*			
Surrogate: Dibutyl Chlorendate	*13.5*			*ug/kg dry*	*10.70*		*126*	*30-150*			

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USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
Blank (B601092-BLK1)					Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
1-Methylnaphthalene	ND	3.00	9.00	ug/kg wet							U
2-Methylnaphthalene	ND	3.00	9.00	ug/kg wet							U
Acenaphthene	ND	3.00	9.00	ug/kg wet							U
Acenaphthylene	ND	3.00	9.00	ug/kg wet							U
Anthracene	ND	3.00	9.00	ug/kg wet							U
Benzo (a) anthracene	ND	3.00	9.00	ug/kg wet							U
Benzo (a) pyrene	ND	3.00	9.00	ug/kg wet							U
Benzo (b) fluoranthene	ND	3.00	9.00	ug/kg wet							U
Benzo (g,h,i) perylene	ND	3.00	9.00	ug/kg wet							U
Benzo (k) fluoranthene	ND	3.00	9.00	ug/kg wet							U
Chrysene	ND	3.00	9.00	ug/kg wet							U
Dibenz (a,h) anthracene	ND	3.00	9.00	ug/kg wet							U
Fluoranthene	ND	3.00	9.00	ug/kg wet							U
Fluorene	ND	3.00	9.00	ug/kg wet							U
Indeno (1,2,3-cd) pyrene	ND	3.00	9.00	ug/kg wet							U
Naphthalene	ND	3.00	9.00	ug/kg wet							U
Phenanthrene	ND	3.00	9.00	ug/kg wet							U
Pyrene	ND	3.00	9.00	ug/kg wet							U
Surrogate: 2-Fluorobiphenyl	*78*			*ug/kg wet*	*120.0*		*65.4*	*40-105*			
Surrogate: Terphenyl-dl4	*92*			*ug/kg wet*	*120.0*		*76.5*	*30-125*			
LCS (B601092-BS3)					Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
1-Methylnaphthalene	92.7	3.00	9.00	ug/kg wet	133.3		69.5	40-105			
2-Methylnaphthalene	97.1	3.00	9.00	ug/kg wet	133.3		72.8	40-105			
Acenaphthene	98.4	3.00	9.00	ug/kg wet	133.3		73.8	45-110			
Acenaphthylene	100	3.00	9.00	ug/kg wet	133.3		75.3	45-110			
Anthracene	113	3.00	9.00	ug/kg wet	133.3		84.9	50-115			
Benzo (a) anthracene	133	3.00	9.00	ug/kg wet	133.3		99.5	50-125			
Benzo (a) pyrene	119	3.00	9.00	ug/kg wet	133.3		89.3	50-130			
Benzo (b) fluoranthene	113	3.00	9.00	ug/kg wet	133.3		84.4	45-130			
Benzo (g,h,i) perylene	117	3.00	9.00	ug/kg wet	133.3		87.7	40-125			
Benzo (k) fluoranthene	113	3.00	9.00	ug/kg wet	133.3		84.5	45-130			
Chrysene	112	3.00	9.00	ug/kg wet	133.3		83.7	50-125			
Dibenz (a,h) anthracene	112	3.00	9.00	ug/kg wet	133.3		84.0	40-125			
Fluoranthene	127	3.00	9.00	ug/kg wet	133.3		95.0	50-120			
Fluorene	113	3.00	9.00	ug/kg wet	133.3		84.7	50-110			
Indeno (1,2,3-cd) pyrene	122	3.00	9.00	ug/kg wet	133.3		91.3	40-125			
Naphthalene	91.1	3.00	9.00	ug/kg wet	133.3		68.3	40-105			
Phenanthrene	126	3.00	9.00	ug/kg wet	133.3		94.8	50-130			
Pyrene	108	3.00	9.00	ug/kg wet	133.3		80.8	45-125			

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
LCS (B601092-BS3)					Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
Surrogate: 2-Fluorobiphenyl	*92*			*ug/kg wet*	*120.0*		*76.8*	*40-105*			
Surrogate: Terphenyl-dl4	*120*			*ug/kg wet*	*120.0*		*102*	*30-125*			
Duplicate (B601092-DUP1)		**Source: 6011801-03**			Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
1-Methylnaphthalene	ND	5.14	15.4	ug/kg dry		ND				30	U
2-Methylnaphthalene	ND	5.14	15.4	ug/kg dry		ND				30	U
Acenaphthene	ND	5.14	15.4	ug/kg dry		ND				30	U
Acenaphthylene	ND	5.14	15.4	ug/kg dry		ND				30	U
Anthracene	ND	5.14	15.4	ug/kg dry		ND				30	U
Benzo (a) anthracene	ND	5.14	15.4	ug/kg dry		ND				30	U
Benzo (a) pyrene	ND	5.14	15.4	ug/kg dry		ND				30	U
Benzo (b) fluoranthene	ND	5.14	15.4	ug/kg dry		ND				30	U
Benzo (g,h,i) perylene	ND	5.14	15.4	ug/kg dry		ND				30	U
Benzo (k) fluoranthene	ND	5.14	15.4	ug/kg dry		ND				30	U
Chrysene	ND	5.14	15.4	ug/kg dry		ND				30	U
Dibenz (a,h) anthracene	ND	5.14	15.4	ug/kg dry		ND				30	U
Fluoranthene	6.53	5.14	15.4	ug/kg dry		7.23			10.2	30	J
Fluorene	ND	5.14	15.4	ug/kg dry		ND				30	U
Indeno (1,2,3-cd) pyrene	ND	5.14	15.4	ug/kg dry		ND				30	U
Naphthalene	ND	5.14	15.4	ug/kg dry		ND				30	U
Phenanthrene	ND	5.14	15.4	ug/kg dry		5.33				30	U
Pyrene	9.23	5.14	15.4	ug/kg dry		7.12			25.9	30	J
Surrogate: 2-Fluorobiphenyl	*110*			*ug/kg dry*	*205.5*		*54.3*	*40-105*			
Surrogate: Terphenyl-dl4	*130*			*ug/kg dry*	*205.5*		*64.6*	*30-125*			
Matrix Spike (B601092-MS2)		**Source: 6011801-01**			Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
1-Methylnaphthalene	132	5.19	15.6	ug/kg dry	230.7	ND	57.3	40-105			
2-Methylnaphthalene	137	5.19	15.6	ug/kg dry	230.7	ND	59.3	40-105			
Acenaphthene	148	5.19	15.6	ug/kg dry	230.7	ND	64.2	45-110			
Acenaphthylene	151	5.19	15.6	ug/kg dry	230.7	ND	65.3	45-110			
Anthracene	192	5.19	15.6	ug/kg dry	230.7	ND	83.0	50-115			
Benzo (a) anthracene	219	5.19	15.6	ug/kg dry	230.7	5.63	92.6	50-125			
Benzo (a) pyrene	201	5.19	15.6	ug/kg dry	230.7	ND	87.0	50-130			
Benzo (b) fluoranthene	188	5.19	15.6	ug/kg dry	230.7	7.12	78.5	45-130			
Benzo (g,h,i) perylene	201	5.19	15.6	ug/kg dry	230.7	5.81	84.7	40-125			
Benzo (k) fluoranthene	186	5.19	15.6	ug/kg dry	230.7	5.72	78.0	45-130			
Chrysene	191	5.19	15.6	ug/kg dry	230.7	6.18	80.1	50-125			
Dibenz (a,h) anthracene	194	5.19	15.6	ug/kg dry	230.7	ND	84.1	40-125			
Fluoranthene	250	5.19	15.6	ug/kg dry	230.7	11.7	103	50-120			
Fluorene	211	5.19	15.6	ug/kg dry	230.7	ND	91.3	50-110			
Indeno (1,2,3-cd) pyrene	206	5.19	15.6	ug/kg dry	230.7	ND	89.2	40-125			

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601092 - EPA 3545											
Matrix Spike (B601092-MS2)		**Source: 6011801-01**			Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
Naphthalene	131	5.19	15.6	ug/kg dry	230.7	ND	57.0	40-105			
Phenanthrene	191	5.19	15.6	ug/kg dry	230.7	6.77	79.8	50-130			
Pyrene	174	5.19	15.6	ug/kg dry	230.7	14.1	69.5	45-125			
Surrogate: 2-Fluorobiphenyl	*130*			*ug/kg dry*	*207.6*		*62.2*	*40-105*			
Surrogate: Terphenyl-dl4	*180*			*ug/kg dry*	*207.6*		*88.9*	*30-125*			
Matrix Spike Dup (B601092-MSD1)		**Source: 6011801-04**			Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
Surrogate: 2-Fluorobiphenyl	*160*			*ug/kg dry*	*254.8*		*64.6*	*40-105*			
Surrogate: Terphenyl-dl4	*180*			*ug/kg dry*	*254.8*		*72.6*	*30-125*			
Matrix Spike Dup (B601092-MSD2)		**Source: 6011801-01**			Prepared: 28-Jan-2016 Analyzed: 08-Feb-2016						
1-Methylnaphthalene	132	5.03	15.1	ug/kg dry	223.7	ND	58.9	40-105	0.401	30	
2-Methylnaphthalene	135	5.03	15.1	ug/kg dry	223.7	ND	60.2	40-105	1.50	30	
Acenaphthene	145	5.03	15.1	ug/kg dry	223.7	ND	64.8	45-110	2.09	30	
Acenaphthylene	144	5.03	15.1	ug/kg dry	223.7	ND	64.5	45-110	4.40	30	
Anthracene	175	5.03	15.1	ug/kg dry	223.7	ND	78.4	50-115	8.84	30	
Benzo (a) anthracene	225	5.03	15.1	ug/kg dry	223.7	5.63	98.2	50-125	2.76	30	
Benzo (a) pyrene	199	5.03	15.1	ug/kg dry	223.7	ND	88.8	50-130	1.01	30	
Benzo (b) fluoranthene	189	5.03	15.1	ug/kg dry	223.7	7.12	81.2	45-130	0.239	30	
Benzo (g,h,i) perylene	190	5.03	15.1	ug/kg dry	223.7	5.81	82.2	40-125	5.89	30	
Benzo (k) fluoranthene	186	5.03	15.1	ug/kg dry	223.7	5.72	80.4	45-130	0.0486	30	
Chrysene	191	5.03	15.1	ug/kg dry	223.7	6.18	82.5	50-125	0.150	30	
Dibenz (a,h) anthracene	189	5.03	15.1	ug/kg dry	223.7	ND	84.3	40-125	2.84	30	
Fluoranthene	204	5.03	15.1	ug/kg dry	223.7	11.7	85.7	50-120	20.6	30	
Fluorene	159	5.03	15.1	ug/kg dry	223.7	ND	71.0	50-110	28.0	30	
Indeno (1,2,3-cd) pyrene	200	5.03	15.1	ug/kg dry	223.7	ND	89.3	40-125	2.99	30	
Naphthalene	132	5.03	15.1	ug/kg dry	223.7	ND	58.8	40-105	0.0826	30	
Phenanthrene	243	5.03	15.1	ug/kg dry	223.7	6.77	106	50-130	24.2	30	
Pyrene	268	5.03	15.1	ug/kg dry	223.7	14.1	114	45-125	42.3	30	RPD-02
Surrogate: 2-Fluorobiphenyl	*130*			*ug/kg dry*	*201.4*		*64.6*	*40-105*			
Surrogate: Terphenyl-dl4	*150*			*ug/kg dry*	*201.4*		*72.6*	*30-125*			

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ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

N-Hexane Extractable Material by Extraction and Gravimetry - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B602042 - * DEFAULT PREP *****											
Blank (B602042-BLK1)					Prepared: 04-Feb-2016 Analyzed: 09-Feb-2016						
Oil and Grease	60.0	25.0	75.0	mg/kg dry wt. wet							
LCS (B602042-BS1)					Prepared: 04-Feb-2016 Analyzed: 09-Feb-2016						
Oil and Grease	1670	25.0	75.0	mg/kg dry wt. wet	2133		78.1	60-110			
Matrix Spike (B602042-MS1)		**Source: 6011801-02RE1**			Prepared: 04-Feb-2016 Analyzed: 09-Feb-2016						
Oil and Grease	2870	24.5	73.5	mg/kg dry wt. dry	2850	549	81.3	40-110			
Matrix Spike Dup (B602042-MSD1)		**Source: 6011801-02RE1**			Prepared: 04-Feb-2016 Analyzed: 09-Feb-2016						
Oil and Grease	2440	24.4	73.3	mg/kg dry wt. dry	2844	549	66.3	40-110	16.3	30	

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USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

AVS and SEM Metals by EPA 6000/7000 Series Methods - Quality Control

ERDC-EL-EP-C

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B601056 - Default Prep Metals											
Blank (B601056-BLK1)					Prepared & Analyzed: 21-Jan-2016						
Acid Volatile Sulfide	ND	0.0100	0.0200	mg/kg							U
LCS (B601056-BS1)					Prepared & Analyzed: 21-Jan-2016						
Acid Volatile Sulfide	2.72	0.0100	0.0200	mg/kg	3.000		90.8	80-120			
Calibration Check (B601056-CCV1)					Prepared & Analyzed: 21-Jan-2016						
Acid Volatile Sulfide	2.09	0.0100	0.0200	mg/kg	2.250		92.9	90-110			
Duplicate (B601056-DUP1)		**Source: 6011801-01**			Prepared & Analyzed: 21-Jan-2016						
Acid Volatile Sulfide	3.80	0.100	0.200	mg/kg		4.04			6.11	20	
Matrix Spike (B601056-MS1)		**Source: 6011801-01**			Prepared & Analyzed: 21-Jan-2016						
Acid Volatile Sulfide	4.09	0.100	0.200	mg/kg	1.645	4.04	2.54	80-120			QM-07
Matrix Spike Dup (B601056-MSD1)		**Source: 6011801-01**			Prepared & Analyzed: 21-Jan-2016						
Acid Volatile Sulfide	4.24	0.100	0.200	mg/kg	1.592	4.04	12.6	80-120	3.81	200	QM-07

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Organotins by Krone et al. - Quality Control

Air Water and Soil Laboratories, Inc.

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 16-01-1310 -											
MS (16-01-1370-MS)					Prepared:	Analyzed: 25-Jan-2016					
Tetrabutyltin	ND	0.00300		ug/kg dry	0.2000		90	23-131	34		4
Tributyltin	ND	0.00300		ug/kg dry	0.2000		27	37-127	12		3
MSD (16-01-1370-MSD)					Prepared:	Analyzed: 25-Jan-2016					
Tetrabutyltin	ND	0.00300		ug/kg dry	0.2000		64	23-131	34		4
Tributyltin	ND	0.00300		ug/kg dry	0.2000		24	37-127	12		3
LCD (Laboratory Control Dup)					Prepared:	Analyzed: 25-Jan-2016					
Tetrabutyltin	ND	0.00300		ug/kg dry	100		118	35-131	118		
Tributyltin	ND	0.00300		ug/kg dry	100		105	50-120	105		
LCS (Laboratory Control Sample)					Prepared:	Analyzed: 25-Jan-2016					
Tetrabutyltin	ND	0.00300		ug/kg dry	100		118	35-131	118		
Tributyltin	ND	0.00300		ug/kg dry	100		101	50-120	101		
MB (Method Blank)					Prepared:	Analyzed: 01-Feb-2016					
Dibutyltin	ND		3.0	ug/kg dry				-			
Monobutyltin	ND		3.0	ug/kg dry				-			
Tetrabutyltin	ND		3.0	ug/kg dry				-			
Tributyltin	ND		3.0	ug/kg dry				-			
SUR (Method Blank SUR)					Prepared:	Analyzed: 01-Feb-2016					
Surrogate: Tripentyltin	*ND*			*ug/kg dry*			*114*	*27-135*			

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Organotins by Krone et al. - Quality Control

Air, Water & Soil Laboratories, Inc.

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 16-01-1309 -											
MS (6011901-01 MS)					Prepared:	Analyzed: 29-Jan-2016					
Tetrabutyltin	ND	0.003000		ug/L	0.2000		111	23-131	3	26	
Tributyltin	ND	0.003000		ug/L	0.2000		79	37-127	3	26	
MSD (6011901-01 MSD)					Prepared:	Analyzed: 01-Feb-2016					
Tetrabutyltin	ND	0.003000		ug/L	0.2000		109	23-131	3	26	
Tributyltin	ND	0.003000		ug/L	0.2000		82	37-127	3	26	
Batch 16-01-1310 -											
MS (6011801-05 MS)					Prepared:	Analyzed: 25-Jan-2016					
Tetrabutyltin	ND	0.003000		ug/L	0.2000		90	23-131	34	26	
Tributyltin	ND	0.003000		ug/L	0.2000		27	37-127	12	26	
MSD (6011801-05 MSD)					Prepared:	Analyzed: 25-Jan-2016					
Tetrabutyltin	ND	0.003000		ug/L	0.2000		64	23-131	34	26	
Tributyltin	ND	0.003000		ug/L	0.2000		24	37-127	12	26	
LCD (Laboratory Control Dup)					Prepared:	Analyzed: 25-Jan-2016					
Tetrabutyltin	ND	0.003000		ug/L	0.2000		111	35-131	18	20	
Tributyltin	ND	0.003000		ug/L	0.2000		95	50-120	14	20	
LCS (Laboratory Control Sample)					Prepared:	Analyzed: 25-Jan-2016					
Tetrabutyltin	ND	0.003000		ug/L	0.2000		93	35-131	18	20	
Tributyltin	ND	0.003000		ug/L	0.2000		82	50-120	14	20	
MB (Method Blank)					Prepared:	Analyzed: 25-Jan-2016					
Dibutyltin	ND	0.0030	0.0030	ug/L				-			
Monobutyltin	ND	0.0030	0.0030	ug/L				-			
Tetrabutyltin	ND	0.0030	0.0030	ug/L				-			
Tributyltin	ND	0.0030	0.0030	ug/L				-			

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Organotins by Krone et al. - Quality Control

Air, Water & Soil Laboratories, Inc.

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 16-01-1310 -											
SUR (Method Blank SUR)					Prepared: Analyzed: 25-Jan-2016						
Surrogate: Tripentyltin	*ND*			*ug/L*			*41*	*19-121*			

ERDC -- Vicksburg (EL)	Project: Kennedy-King's Bay	
ERDC, 3909 Halls Ferry Road		**Reported:**
Vicksburg MS, 39180	Project Manager: Al Kennedy	24-Mar-2016

Wet Chemistry Analysis - Quality Control

Air Water and Soil Laboratories, Inc.

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BZA0471 - No Prep Wet Chem											
Blank (BZA0471-BLK1)					Prepared & Analyzed: 26-Jan-2016						
Cyanide	<0.010	0.010	0.010	mg/L				-			
LCS (BZA0471-BS1)					Prepared & Analyzed: 26-Jan-2016						
Cyanide	0.233			mg/L	0.250		93.1	80-120			
LCS Dup (BZA0471-BSD1)					Prepared & Analyzed: 26-Jan-2016						
Cyanide	0.226			mg/L	0.250		90.5	80-120	2.83	20	
Matrix Spike (BZA0471-MS1)		**Source: 16A0343-12**			Prepared & Analyzed: 26-Jan-2016						
Cyanide	0.240	0.010	0.010	mg/L	0.250	ND	95.8	80-120			
Matrix Spike Dup (BZA0471-MSD1)		**Source: 16A0343-12**			Prepared & Analyzed: 26-Jan-2016						
Cyanide	0.240	0.010	0.010	mg/L	0.250	ND	96.0	80-120	0.167	20	
Batch BZA0583 - No Prep Wet Chem											
Blank (BZA0583-BLK1)					Prepared & Analyzed: 29-Jan-2016						
Cyanide	<0.010	0.010	0.010	mg/L				-			
LCS (BZA0583-BS1)					Prepared & Analyzed: 29-Jan-2016						
Cyanide	0.240			mg/L	0.250		96.1	80-120			
LCS Dup (BZA0583-BSD1)					Prepared & Analyzed: 29-Jan-2016						
Cyanide	0.253			mg/L	0.250		101	80-120	5.35	20	
Matrix Spike (BZA0583-MS1)		**Source: 16A0391-06**			Prepared & Analyzed: 29-Jan-2016						
Cyanide	0.242	0.010	0.010	mg/L	0.250	ND	96.8	80-120			

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Wet Chemistry Analysis - Quality Control

Air Water and Soil Laboratories, Inc.

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BZA0583 - No Prep Wet Chem											
Matrix Spike (BZA0583-MS2)		**Source: 16A0402-04**			Prepared & Analyzed: 29-Jan-2016						
Cyanide	0.239	0.010	0.010	mg/L	0.250	ND	95.7	80-120			
Matrix Spike Dup (BZA0583-MSD1)		**Source: 16A0391-06**			Prepared & Analyzed: 29-Jan-2016						
Cyanide	0.234	0.010	0.010	mg/L	0.250	ND	93.6	80-120	3.36	20	
Matrix Spike Dup (BZA0583-MSD2)		**Source: 16A0402-04**			Prepared & Analyzed: 29-Jan-2016						
Cyanide	0.263	0.010	0.010	mg/L	0.250	ND	105	80-120	9.63	20	
Batch BZB0363 - No Prep Halides											
Blank (BZB0363-BLK1)					Prepared & Analyzed: 12-Feb-2016						
TOC	<80.0	80.0	100	mg/kg dry							
LCS (BZB0363-BS1)					Prepared & Analyzed: 12-Feb-2016						
TOC	970	80.0	100	mg/kg dry	1000		97.0	80-120			
LCS Dup (BZB0363-BSD1)					Prepared & Analyzed: 12-Feb-2016						
TOC	995	80.0	100	mg/kg dry	1000		99.5	80-120	2.53	20	
Matrix Spike (BZB0363-MS1)		**Source: 6011801-01**			Prepared & Analyzed: 12-Feb-2016						
TOC	7300	400	500	mg/kg dry	1740	6930	20.9	75-125			M2
Matrix Spike Dup (BZB0363-MSD1)		**Source: 6011801-01**			Prepared & Analyzed: 12-Feb-2016						
TOC	6850	400	500	mg/kg dry	1740	6930	NR	75-125	6.30	20	M2

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ERDC -- Vicksburg (EL) ERDC, 3909 Halls Ferry Road Vicksburg MS, 39180	Project: Kennedy-King's Bay Project Manager: Al Kennedy	**Reported:** 24-Mar-2016

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
			Data included from: W:\TransferIn\6011801 TRANSFER 23 Feb 2016 1332.mdb
			Data included from: W:\TransferIn\6011801 TRANSFER 23 Feb 2016 1516.mdb
			Data included from: W:\TransferIn\6011801 TRANSFER 23 Feb 2016 1528.mdb
			Data included from: W:\TransferIn\6011901 TRANSFER 23 Feb 2016 1338.mdb
			Data included from: W:\TransferIn\6011901 TRANSFER 23 Feb 2016 1447.mdb