Freeport LNG

Liquefaction Project and Phase II Developments

Environmental Analysis

Permit Modification Application for
Long Term Dredged Material Placement Area

SWG-2013-00147

June 2018

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APPENDICES

ACRONYMS AND ABBREVIATIONS

Channel Widening Project	Port Freeport Channel Widening Project
Channel Widening FEIS	Final Environmental Impact Statement for the Port Freeport Channel Widening Project
CY	cubic yard
CWA	Clean Water Act
DMPA	dredged material placement area
EFH	essential fish habitat
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FHCIP	Freeport Harbor Channel Improvement Project
FLNG	Freeport LNG
ft.	feet
GIWW	Gulf Intercostal Waterway
GLO	Texas General Land Office
LEI	Lloyd Engineering, Inc.
LEDPA	Least Environmentally Damaging Practicable Alternative
LNG	liquefied natural gas
LTDMPA	Long Term Dredged Material Placement Area
MLLW	mean lower low water
MPRSA	Marine Protection, Research, and Sanctuaries Act of 1972/ Ocean Dumping Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NWI	National Wetlands Inventory
ODMDS	Ocean Dredged Material Disposal Site
Project	Liquefaction and Phase II Developments
RHA	Rivers and Harbors Act
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
SAP	sampling analysis plan
Terminal	existing LNG terminal on Quintana Island near Freeport, Texas
TPWD	Texas Parks and Wildlife Department

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Galveston District issued Permit No. SWG-2013-00147 under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act (Section 404/10) to Freeport LNG (FLNG) for the Liquefaction Project and Phase II Developments (Project) on September 23, 2014. The USACE issued an amendment to Permit No. SWG-2013-00147 on September 9, 2015 adding the Freeport New Work Offshore Dredged Material Disposal Site (ODMDS) as a placement area. Under the original permit and subsequent amendment, 1,188,000 cubic yards (CY) of new work material was dredged from the Phase II LNG berthing area for placement into the New Work ODMDS. On February 14, 2018 the USACE issued an amendment to Permit No. SWG-2013-00147 for the addition of the Freeport Maintenance ODMDS as a placement area for the disposal of maintenance material dredged from the FLNG Berth to allow for the safe and efficient operations. The FLNG Berth encompasses the Phase II LNG berthing area (authorized under SWG-2013-00147) and the Phase I LNG berthing area (authorized under SWG-2003-02110). The authorized depth of the FLNG berth is 46.5 feet plus 2 feet over dredge. Refer to Appendix A, Figure 1 for a vicinity map and Project location map depicting the FLNG Berth.

FLNG is requesting a modification to the existing permit (SWG-2013-00147) for the construction and operation of a long term dredged material placement area (LTDMPA), pursuant to Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA), for the placement of maintenance material dredged from within the FLNG Berth as required for the continuation of operations of the FLNG Berth and associated terminal supporting infrastructure.

This document presents an alternatives analysis for the future maintenance dredged material placement and assesses the potential environmental impacts of practicable alternatives.

2.0 PROJECT PURPOSE AND NEED

The purpose of the proposed Project is to develop a long-term solution for the annual placement of maintenance material dredged from the FLNG Berth to create stability for future operations and navigation of vessels within the FLNG Berth. Safe navigation and operation of vessels within the FLNG Berth is required to support existing FLNG infrastructure and fulfillment of contract commitments to export LNG products to international markets.

FLNG's authorized Liquefaction Project is expected to result in 250 ship visits per year to the FLNG Berth. Additionally, FLNG's proposed Train 4 Project is expected to raise the total ship visits per year to the FLNG Berth to 325, once authorized. Based on a sedimentation analysis conducted, FLNG anticipates an approximate sedimentation rate of 4.1 feet per year within the FLNG Berth. As such, it is estimated that annual maintenance dredging of approximately 500,000 CY would be required to maintain previously authorized depths (48.5 feet including over-dredge) and allow vessels to safely access FLNG infrastructure located within the FLNG Berth. Please see Appendix B for the FLNG Marine Basin Sedimentation Study (Sedimentation Study). In addition to routine maintenance dredging activities, in the case of a major storm or other event that causes shoaling in the FLNG Berth to the point where a ship would not be able to access one or both LNG Docks, FLNG would need to be able to conduct emergency dredging activities to prevent operation delays.

According to the results of the Gulf Intracoastal Waterway (GIWW): Brazos River Floodgates and Colorado River Lock Systems Feasibility Study Draft Report issued February 19, 2018 (Feasibility Study), the USACE's recommended plan of widening and relocating the Brazos River Floodgates would result in a 15% increase in sedimentation in the GIWW and an 11% increase in sedimentation in the Freeport Harbor Channel (FHC) once the new structures are in place. Due to the proximity of the FLNG Berth to both the

GIWW and the FHC, sedimentation within the FLNG Berth would likely increase within that range. Sedimentation rates within the 2-year construction period where no structures would be in place would likely be higher.

Based on the engineering analysis within the Feasibility Study, the USACE does not anticipate the need for additional DMPA's or new/expanded ODMDS for the additional maintenance dredging volumes. As the lack of availability of existing dredged material capacity is currently a critical issue in the Freeport area, FLNG would like to reserve the right to allow outside users to utilize the proposed LTDMPA if and when deemed appropriate by FLNG. With current lack of availability of dredged material capacity in the Freeport area as well as the potential for sedimentation rates to increase above current values if the Brazos River Locks are modified as outlined in the Feasibility Study, a privately operated LTDMPA that can accept routine maintenance dredging volumes at the rate anticipated by the Sedimentation Study is vital to ensure long-term operations of the FLNG Berth.

FLNG requests authorization of the requested permit modification by January 2020 to allow sufficient time for the construction of the proposed Project and initial placement of maintenance material dredged from the FLNG Berth.

3.0 ALTERNATIVES ANALYSIS FOR PLACEMENT OF MAINTENANCE MATERIAL

FLNG analyzed multiple alternatives for the long-term placement of maintenance material dredged from the FLNG Berth. Each of the placement alternatives that were analyzed are discussed further below.

3.1 NO ACTION ALTERNATIVE

The no action alternative consists of the continuation of operations at the FLNG Berth without the identification of options for the future long-term placement of maintenance material. Currently, FLNG has authorization for the placement of maintenance material offshore at the Maintenance ODMDS, which expires in February 2021. Current regulations only allow the USACE to issue permits for offshore disposal of dredged material for a 3-year period. As part of the No Action alternative, once the current offshore disposal authorization expires, the current conditions that are observed at the FLNG Berth would remain, thereby preventing the future utilization of FLNG's existing infrastructure and fulfillment of contract commitments due to navigational concerns of incoming and outgoing vessel traffic.

3.2 BENEFICIAL USE

3.2.1 Beach Nourishment Alternative

Previous beach nourishment projects have been undertaken locally (including several on Quintana Island). The ideal sediment to be used for beach nourishment is dependent on the grain size, which must closely match the native beach material. Sediment containing excess silts and clay fraction typically disqualifies the material from being considered suitable for nourishment activities. Projects with unmatched grain sizes typically perform relatively poorly. FLNG performed evaluations of the maintenance material located within the FLNG Berth to determine the feasibility for the materials use for beach nourishment.

3.2.2 Bird Island Creation and Wetland Restoration

The placement of material dredged from the FLNG Berth for beneficial use (BU) for bird island creation and/or wetland restoration was considered as an alternative for the placement of material. FLNG conducted a screening-level assessment of potential BU sites within approximately 5 miles from the FLNG Berth. Additionally, FLNG engaged in discussions with the U.S. Fish and Wildlife Service (USFWS), Texas Parks and Wildlife Department (TPWD), National Marine Fisheries Service (NMFS), the Texas General Land

Office (GLO), Galveston Bay Foundation, and Ducks Unlimited to identify potential BU opportunities. Refer to Appendix A, Figure 3 and Figures 4A through 4F for depictions of the location of the sites investigated for bird island creation and wetland restoration.

3.3 EXISTING AND UNDEVELOPED FEDERAL DMPA

3.3.1 Existing Federal DMPA

FLNG investigated the use of existing Federal dredged material placement areas (DMPA) for the long-term disposal of dredged material from the FLNG Berth. The Galveston District's "Dredged Material Management Plan – Final Preliminary Assessment" (March, 2012) was used to identify existing Federal DMPAs within 5 miles to the FLNG Berth to be considered as potential alternatives on a solely locational basis. Refer to Appendix A, Figure 5 for a depiction of the locations of the existing Federal DMPAs investigated as potential alternatives for the long-term placement of maintenance material dredged at the FLNG Berth.

3.3.2 Undeveloped Federal DMPA

FLNG investigated the use of currently undeveloped federal DMPAs for the long-term disposal of dredged material from the FLNG Berth. The USACE Final Environmental Impact Statement for Proposed Port Freeport Channel Widening (Channel Widening FEIS) was used to identify undeveloped Federal DMPAs located within 5 miles of the FLNG Berth to be considered as potential alternatives. Refer to Appendix A, Figure 6 for a depiction of the locations of the undeveloped Federal DMPAs investigated as potential alternatives for the long-term placement of maintenance material dredged at the FLNG Berth.

3.4 OFFSHORE DREDGE MATERIAL DISPOSAL SITE

The option of offshore dredged material disposal at an ODMDS has historically been reserved for projects where the USACE is the sole sponsor or a co-sponsor. However, the U.S. Environmental Protection Agency (USEPA) changed the regulations to allow dredged material from the vicinity of the Federal channels to be disposed of at designated offshore placement areas. Two USEPA-designated dispersive ODMDSs are located south of Quintana Island in the Gulf of Mexico. The ODMDS closest to shore is referred to as the Freeport Maintenance ODMDS, whereas the ODMDS farthest from shore is referred to as the Freeport New Work ODMDS. Refer to Appendix A, Figure 2 for a depiction of the Freeport Maintenance and New Work ODMDS locations.

On February 14, 2018, FLNG received an amendment to SWG-2013-00417 to allow for three years of placement of maintenance dredge material at the Freeport Maintenance ODMDS. Once expired, the continued use of the ODMDS for the discharge of maintenance material would require a new MPRSA Section 103 Permit. The USACE has the authority to issue the permit contingent upon concurrence from the USEPA that the material is suitable for ocean disposal. FLNG's current authorization for use of the Freeport Maintenance ODMDS expires on February 14, 2021.

3.5 SEDIMENT DIVERSION

The Sedimentation Study was conducted by Lloyd Engineering, Inc. (LEI) to determine the feasibility of additional measures to reduce the sedimentation in the FLNG Berth. As part of this analysis, diversion structures in the GIWW and Lower Turning Basin, as well as alternative dredging and maintenance procedures were analyzed as potential sediment reduction features.

Based on the model created, high velocity currents along with high sediment concentrations flow east along the GIWW from the Brazos River to Freeport. As the flow reaches the southern end of the FLNG Berth, the flow is diverted into the FLNG Berth where a large eddy forms and water velocity decreases significantly

allowing sediment to settle. As part of this study, two sediment diversion/dredging alternatives were developed to divert the ebb flow away from the FLNG Berth and out towards the Freeport channel.

3.5.1 Southern Dredging Alternative

The Southern Dredging Alternative consists of dredging an area located adjacent to the shoreline along the Freeport Channel and just south of the FLNG Berth. The goal of dredging this area would be to reduce the diversion of ebb flows from the Freeport Channel into the FLNG Berth. Refer to the FLNG Marine Basin Sedimentation Study provided in Appendix B for the modeled flow pattern for the Southern Dredging Alternative.

3.5.2 Locks Alternative

Another sediment diversion alterative analyzed was the Locks Alternative which included the installation of locks at the GIWW and Brazos River. The main source of shoal material being deposited within the FLNG Berth occurs as a result of the Brazos River. With the locks closed, especially at high tide, there would be a major decrease in the amount of sediment traveling east along the GIWW. This alternative would require USACE permitting as well as consultations and agreements with the Texas Department of Transportation on a public/private partnership to construct the locks in a form of a Section 204 agreement – Construction of Water Resources Development Projects by Non-Federal Interest. Refer to the FLNG Marine Basin Sedimentation Study provided in Appendix B for detailed descriptions of the Locks Alternative analyzed.

3.6 PRIVATE DMPA DEVELOPMENT (PREFERRED ALTERNATIVE)

FLNG investigated the development of a private DMPA as a potential alternative for the long-term placement of maintenance material dredged at the FLNG Berth. This alternative would require USACE permitting and site development to establish the site conditions necessary to accommodate for the long-term placement of maintenance material. FLNG conducted an assessment of potential private DMPA sites within approximately 5 miles of the FLNG Berth. Refer to Appendix A, Figure 7 and Figures 8A through 8F for depictions of the potential private DMPA sites investigated.

4.0 ALTERNATIVE SCREENING PROCESS

FLNG conducted an alternative screening process to determine which alternatives allow for the long-term placement of maintenance material dredged within the FLNG Berth while minimizing environmental impacts. In order to be considered as a practicable disposal option, FLNG considered the alternatives detailed in the previous sections with the following selection criteria:

1. Fulfillment of the project purpose and need to allow for the long-term placement of maintenance material dredged from the FLNG Berth to create stability for future operations and navigation of vessels within the FLNG Berth;
2. Located within 5 miles of the FLNG Berth;
3. Dredged material is suitable for placement at a given location;
4. Dedicated annual capacity for use by FLNG for placement of maintenance material;
5. Provides an annual dredged material capacity of 500,000 CY for a term of 15 years;
6. Authorization and construction timelines allow for the utilization prior to the expiration of existing maintenance material placement authorizations;
7. Minimizes impacts to properties of Federal interest; and,
8. Minimizes environmental impacts to the maximum extent practicable.
9. Disposal method requires minimal dredging equipment to safely maneuver around incoming and outgoing LNG ships and conduct dredging activities within a very active FLNG Berth.
10. Provides year-round availability to allow for emergency maintenance dredge disposal following possible natural disasters or other large-scale shoaling events.

The alternatives screening process was used to reduce the number of alternatives considered during more-detailed evaluations based on their ability to fulfill the requirements set forth in the selection criteria. FLNG analyzed 6 potential alternatives, including 1) the no action alternative, 2) beneficial use of dredged material, 3) disposing into an existing or undeveloped Federal DMPA, 4) sediment diversion, 5) Maintenance ODMDS, and 6) development of private DMPA for disposal. The following information is provided for each alternative disposal site that was examined, as applicable:

- Specific parcel information
    - Parcel ID numbers (see Appendix C)
    - Aerial photos and location maps (see Appendix A, Figures 3 through 8)
    - GPS Coordinates – (see Appendix A, Figures 3, 5, and 7)
    - Estimated Material Capacities – (see Appendix A, Figures 6 and 8A through87F)
- Presence, quantity, and quality of wetlands and/or waters of the U.S. (see Table 1)
- County/City Zoning designations (see Table 2)
- Site infrastructure and other components for a single and complete project (see Table 3)
- Presence of federally-listed threatened or endangered species or their critical habitat, state listed species, or other natural or regionally important ecosystem resource factors that may be significantly impacted (Table 4)

The following sections detail the results of the alternative screening process as well as identify the alternatives selected for further evaluation.

Table 1:
Wetland/Waterbody Impacts Associated with Placement Alternatives and Dredging the FLNG Berth

	Acres of Impact															
	BU Sites						Undev. Fed DMPAs		Private DMPAs						Maintenance ODMDS	FLNG Berth
NWI Classification	A	B	C	D	E	F	8	9	A	B	C	D	E	F		
Estuarine and Marine Wetland	0.0	165.0	0.0	0.1	58.4	271.3	0.0	0.0	0.0	237.6	0.0	0.0	264.3	122.9	0.0	0.0
Freshwater Emergent Wetland	0.0	0.0	1.0	0.0	0.0	0.0	23.7	14.8	0.0	43.2	171.0	0.9	0.0	0.0	0.0	0.0
Palustrine Scrub Shrub Wetland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lake	0.0	0.0	130.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Estuarine and Marine Deepwater	18.3	0.0	0.0	24.6	1.5	0.0	0.0	0.0	18.3	0.0	0.0	0.0	9.5	0.0	1,273.0 [a]	62.9
Riverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
Total:	18.3	165.0	131.0	24.7	59.9	271.3	23.7	14.8	18.3	281.1	171.8	0.9	273.8	122.9	1,273.0 [a]	62.9

[a] The acreage provided for the Maintenance ODMDS (1,273.0) is the total acreage for the entire ODMDS site. Disposal activities are limited to a smaller area as defined by the USEPA and USACE.

Table 2:
County/City Zoning Restrictions Associated with Onshore Placement Alternatives

	BU Sites						Undev. Fed DMPAs		Private DMPAs					
	A	B	C	D	E	F	8	9	A	B	C	D	E	F
None (located in unincorporated Brazoria County)	X	-	X	X	X	X	X	-	X	X	-	X	X	X
R-1 District, Single Family Residential (City of Freeport)	-	X	-	-	-	-	-	-	-	-	X	-	-	-
W-3 District, Waterfront-Heavy (City of Freeport)	-	-	-	-	-	-	-	-	-	-	X	-	-	-
Planned Unit Development District, PUD (City of Freeport)	-	-	-	-	-	-	-	X	-	-	-	-	-	-

Table 3:
Infrastructure Requirements Associated with Onshore Placement Alternatives

Required Infrastructure Development	**BU Sites**						**Undev. Fed DMPAs**		**Private DMPAs**					
	A	B	C	D	E	F	8	9	A	B	C	D	E	F
Access Road(s)	-	-	-	-	-	-	X	X	-	-	X	-	X	-
Drainage Structure Installation within Federal Levee (408 Permit)	-	-	-	-	-	-	-	-	-	-	X	-	-	-
Site Security Infrastructure (fencing, gated access, etc.)	-	-	-	-	-	-	-	-	X	X	X	X	X	X
Water Level Control Outfalls (Weirs)	X	-	X	X	-	-	X	X	-	X	-	X	X	X
Construction of Levees	-	-	-	-	-	-	X	X	X	X	X	X	X	X
Improvement of Existing Levees	-	X	X	-	-	-	-	-	-	-	-	-	-	-
Equipment Staging Areas	X	-	-	-	X	X	-	-	X	-	-	-	-	-
Hay Bale Dikes/Sediment Control Dikes	X	X	X	X	X	X	-	-	X	-	-	-	-	-
Effluent Collection Trench	-	-	-	-	-	-	-	-	-	-	X	X	X	X
Effluent Detention Basin	-	-	-	-	-	-	-	-	-	-	-	X	X	X

Table 4:
Threatened and Endangered Species Habitat Assessment for Placement Alternatives and Dredging the FLNG Berth

Common Name *Scientific Name*	Federal Status		State Status	Suitable Habitat Description	Habitat Assessments															
					BU Sites						Undev. Fed. DMPAs		Private DMPAs						Maint. ODMDS	FLNG Berth
	USFWS	NMFS			A	B	C	D	E	F	8	9	A	B	C	D	E	F		
Invertebrates																				
Boulder star coral *Orbicella franksi*	-	T	-	Species inhabits reefs in shallow waters.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Elkhorn coral *Acropora palmata*	-	T	-	Species inhabits reefs in shallow waters.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lobed star coral *Orbicella annularis*	-	T	-	Species inhabits reefs in shallow waters.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mountainous star coral *Orbicella faveolata*	-	T	-	Species inhabits reefs in shallow waters.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Smooth pimpleback *Quadrula houstenensis*	C	-	T	Species occurs within a total of nine locations within the Colorado and Brazos River basins. Potential presence of this species within the Project area is so low as to be discountable.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Texas fawnsfoot *Truncilla macrodon*	C	-	T	Species occurs within a total of five locations within the Colorado and Brazos River basins. Potential presence of this species within the Project area is so low as to be discountable.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fishes																				
Sharpnose shiner *Notropis oxyrhynchus*	E [a]	-	-	Species is endemic to the Colorado and Brazos River drainages and prefers large, turbid rivers with a combination of sand, gravel, and clay-mud substrates. Species is not known to occur within Brazoria County.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Smalltooth sawfish *Pristis pectinata*	E [a]	E [a]	E	Species found in estuaries or river mouths with muddy or sandy substrate. Species is not known to occur within Brazoria County.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Terrestrial Reptiles																					
Texas horned lizard *Phrynosoma cornutum*	-	-	T	Found in arid and semiarid habitats in open areas with little vegetation and loose sand or loamy soils.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Timber/canebrake rattlesnake *Crotalus horridus*	-	-	T	Species found in swamps, river floodplains, hardwood and pine forests, and rural farming areas.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Aquatic Reptiles																					
Alligator snapping turtle *Macrochelys temminckii*	-	-	T	Species found in river systems, lakes, and wetlands.	N	N	Y	N	N	N	Y	Y	N	N	Y	Y	N	N	N	N
Green sea turtle *Chelonia mydas*	T	T	T	The species inhabits coastal areas and the open ocean. Nesting occurs along sandy beaches.	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	N	N	Y	Y
Hawksbill sea turtle *Eretmochelys imbricata*	E	E	E	The species inhabits coastal areas and the open ocean. Nesting occurs along sandy beaches.	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	N	N	Y	Y
Kemp's ridley sea turtle *Lepidochelys kempii*	E	E	E	The species inhabits coastal areas and the open ocean. Nesting occurs along sandy beaches.	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	N	N	Y	Y
Leatherback sea turtle *Dermochelys coriacea*	E	E	E	The species inhabits coastal areas and the open ocean. Nesting occurs along sandy beaches.	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	N	N	Y	Y
Loggerhead sea turtle *Caretta caretta*	T	T	T	The species inhabits coastal areas and the open ocean. Nesting occurs along sandy beaches.	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	N	N	Y	Y
Birds																					
Bald eagle *Haliaeetus leucocephalus*	DL [a]	-	T	Nesting typically occurs in mature trees in or near cypress/tupelo swamps, fresh to intermediate marshes, or open water.	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N
Brown pelican *Pelecanus occidentalis*	DL	-	-	The species is largely restricted to coastal waters for foraging and nesting.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
Eskimo curlew *Numenius borealis*	E [a]	-	E	Species nests in arctic tundra and winters in open grasslands, fields, and wetlands. Species is not known to occur within Brazoria County.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Peregrine falcon *Falco peregrinus*	DL	-	T [c]	This species breeds in open landscapes with cliffs and winters in open habitat primarily along barrier islands, mudflats, lake edges, and coastlines.	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y	N	N	N	N
Piping plover *Charadrius melodus*	T, CH	-	T	The species breeds in the northern United States and Canada. Wintering habitat includes sandy beaches.	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N
Red knot *Calidris canutus rufa*	T	-	-	The species breeds in Alaska and Canada. Wintering habitat includes tidal flats and beaches.	Y	Y	N	Y	Y	Y	N	N	Y	Y	N	N	Y	N	N	N
Reddish egret *Egretta rufescens*	-	-	T	Occurs within coastal tidal flats, salt marshes, shores, and lagoons. Forages within calm, shallow waters along coast, in protected bays, and estuaries.	Y	Y	N	Y	Y	Y	N	N	Y	Y	N	Y	N	N	N	N
Sooty tern *Onychoprion fuscatus*	-	-	T	Species breed on small islands along the coast in flat, open areas with little vegetation.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
White-faced ibis *Plegadis chihi*	-	-	T	Occurs within freshwater marshes, irrigated land, and tules. Foraging habitat includes very shallow water, as in marshes, flooded pastures, and irrigated fields. Occasionally occurs within damp meadows with no standing water.	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	N
White-tailed hawk *Buteo albicaudatus*	-	-	T	Occurs within open grasslands with scattered shrubs or low trees. Species primarily inhabits coastal prairie, but may also occur inland in ranch country. Generally not found where land is farmed or heavily grazed.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Whooping crane *Grus americana*	E	-	E	Species found in salt marshes, primarily within Aransas NWR in Texas.	N	Y	N	Y	Y	Y	N	N	N	Y	N	N	Y	N	N	N
Wood stork *Mycteria americana*	T [a d]	-	T	Found in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water. Species is not known to occur within Brazoria County.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Terrestrial Mammals																				
Jaguarundi *Herpailurus yaguarundi*	E [a]	-	E	Species is found in dense, thorny shrublands. Species is not known to occur within Brazoria County.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Louisiana black bear *Ursus americanus luteolus*	DL	-	T	Species found in large tracts of forested habitat.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Ocelot *Leopardus pardalis*	E [a]	-	E	Species is found in dense, thorny shrublands. Species is not known to occur within Brazoria County	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Red wolf *Canis rufus*	E [a]	-	E	This species has been extirpated from Texas.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Marine Mammals																				
Bryde's whale *Balaenoptera edeni*	-	P	-	The species inhabits a small area in the northeastern Gulf near De Soto Canyon in waters between along the continental shelf break.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fin (finback) whale *Balaenoptera physalus*	-	E [b]	-	This species inhabits the open ocean.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Humpback whale *Megaptera novaeangliae*	-	E [b]	-	The species inhabits the open ocean, coastal waters, and sometimes inshore areas such as bays.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y
Sei whale *Balaenoptera borealis*	-	E [b]	-	This species inhabits the open ocean.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
Sperm whale *Physeter microcephalus*	-	E [b]	-	This species inhabits the open ocean.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
West Indian manatee *Trichechus manatus*	E [b]	-	E	Species inhabits in large, slow-moving rivers, river mouths, and shallow coastal areas such as coves and bays.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y

Notes

C = candidate species; P = proposed species; T = threatened species; E = endangered species; DL = delisted species; CH = critical habitat

N = No Suitable Habitat Present; Y = Potential Suitable Habitat Present

[a] Although this species is federally listed under the ESA, it does not appear on the USFWS species list for Brazoria County (USFWS, 2017) or the NMFS species list for Texas (NMFS, 2017). However, because it occurs on the TPWD county list, we have included it in this analysis.

[b] Although the bald eagle is delisted, it is still federally protected under the Bald and Golden Eagle Protection Act (16 USC § 668-668d)

[c] Threatened status applies only to American peregrine falcon, not to Arctic peregrine falcon. Due to the similarity of the two species, the TPWD applies threatened status at the species level.

[d] Only the portion of the wood stork population that breeds in the U.S. is federally listed as threatened. Breeding populations of wood storks are found in Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina.

[e] Also federally protected and defined as depleted by the Marine Mammal Protection Act (16 USC 31)

"-" (blank) - No regulatory listing status by agency for the Lower Brazoria County area

4.1 NO ACTION ALTERNATIVE SCREENING ANALYSIS

The no action alternative was considered during analysis but does not fulfill the Project's purpose and need for the long-term placement of maintenance material dredged from within the FLNG Berth. As such, the no action alternative jeopardizes future operations due to ongoing sedimentation which prevents the necessary vessel operations within the FLNG berth to fulfill contract commitments to export LNG products to international markets. Based on this analysis, the no action alternative does not fulfill the Project's purpose and need (selection criteria 1) and therefore was not considered a practicable alternative. However, the no action alternative is carried forward for further evaluation to serve as a baseline of environmental conditions in which to compare all other alternatives to.

4.2 BENEFICIAL USE SCREENING ANALYSIS

4.2.1 Beach Nourishment

In May 2017, FLNG collected surficial sediment and ambient water for the purposes of conducting chemical and grain-size analysis of the maintenance material located at the FLNG Berth. The grain size data collected during this analysis was reviewed to determine the suitability of the material to be dredged for the use of beach nourishment. The results of the grain-size analysis ranged in composition amongst the three sampling stations between 21.8 to 31.3 percent gravel, 22.1 to 22.6 percent sand, 45.6 to 55.6 percent silt and clay. These results indicate that the material to be dredged at the FLNG Berth includes a high proportion of silt and clay material, and therefore is not considered suitable for beach nourishment. The beach nourishment BU option would not meet selection criteria 3; therefore, the placement of material for beach nourishment was not considered a practicable alternative or selected for further evaluation. Refer to Appendix D for the Contaminant Assessment Report, including the results of the grain-size analysis conducted on maintenance material located within the FLNG Berth.

4.2.2 Bird Island Creation and Wetland Creation/Restoration

Discussions with the various agencies and organizations failed to identify any specific BU sites with immediate/short-term material needs with enough detail to assess the material volume requirements or assess schedule timeframe for potential development. Therefore, FLNG conducted an independent analysis of six potential sites to use dredged material beneficially by creating bird islands or creating/restoring wetlands. The sites investigated are displayed in Appendix A, Figures 3 and 4A through 4F and discussed below. Wetland and waterbody impacts based on National Wetland Inventory (NWI)[1] data that would be required for the disposal of dredged material within each BU site are outlined in Table 1. City/county zoning restrictions at each site are presented in Table 2 and required infrastructure improvements to develop each BU site are included in Table 3.

Beneficial Use Site A

BU Site A is a shallow, open water area containing 18.3 acres of estuarine and marine deepwater (see Table 1 and Appendix A, Figure 4A) located approximately 2 miles southwest of the FLNG Berth within shallow manmade canals. BU Site A meets selection criteria 2, 3, 6, 7, and 8, and was investigated for potential bird island creation and wetland creation. While development of a BU site would require permitting through the USACE, a Nationwide Permit 27 could be utilized, which would expedite the permitting process to a timeframe that could meet the Project schedule.

[1] Wetland and Waterbody acreages discussed throughout the document are based on NWI data except where noted otherwise.

While BU Site A provides 18.3 acres of available open water areas for wetland creation, the water depths in these canals are very shallow, and would only allow for a maximum of approximately 2 feet of dredged material placement to achieve wetland elevations. This would only allow for a capacity of approximately 60,000 cubic yards of dredged material, which does not meet selection criteria 4, 5, or the Project's purpose and need (selection criteria 1).

Small areas of oysters exist along the bulkheads throughout the canal areas, which would be impacted if this area were used for dredged material disposal and wetland creation. A small area of existing wetlands is also present within the interior of the northwestern most canal. These existing open water and wetland areas along with oysters within BU Site A currently provide valuable habitat for birds, wildlife, and fisheries. While creating wetlands would provide additional habitat for certain types of species, it would also reduce the available open water areas that are currently providing habitat for other species including loafing and foraging habitat for waterfowl and are habitat for larger fish species.

BU Site A currently provides potential habitat for 5 species of threatened or endangered sea turtles (green, hawksbill, Kemp's ridley, leatherback, loggerhead), 3 species of threatened or endangered birds (peregrine falcon, red knot, and reddish egret), and the delisted brown pelican. Activities associated with development of BU Site A could impact, but would not be expected to adversely impact these species.

No zoning restrictions are present within BU Site A (see Table 2). Infrastructure improvements including water level control outfalls, equipment staging area, and hay bale/sediment control dikes would be required to complete BU at this site (see Table 3).

Beneficial Use Site B

BU Site B includes 3 large, shallow, open water areas containing 165.0 acres of estuarine and marine wetlands (see Table 1 and Appendix A, Figure 4B) located approximately 3 miles west of the FLNG Berth. BU Site B meets selection criteria 2, 3, 6, 7, and 8, and was investigated for potential bird island creation and wetland creation. While development of a BU site would require permitting through the USACE, a Nationwide Permit 27 could be utilized, which would expedite the permitting process to a timeframe that could meet the Project schedule

BU Site B is located on a large tract of contiguous land (with 165 acres of open water areas, although NWI has them classified as wetlands). Based on an analysis conducted, BU Site B has the capacity to accommodate 100,000 cubic yards of dredged material. As such, BU Site B does not have sufficient capacity to meet criteria 4, 5, or the Project's purpose and need (selection criteria 1). Based on review of aerial photography, wetlands are located along the entire perimeter of the available open water areas, and small areas of oysters are located throughout these areas. These existing open water and wetland areas along with oysters within BU Site B currently provide valuable habitat for birds, wildlife, and fisheries. While creating wetlands would provide additional habitat for certain types of species, it would also reduce the available open water areas that are currently providing habitat for other species including loafing and foraging habitat for waterfowl. This site was analyzed for potential BU as part of the USACE's Final Environmental Impact Statement for Proposed Port Freeport Channel Widening (Channel Widening FEIS), and was deemed infeasible, as utilizing this site for BU would do unnecessary damage to the healthy and functioning habitat that is present at the site. This original analysis is appended to this document as Appendix E for reference.

BU Site B currently provides potential habitat for 5 species of threatened or endangered sea turtles (green, hawksbill, Kemp's ridley, leatherback, loggerhead), 4 species of threatened or endangered birds (peregrine

falcon, red knot, reddish egret, and whooping crane), and the delisted brown pelican. Activities associated with development of BU Site B could impact, but would not be expected to adversely impact these species.

BU Site B is zoned as R-1 District, Single Family Residential by the City of Freeport (see Table 2). Developing this site for BU would not be consistent with current zoning regulations. Infrastructure improvements including improvement of existing levees and hay bale/sediment control dikes would be required to complete BU at this site (see Table 3).

Beneficial Use Site C

BU Site C includes a large, shallow, open water area containing 1.0 acre of freshwater emergent wetland and 130.0 acres of lake (see Table 1 and Appendix A, Figure 4C) located approximately 4 miles west of the FLNG Berth. BU Site C meets selection criteria 2, 3, 6, and 7, and was investigated for potential bird island creation and wetland creation. BU Site C does not meet selection criteria 8, as portions of the open water area are located on property owned by the United States government and are of significant Federal interest. Additionally, this area is located immediately adjacent to the Federal Petroleum reserve, and therefore may preclude construction activity from happening in the area due to security access reasons.

BU Site C is located on a large tract of contiguous land (with over 130 acres of open water areas) and would likely be able to accommodate 100,000 cubic yards of dredged material capacity to establish conditions suitable for the establishment of wetlands. As such, BU Site C does not have sufficient capacity to meet criteria 4, 5, or the Project's purpose and need (selection criteria 1). Existing wetlands are located along the entire perimeter of the available open water areas. These existing open water and wetland areas within BU Site A currently provide valuable habitat for birds, wildlife, and fisheries. While creating wetlands would provide additional habitat for certain types of species, it would also reduce the available open water areas that are currently providing habitat for other species including loafing and foraging habit for waterfowl and habitat for larger fish species.

BU Site C currently provides potential habitat for 1 species of threatened aquatic reptile (alligator snapping turtle), 2 species of threatened or endangered birds (peregrine falcon and white-faced ibis), and the delisted brown pelican. Activities associated with development of BU Site C could impact, but would not be expected to adversely impact these species.

No zoning restrictions are present within BU Site C (see Table 2). Infrastructure improvements including water level control outfalls, improvement of existing levees, and hay bale/sediment control dikes would be required to complete BU at this site (see Table 3).

Beneficial Use Site D

BU Site D includes a large estuarine wetland/open water complex containing 0.1 acre of estuarine and marine wetland and 24.6 acre of estuarine and marine deepwater (see Table 1 and Appendix A, Figure 4D) located approximately 3 miles north of the FLNG Berth. BU Site D meets selection criteria 2, 3, 6, 7, and 8, and was investigated for potential wetland creation.

BU Site D is located on a large tract of contiguous land with approximately 25 acres of shallow, open water areas available for BU. While the exact depth of open water areas are unknown, it is estimated that BU Site D has an approximate capacity of 100,000 cubic yards of material to establish elevations to support the creation of wetland area. As such, BU Site D does not have sufficient capacity to meet criteria 4, 5, or the Project's purpose and need (selection criteria 1).

Wetlands are located along the entire perimeter of the available open water areas. These existing open water and wetland areas within BU Site D currently provide valuable habitat for birds, wildlife, and fisheries. While creating wetlands would provide additional habitat for certain types of species, it would also reduce the available open water areas that are currently providing habitat for other species including loafing and foraging habitat for waterfowl and habitat for larger fish species. Similar to BU Site B discussed above, these areas are adjacent to high quality fringe wetland areas and currently provide valuable habitat for birds, wildlife, and fisheries. While creating wetlands would provide additional habitat for certain types of species, it would also reduce the available open water areas that are currently providing habitat for other species including loafing and foraging habitat for waterfowl.

Site D currently provides potential habitat for 5 species of threatened or endangered birds (peregrine falcon, red knot, reddish egret, white-faced ibis, and whooping crane) and the delisted brown pelican. Activities associated with development of BU Site D could impact, but would not be expected to adversely impact these species.

No zoning restrictions are present within BU Site D (see Table 2). Infrastructure improvements including water level control outfalls and hay bale/sediment control dikes would be required to complete BU at this site (see Table 3).

Beneficial Use Site E

BU Site E includes a large estuarine wetland/open water complex containing 58.4 acres of estuarine and marine wetland and 1.5 acres of estuarine and marine deepwater (see Table 1 and Appendix A, Figure 4E) located approximately 1.5 miles north of the FLNG Berth. BU Site E meets selection criteria 2, 3, 6, 7, and 8, and was investigated for wetland creation/restoration.

BU Site E is located on a large tract of contiguous land (with over 73 acres of open water areas) and would likely be able to accommodate 100,000 cubic yards of dredged material. As such, BU Site E does not have sufficient capacity to meet criteria 4, 5, or the Project's purpose and need (selection criteria 1).

Wetlands are located along the entire perimeter of the available open waters and both large and small oyster reefs are located within the available open water areas. These existing open water and wetland areas along with oysters within BU Site E currently provide valuable habitat for birds, wildlife, and fisheries. Additionally, the open water areas within the site are utilized for recreational fishing. While creating wetlands would provide additional habitat for certain types of species, it would also reduce the available open water areas that are currently being utilized for recreational fishing and are providing habitat for other species including loafing and foraging habitat for waterfowl. Additionally, this site was analyzed for potential BU as part of the USACE's Channel Widening FEIS and was concluded that "filling of these areas to create low marsh vegetation grounds will negatively impact some functioning oyster beds as well as popular and functioning recreational fishing grounds" (see Appendix E for reference).

BU Site E currently provides potential habitat for 5 species of threatened or endangered sea turtles (green, hawksbill, Kemp's ridley, leatherback, loggerhead) 4 species of threatened or endangered birds (peregrine falcon, red knot, reddish egret, and whooping crane), and the delisted brown pelican. Activities associated with development of BU Site D could impact, but would not be expected to adversely impact these species.

No zoning restrictions are present within BU Site E (see Table 2). Infrastructure improvements including equipment staging areas and hay bale/sediment control dikes would be required to complete BU at this site (see Table 3).

Beneficial Use Site F

BU Site F includes a large estuarine wetland/open water complex containing 271.3 acres of estuarine and marine wetlands (see Table 1 and Appendix A, Figure 4F) located approximately 3 miles northeast of the FLNG Berth. BU Site F meets selection criteria 2, 3, 6, and 7, and was investigated for potential bird island creation and wetland creation. BU Site F does not meet selection criteria 8 as it is located on state-owned submerged lands that would require permitting through the GLO.

BU Site F is located on a large tract of contiguous land (with over 270 acres of open water areas) and would be able to accommodate 100,000 cubic yards of dredged material capacity, therefore does not fulfill selection criteria 4, 5, or the Project's purpose and need (selection criteria 1). Wetlands are located along the entire perimeter of the available open waters. A review of aerial photography indicates that both large and small areas of oysters are located within the available open water areas. These existing open water and wetland areas along with oysters within BU Site F currently provide valuable habitat for birds, wildlife, and fisheries. Additionally, the open water areas within the site are utilized for recreational fishing. While creating wetlands would provide additional habitat for certain types of species, it would also reduce the available open water areas that are currently being utilized for recreational fishing and providing habitat for other species including loafing and foraging habitat for waterfowl. This site was analyzed for potential BU as part of the Channel Widening FEIS, and was deemed infeasible as utilizing this site for BU would do unnecessary damage to the healthy and functioning habitat that is present at the site (see Appendix E for reference).

BU Site F currently provides potential habitat for 5 species of threatened or endangered sea turtles (green, hawksbill, Kemp's ridley, leatherback, loggerhead), 4 species of threatened or endangered birds (peregrine falcon, red knot, reddish egret, and whooping crane) and the delisted brown pelican. Activities associated with development of BU Site E could impact, but would not be expected to adversely impact these species.

No zoning restrictions are present within BU Site F (see Table 2). Infrastructure improvements including equipment staging areas and hay bale/sediment control dikes would be required to complete BU at this site (see Table 3).

4.2.3 Conclusion

Based on the screening-level assessment conducted at potential bird island creation and/or wetland restoration sites, none of the sites analyzed adequately fulfilled the selection criteria necessary to be considered as a practicable alternative and therefore, were not selected for further evaluation. However, FLNG will continue to coordinate with the various agencies on potential BU opportunities. Table 5 includes a summary of the results of the screening level analysis against the selection criteria at each potential BU Site.

Table 5:
Selection Criteria Potential Beneficial Use Sites - Summary

Selection Criteria	Potential Beneficial Use Site					
	A	B	C	D	E	F
Fulfillment of project purpose and need to allow for the long-term placement of maintenance material dredged within the FLNG Berth (selection criteria 1)	X	X	X	X	X	X
Within 5 miles of the FLNG Berth (selection criteria 2)	M	M	M	M	M	M

Dredge material is suitable for placement at a given location (selection criterion 3)	M	M	M	M	M	M
Dedicated annual capacity for use by FLNG for placement of maintenance material (selection criteria 4)	X	X	X	X	X	X
Provides an annual dredged material capacity of 500,000 CY for a term of 15 years (selection criteria 5)	X	X	X	X	X	X
Authorization and construction timelines allow for utilization prior to expiration of existing maintenance material placement authorizations (selection criteria 6)	M	M	X	M	M	X
Minimizes impacts to properties of federal interest (selection criteria 7)	M	M	M	M	M	M
Minimizes environmental impacts to the maximum extent practicable (selection criteria 8)	M	M	M	M	M	M
Disposal method requires minimal dredging equipment (selection criteria 9)	M	M	M	M	M	M
Available for disposal activities year-round (selection criteria 10)	M	M	M	M	M	M

M = Meets
P = Partially Meets
X = Does Not Meet

4.3 EXISTING FEDERAL DMPA SCREENING ANALYSIS

FLNG conducted a screening level analysis of a total of 13 existing federal DMPA's, including 11 that are currently developed and two that are currently undeveloped. The results of this analysis are presented in Table 6 and the existing DMPA locations investigated are displayed in Appendix A, Figure 5.

Table 6:
Selection Criteria Summary for Existing Federal DMPA Site Alternatives - Summary

Selection Criteria	Developed DMPA No.											Undev. DMPA No.	
	1	7	78	79	80	81	82	84	85	86/87	88	8	9
Fulfillment of the Project purpose and need (selection criteria 1)	X	X	X	X	X	X	X	X	X	X	X	X	X
Location within 5 miles of FLNG Berth (selection criteria 2)	M	P	P	P	P	P	M	M	M	M	M	P	P
Dredged material is suitable for placement at a DMPA (selection criteria 3)	M	M	M	M	M	M	M	M	M	M	M	M	M
Dedicated annual capacity for use by FLNG for placement of maintenance material (selection criteria 4)	X	X	X	X	X	X	X	X	X	X	X	X	X
Sufficient available capacity to accommodate an annual minimum of 500,000 CY of maintenance material (selection criteria 5)	X	X	X	X	X	X	X	X	X	X	X	X	X

Authorizations and construction timelines allow for utilization prior to the expiration of existing maintenance material placement authorizations (selection criteria 6)	X	M	P	P	P	P	P	X	M	M	M	X	X
Minimizes impacts to properties of federal interest (selection criteria 7)	X	X	X	X	X	X	X	X	X	X	X	X	X
Minimizes environmental impacts to the maximum extent practicable (selection criteria 8)	M	M	M	M	M	M	M	M	M	M	M	X	X
Disposal method requires minimal dredging equipment (selection criteria 9)	M	M	M	M	M	M	M	M	M	M	M	M	M
Available for disposal activities year-round (selection criteria 10)	P	P	P	P	P	P	P	P	P	P	P	P	P
M = Meets P = Partially Meets X = Does Not Meet													

4.3.1 Developed Federal DMPA Sites

FLNG has historically worked with the USACE to dispose dredged material into federal DMPAs 1 or 85. The USACE recently awarded a contract to raise the levees and DMPA 1. While this work will ultimately increase the capacity of DMPA 1, during the period that the work is occurring, no disposal activities can take place within DMPA 1. The estimated timeframe and additional dredged material capacity as a result of the levee improvement work is unknown. Additionally, the placement of material within DMPA 1 would require additional permitting for the placement of material within a federal DMPA (property of federal interest), thereby further extending the timeframe to dispose of material within DMPA 1.

The long-term placement of maintenance material within a developed federal DMPA would require sufficient capacities be available to accommodate for the annual placement of 500,000 CY of maintenance material for a term of 15 years. Federal DMPAs are utilized for the placement of material to keep federal channels open for navigation and commerce. As such, there is uncertainty as to federal DMPAs ability to accommodate for the placement of material dredged as a result of federal maintenance dredging operations and material dredged within the FLNG Berth.

For example, in August 2016, surficial sediment and ambient water were collected and analyzed to obtain permission from the USACE to place 150,000 cubic yards from the FLNG Berth into DMPA 85. The results of the sediment and water analysis showed that there were no exceedances of chemical concentrations compared to benchmarks, and therefore were suitable for placement within DMPA 85. A real-estate application was submitted as an emergency in June 2016 and was anticipated to take a maximum of 3 months to obtain authorization. In December 2017 authorization for the placement of material within DMPA 85 was received (17 months following application submittal). This authorization was for just a fraction of the capacity (30%) required for annual maintenance dredging operations within the FLNG Berth.

Based on the assessment conducted at existing developed federal DMPA sites (see Table 5), none of the sites analyzed adequately fulfill selection criteria 1, 4, 5, 6, and 7, and therefore were not considered a practicable alternative or selected for further evaluation.

4.3.2 Undeveloped Federal DMPA Sites

FLNG investigated the potential use of two undeveloped federal DMPA sites. The sites investigated are displayed in Appendix A, Figure 6. Both sites described below were analyzed as potential placement areas in the Final Environmental Impact Statement for Freeport Harbor Channel Improvement Project (FHCIP FEIS) in September 2012. Wetland and waterbody impacts based on NWI data that would be required for the development of each DMPA site are outlined in Table 1. City/county zoning restrictions at each site are presented in Table 2 and a list of required infrastructure developments for each site is included in Table 3.

DMPA 8

DMPA 8 is an undeveloped tract of land located approximately 5 miles northwest of the FLNG Berth (meeting selection criteria 2). DMPA 8 contains 23.7 acres of freshwater emergent wetland (see Table 1 and Appendix A, Figure 6). The FHCIP FEIS states that DMPA 8 contains 23 acres of wetlands as well as two small stock ponds. These features provide valuable habitat for a variety of bird, fish, and other wildlife species.

Developments would be required to allow for the placement of material within DMPA 8. Once developed it is estimated that DMPA 8 would have a future capacity of 5 million cubic yards (MCY), and therefore does not fulfill selection criteria 5. Additionally, DMPA 8 would serve as a placement area for federal projects in addition to material dredged from the FLNG Berth and therefore uncertainties as to the dedicated annual capacity for use by FLNG for the placement of maintenance material (selection criteria 4). The FHCIP FEIS also indicates that Port Freeport has plans to develop portions of this site, which could reduce the amount of land available for DMPA development.

DMPA 8 is a property of significant federal interest. As such, the estimated timeframe for obtaining the necessary authorizations for the construction of DMPA 8 is unknown. Additionally, because DMPA 8 would be a federal DMPA, the placement of maintenance material dredged from the FLNG Berth would require additional permitting, thereby further extending the timeframe to dispose of material within DMPA 8. For these reasons, DMPA 8 does not meet selection criteria 4, 5, 6, or 7.

As stated previously, wetlands and waterbodies are located within the site, which would be impacted if this area was used for dredged material disposal. DMPA 8 currently provides potential habitat for 1 species of threatened aquatic reptile (alligator snapping turtle) and 1 species of delisted bird (brown pelican). Activities associated with development of DMPA 8 could impact, but would not be expected to adversely impact these species.

No zoning restrictions are present within DMPA 8 (see Table 2). Infrastructure improvements including access roads, water level control outfalls, and construction of levees would be required to complete DMPA 8 development at this site (see Table 3).

DMPA 9

DMPA 9 is an undeveloped tract of land located approximately 5 miles northwest of the FLNG Berth (meeting selection criteria 2). DMPA 9 contains 14.8 acres of freshwater emergent wetlands (see Table 1 and Appendix A, Figure 6). The FHCIP FEIS states that DMPA 9 contains 16 acres of wetlands, 21 acres of riparian forest, and 250 acres of prime farmland. The wetlands and riparian forest currently provide habitat to bird and wildlife species in the area. Additionally, the FHCIP states that cultural resources were identified within the footprint of DMPA 9.

Developments would be required to allow for the placement of material within DMPA 9. Once developed it is estimated that DMPA 9 would have a future capacity of 3 MCY, and therefore does not fulfill selection criteria 5. Additionally, DMPA 9 would serve as a placement area for federal projects in addition to material dredged from the FLNG Berth and therefore uncertainties as to the dedicated annual capacity for use by FLNG for the placement of maintenance material (selection criteria 4).

DMPA 9 is a property of significant federal interest. As such, the estimated timeframe for obtaining the necessary authorizations for the construction of DMPA 9 is unknown. Additionally, because DMPA 9 would be a federal DMPA, the placement of maintenance material dredged from the FLNG Berth would require additional permitting, thereby further extending the timeframe to dispose of material within DMPA 9. For these reasons, DMPA 8 does not meet selection criteria 4, 5, 6, or 7.

DMPA 9 currently provides potential habitat for 1 species of threatened aquatic reptile (alligator snapping turtle) and 2 species of protected birds (bald eagle and brown pelican). Largely, activities associated with development of DMPA 9 could impact, but would not be expected to adversely impact these species. However, adverse impacts to the bald eagle could occur if construction activities were to occur during bald eagle nesting season if a nest were present nearby, as potentially suitable nesting habitat is located immediately adjacent to the site.

DMPA 9 is zoned as a Planned Unit Development District by the City of Freeport (see Table 2), which is defined as “a development of land which is under unified control and is planned and developed as a whole in a single development operation or programmed series of development, and which includes street, utilities, lots or building sites and which indicates all structures and their relationship to each other and to adjacent uses and improvements, as well as open spaces.” Developing this property into a DMPA would not be consistent with current zoning regulations. Infrastructure improvements including access roads, water level control outfalls, and construction of levees would be required to complete DMPA development at this site (see Table 3).

4.3.3 Conclusion

Based on this assessment, no Federal land-based DMPA’s are available for spoil disposal associated with maintenance dredging activates at the FLNG Berth. Based on this analysis, the use of existing federal DMPA’s (either developed or undeveloped) for the placement of dredged material was not considered a practicable alternative or selected for further evaluation. Table 6 includes a summary of the results of the screening level analysis against the selection criteria at each existing developed and undeveloped federal DMPA site.

4.4 OFFSHORE DREDGED MATERIAL DISPOSAL SITE SCREENING ANALYSIS

The option of offshore disposal of maintenance dredged material was considered during the screening level analysis. The disposal of material dredged from the FLNG Berth would create the conditions necessary to ensure the navigational safety and operability of vessels for the utilization of existing FLNG infrastructure and fulfillment of contract commitments. The permitting timeframe (including required sampling and analyses) associated with the offshore disposal of material is anticipated to require a total of up to 12 months, which satisfies selection criteria 6.

Based on the recent changes in regulations, the Freeport Maintenance ODMDS and New Work ODMDS may now be utilized by outside users with projects within the vicinity of the Federal channel, satisfying selection criterion 3. Due to the dispersive nature of an ODMDS and the procedures and protocols in place within the ODMDS Site Management and Monitoring Plan to monitor the status of the sites, FLNG expects

the ODMDS to have sufficient capacity for the Project, satisfying selection criterion 4. As the Maintenance ODMDS and New Work ODMDS are existing designated disposal sites, and the regulations updated in 2015 allow for the disposal of material within the FLNG Berth to be deposited offshore, FLNG considers this alternative will meet selection criterion 5. Because both ODMDS are operated by federal government, neither meets selection criteria 7.

In August 2016, FLNG collected surficial sediment and ambient water for the purposes of conducting chemical and grain-size analysis for the maintenance dredging of approximately 150,000 CY of material from Dock 1 of the FLNG Berth for disposal at the Federal DMPA 85. Based on the results of this data, there were no exceedances of chemical concentrations or indications that would suggest a cause for concern for significant impacts to special aquatic resources as a result of the placement of material at the Freeport Maintenance ODMDS. Refer to Appendix D for the contaminant assessment report detailing the results of this analysis. Based on previous analyses, FLNG anticipates that the material will be suitable for ocean disposal at either the Maintenance or New Work ODMDS. However, the New Work ODMDS was designated for disposal of new work material, and the proposed material to be dredged would not meet that description physically. The New Work ODMDS is much larger than the Maintenance ODMDS, therefore any concerns with mounding or travel of material outside the ODMDS boundaries would be minimized at the New Work site. However, because the maintenance dredged material does not meet the description of New Work material outlined in the designation documents, FLNG considers that selection criterion 3 is not met at the New Work ODMDS. Selection criterion 3 would be met at the Maintenance ODMDS.

The New Work ODMDS is located approximately 6 miles offshore and 7 miles south of the FLNG Berth, which does not satisfy selection criteria 2. The Freeport Maintenance ODMDS is located approximately 3 miles offshore and 4 miles from the FLNG Berth, satisfying selection criterion 2.

Offshore disposal of dredged material requires several pieces of specialized dredging equipment including the dredge, a spider barge, tugboat, and scow(s). In order to conduct dredging for offshore disposal, all equipment must access and maneuver throughout the area for an extended period of time. Because FLNG anticipates up to 325 LNG ship visits per year to the FLNG Berth, it is likely that the additional equipment required to conduct offshore disposal of dredged material would pose safety and navigational hazards within the active FLNG Berth and therefore does not meet selection criteria 9. Additionally, the USACE prohibits outside users from conducting disposal activities within the ODMDS when the USACE is conducting dredging and disposal operations (typically in the fall between August and November each year). As the ODMDS is not available for year-round disposal, particularly during hurricane season when the chances for shoaling events is the greatest, offshore disposal does not meet selection criterial 10. Table 7 includes a summary of the results of the screening level analysis against the selection criteria for each ODMDS site.

Table 7:
Selection Criteria Summary for ODMDS Site Alternatives - Summary

Selection Criteria	Maintenance ODMDS	New Work ODMDS
Fulfillment of project purpose and need to allow for the long-term placement of maintenance material dredged within the FLNG Berth (selection criteria 1)	P	X
Within 5 miles of the FLNG Berth (selection criteria 2)	M	X
Dredge material is suitable for placement at a given location (selection criterion 3)	M	X
Dedicated annual capacity for use by FLNG for placement of maintenance material (selection criteria 4)	M	M
Provides an annual dredged material capacity of 500,000 CY for a term of 15 years (selection criteria 5)	M	M
Authorization and construction timelines allow for utilization prior to expiration of existing maintenance material placement authorizations (selection criteria 6)	M	M
Minimizes impacts to properties of federal interest (selection criteria 7)	X	X
Minimizes environmental impacts to the maximum extent practicable (selection criteria 8)	M	M
Disposal method requires minimal dredging equipment (selection criteria 9)	X	X
Available for disposal activities year-round (selection criteria 10)	X	X

M = Meets
P = Partially Meets
X = Does Not Meet

4.4.1 Conclusion

The Freeport Maintenance ODMDS is currently being used to place dredged material from the FLNG Berth as authorized under Permit No. SWG-2013-00147 to allow for the safe and efficient operations of the facility.

Even with a valid offshore disposal permit, very few dredging contractors have the equipment to conduct offshore dredging operations, many of which are located on the east coast and could take several weeks to mobilize to the Freeport area. Additionally, offshore disposal requires several large pieces of equipment in addition to the dredge, including a spider barge, tug, and scow, while smaller pipeline dredges do not require additional equipment. With both LNG Docks in operation, maneuvering multiple large pieces of equipment associated with offshore disposal could pose safety and navigation risks. Finally, the Maintenance ODMDS is unavailable as a disposal option during several months out of the year when the USACE is dredging the Freeport Harbor Channel.

The extended length of time required to mobilize the necessary equipment for offshore disposal, due to the limited supply of such equipment and qualified operators as well additional limitations on the disposal timeframe, makes frequent offshore disposal of small maintenance dredges infeasible for the project. Due to the cost, time, and limited availability of equipment needed to place dredged material within the ODMDS,

the continuation of utilizing the ODMDS as the only available option for routine maintenance event dredge material would hinder the continuous operation of the FLNG Berth.

Because the FLNG Berth has such a high sedimentation rate, and thus requires maintenance dredging annually or sub-annually to maintain authorized depths and continuous operation, there is an immediate need for a dredge material placement area that is more easily accessible and feasibly useful for smaller more frequent dredge volumes than what is currently justified for disposal at the ODMDS. The Maintenance ODMDS is unavailable as a disposal option during several months out of the year when the USACE is dredging the Freeport Harbor Channel and currently, FLNG has no other disposal alternatives if a shoaling event were to occur during this time. A privately-owned facility would allow FLNG to continue annual dredge maintenance of the Berth without interfering with federal use of the ODMDS and free additional capacity at the ODMDS for use during emergency or unpredicted high-volume dredge events.

Utilization of the ODMDS for dredge events requiring large volumes of material may be required in the future to reserve capacity in the private DMPA and to ensure capacity for future routine maintenance dredging cycles. Should it be determined that sufficient volumes of material from the Berth requires placement, or when the placement of material offshore is circumstantially more feasible, FLNG will continue to utilize the ODMDS. However, based on the screening-level assessment conducted for the offshore disposal alternatives, neither alternative analyzed adequately fulfilled the selection criteria necessary to be considered as a practicable alternative and therefore, were not considered for further consideration for this project and not carried forward to further environmental assessment.

4.5 SEDIMENT DIVERSION SCREENING ANALYSIS

4.5.1 Southern Dredging Option Screening Analysis

The southern dredging alternative was considered during analysis but does not fulfill the Project purpose and need to allow for the long-term placement of maintenance material dredged within the FLNG Berth to create stability for future operations and navigation of vessels. The modeling of this alternative, as described in Appendix B, shows a 10 percent reduction of sedimentation within the basin. The Southern Dredging Option would require modifications to the existing USACE permit for the additional dredging and modification of the rock groins located south of the FLNG Berth. Such modifications would likely require a Section 408 permit review and real estate agreement with the USACE Galveston District. Although a 10% reduction in the sedimentation within the FLNG Basin, the implementation of the southern dredging option would still require the annual maintenance dredging of approximately 450,000 CY of material.

The anticipated timeline associated with obtaining the necessary regulatory approvals, engineering, and construction is anticipated to require 24 months. Additionally, this option would require the disposal of dredged material as a result of the described modifications in addition to the annual maintenance dredging of approximately 450,000 CY of material. The southern dredging option would help to alleviate future sedimentation within the FLNG Berth but does not meet the Project's purpose and need to allow for the long-term placement of maintenance material dredged within the FLNG Berth to create stability for future operations and navigation of vessels. Based on this analysis, the southern dredging alternative does not fulfill the Project purpose and need and therefore was not considered a practicable alternative or selected for further evaluation.

4.5.2 Locks Alternative Screening Analysis

The locks alternative was considered during analysis but does not fulfill the Project's purpose and need to allow for the long-term placement of maintenance material dredged from within the FLNG Berth to create stability for future operations and navigation of vessels.

Additionally, the required permitting and Section 204 agreement with the Texas Department of Transportation are anticipated to take 36 months. This option would still require both the initial and subsequent maintenance dredging events to remove accumulated sediments until the locks are installed.

The USACE considered the conversion of the existing floodgates to locks at the Brazos River in the initial screening of its Feasibility Study (Alternative 4). The USACE evaluated this alternative based on a variety of factors including cost, hydrographic data, environmental impact and benefits, and ultimately eliminated this option from further consideration.

This option does not fulfill the immediate Project goals and objectives and therefore was not considered a practicable alternative or selected for further evaluation.

4.5.3 Conclusion

Based on the screening-level assessment conducted for sediment diversion alternatives, neither alternative analyzed adequately fulfilled the selection criteria necessary to be considered as a practicable alternative and therefore, were not selected for further evaluation. Table 8 includes a summary of the results of the screening level analysis against the selection criteria for each sediment diversion alternative.

Table 8:
Selection Criteria Summary for Sediment Diversion Alternatives - Summary

Selection Criteria	Southern Dredging Option	Locks
Fulfillment of the Project purpose and need to allow for the long-term placement of maintenance material dredged from the FLNG Berth (selection criteria 1)	X	X
Located within 5 miles of the FLNG Berth (selection criteria 2)	M	M
Dredged material is suitable for placement at a given location (selection criteria 3)	N/A	N/A
Dedicated annual capacity for use by FLNG for placement of maintenance material (selection criteria 4)	X	X
Provides an annual dredged material capacity of 500,000 CY for a term of 15 years (selection criteria 5)	X	X
Authorization and construction timelines allow for the utilization prior to the expiration of existing maintenance material placement authorizations (selection criteria 6)	M	X
Minimizes impacts to properties of federal interest (selection criteria 7)	X	X
Minimizes environmental impacts to the maximum extent practicable (selection criteria 8)	M	X
Disposal method requires minimal dredging equipment (selection criteria 9)	N/A	N/A
Available for disposal activities year-round (selection criteria 10)	N/A	N/A

M = Meets
X = Does not meet
N/A = Not Applicable

4.6 PRIVATE DMPA DEVELOPMENT SCREENING ANALYSIS

FLNG conducted an independent analysis of six potential sites for the development of a private DMPA. The sites investigated are displayed in Appendix A, Figures 7 and 8A through 8B and discussed below. Estimated wetland and waterbody impacts that would be required for the development of each DMPA site are outlined in Table 1. City/county zoning restrictions at each site are presented in Table 2 and a list of required infrastructure developments for each site is included in Table 3.

4.6.1 Private DMPA Site A

Private DMPA Site A is an undeveloped canal subdivision that contains 18.3 acres of estuarine and marine deepwater (see Table 1 and Appendix A Figure 8A) located approximately 2 miles southwest of the FLNG Berth (meeting selection criteria 2). Private DMPA Site A was investigated as a potential long-term solution for the annual placement of maintenance material.

The development of Private DMPA Site A would require infrastructure improvements including site security infrastructure, construction of levees, equipment staging areas, and hay bale/sediment control dikes would be required to complete DMPA construction and operation activities at this site (see Table 3). No zoning restrictions are present within Private DMPA Site A (see Table 2). Selection criteria 3 would be met as the material would be contained inside constructed levees and any dewatering would be in accordance with USACE Nationwide Permit 16. Private DMPA Site A would be dedicated for use by FLNG for the placement of maintenance material dredged within the FLNG Berth (meeting selection criteria 4). However, Private DMPA Site A does not meet selection criteria 5 as it is estimated to have a capacity of 1.5 MCY, thereby only accommodating for the placement of maintenance material for a term of 3 years.

Private DMPA Site A would require filling activities within the canals which would result in impacts to existing open water area, wetlands, and oyster habitat. As such the development of Private DMPA Site A would require an individual permit through the USACE (expected to take up to 18 months). Additionally, once the permit is obtained, up to 12 months would be required to complete construction of the DMPA. Private DMPA Site A is positioned on land currently under the ownership and/or available for long term lease and would result in minimal impacts to properties of a federal interest (meeting selection criteria 7). Private DMPA Site A would meet selection criteria 2, 3, 4, 6, and 7. However, this site does not exhibit a sufficient 15-year capacity for the disposal of maintenance material. As such, Private DMPA Site A does not meet selection criteria 5 and only partially fulfills the Project purpose and need (selection criteria 1).

Small areas of oysters exist along the bulkheads throughout the canal areas, which would be impacted if this area were used for DMPA development. A small area of existing wetlands is also present within the interior of the northwestern most canal. These existing shallow open water and tidal emergent wetland areas along with oysters within DMPA Site A currently provide valuable functioning shallow open water, wetland, and oyster habitat for a variety birds, wildlife, and fisheries species. Mitigation for impacts to these habitats would be required through USACE permitting. Additionally, the open water areas within the site are periodically utilized for recreational fishing, which would be permanently lost at this area through DMPA development.

Private DMPA Site A currently provides potential habitat for 5 species of threatened or endangered sea turtles (green, hawksbill, Kemp's ridley, leatherback, loggerhead), 3 species of threatened or endangered birds (peregrine falcon, red knot, and reddish egret), and the delisted brown pelican. Activities associated

with development of Private DMPA Site A could impact, but would not be expected to adversely impact these species.

4.6.2 Private DMPA Site B

Private DMPA Site B is an undeveloped tract of land containing 237.6 acres of estuarine and marine wetlands and 43.2 acres of freshwater wetlands (see Table 1 and Appendix A, Figure 8B) located approximately 3.5 miles southwest of the FLNG Berth (meeting selection criteria 2). Private DMPA Site B was investigated as a potential long-term solution for the annual placement of maintenance material.

The development of Private DMPA Site B would require infrastructure improvements including site security infrastructure, water level control outfalls, and construction of levees would be required to complete DMPA construction and operation activities at this site (see Table 3). No zoning restrictions are present within Private DMPA Site B (see Table 2). Selection criteria 3 would be met as the material would be contained inside constructed levees and any dewatering would be in accordance with USACE Nationwide Permit 16. Private DMPA Site B would be dedicated for use by FLNG for the placement of maintenance material dredged within the FLNG Berth (meeting selection criteria 4). However, Private DMPA Site B does not meet selection criteria 5 as it is estimated to have a capacity of 5 MCY, thereby only accommodating for the placement of maintenance material for a term of 10 years.

Private DMPA Site B would require filling activities in open water and wetland habitat. As such the development of Private DMPA Site B would require an individual permit through the USACE (expected to take up to 18 months). Additionally, once the permit is obtained, up to 12 months would be required to complete construction of the DMPA. Private DMPA Site B is positioned on land currently not currently under the ownership of FLNG and/or available for long term lease however, would result in minimal impacts to properties of a federal interest (meeting selection criteria 7). Private DMPA Site B would meet selection criteria 2, 3, 4, 6, and 7. However, this site does not exhibit a sufficient 15-year capacity for the disposal of maintenance material. As such, Private DMPA Site B does not meet selection criteria 5 and only partially fulfills the Project purpose and need (selection criteria 1).

The vast amount of existing wetlands and open water areas within Private DMPA Site B currently provide valuable functioning habitat for a variety birds, wildlife, and fisheries species. Mitigation for impacts to these habitats would be required through USACE permitting. Additionally, this site is located immediately adjacent to critical habitat for piping plover (see Appendix A, Figure 7).

Private DMPA Site B currently provides potential habitat for 5 species of threatened or endangered sea turtles (green, hawksbill, Kemp's ridley, leatherback, loggerhead), 5 species of threatened or endangered birds (peregrine falcon, piping plover, red knot, reddish egret, and whooping crane), and the delisted brown pelican. Largely, activities associated with the development of Private DMPA Site B could impact, but would not be expected to adversely impact these species. However, adverse impacts to sea turtles and piping plovers could occur if construction activities were to occur during sea turtle nesting season or piping plover wintering season, as suitable sea turtle nesting and piping plover wintering habitat are located immediately adjacent to the site.

4.6.3 Private DMPA Site C

Private DMPA Site C is an undeveloped tract of land containing 171.0 acres of palustrine wetlands and 0.8 acre of riverine areas (see Table 1 and Appendix A, Figure 8C) located approximately 4 miles west of the FLNG Berth (meeting selection criteria 2). Private DMPA Site C was investigated as a potential long-term solution for the annual placement of maintenance material.

The development of Private DMPA Site C would require infrastructure improvements including access roads, site security infrastructure, construction of levees, and effluent collection trench would be required to complete DMPA construction and operation activities at this site. While the W-3 District zoning is consistent with DMPA development, developing the DMPA within the portions of the site zoned as R-1 would not be consistent with current zoning regulations (see Table 2). Selection criteria 3 would be met as the material would be contained inside constructed levees and any dewatering would be in accordance with USACE Nationwide Permit 16. Private DMPA Site C would be dedicated for use by FLNG for the placement of maintenance material dredged from within the FLNG Berth (meeting selection criteria 4). Private DMPA Site C meets selection criteria 5 as it is estimated to have a capacity of 7.5 MCY, thereby accommodating for the placement of maintenance material for a term of 15 years.

Private DMPA Site C is positioned on land currently under the ownership of FLNG. Due to the location within the floodplain, development of Private DMPA Site C would require installation of a drainage structure within a federal levee, which would require a 408 permit through the Velasco Drainage District and USACE (see Table 3). However, installation of the required drainage structure would result in minimal impacts to properties of a federal interest (meeting selection criteria 7). Private DMPA C meets selection criteria 2, 3, 4, 5, 6, and 8 and therefore fulfills the Projects purpose and need (selection criteria 1).

The vast amount of existing contiguous wetlands within Private DMPA Site C currently provide valuable functioning habitat for a variety bird and wildlife species. Mitigation for impacts to these habitats would be required through USACE permitting. FLNG has conducted a detailed analysis of potential mitigation opportunities to offset impacts as a result of the development of Private DMPA Site C.

DMPA Site C currently provides potential habitat for 1 species of threatened aquatic reptile (alligator snapping turtle) and 2 species of protected birds (brown pelican and white-faced ibis). Activities associated with the development of Private DMPA Site C may impact, but would not be expected to adversely impact these species.

4.6.4 Private DMPA Site D

Private DMPA Site D is an undeveloped tract of land containing 0.9 acre of freshwater emergent wetlands (see Table 1 and Appendix A, Figure 8D) located approximately 2.8 miles north of the FLNG Berth (meeting selection criteria 2). Private DMPA Site D was investigated as a potential long-term solution for the annual placement of maintenance material.

The development of Private DMPA Site D would require infrastructure improvements including site security infrastructure, water level control outfalls, and construction of levees would be required to complete DMPA construction and operation activities at this site (see Table 3). No zoning restrictions are present within Private DMPA Site D (see Table 2). Selection criteria 3 would be met as the material would be contained inside constructed levees and any dewatering would be in accordance with USACE Nationwide Permit 16. Private DMPA Site D would be dedicated to for use by FLNG for the placement of maintenance material dredged within the FLNG Berth (meeting selection criteria 4). However, Private DMPA Site D does not meet selection criteria 5 as it is estimated to have a capacity of 0.5 MCY, thereby only accommodating for the placement of maintenance material for single year.

Private DMPA Site D would require filling activities of existing wetlands. As such, the development of Private DMPA Site D would require an individual permit through the USACE (expected to take up to 18 months). Additionally, once the permit is obtained, up to 12 months would be required to complete construction of the DMPA. Private DMPA Site D is positioned on land currently under the ownership of FLNG and/or available for long term lease and would not require impacts to properties of a federal interest (meeting

selection criteria 7). Private DMPA Site D would meet selection criteria 2, 3, 4, 6, and 7. However, this site does not exhibit a sufficient capacity for the disposal of maintenance material beyond year one. As such, Private DMPA Site D does not meet selection criteria 5 or fulfill the Project purpose and need (selection criteria 1).

The existing wetlands and open water areas within Private DMPA Site D currently provide valuable functioning habitat for a variety birds and wildlife species. Mitigation for impacts to these habitats would be required through USACE permitting.

Private DMPA Site D currently provides potential habitat for 1 species of threatened aquatic reptile (alligator snapping turtle) and 3 species of protected birds (brown pelican, peregrine falcon, and reddish egret). Activities associated with the development of Private DMPA Site D would not be expected to adversely impact these species.

4.6.5 Private DMPA Site E

Private DMPA Site E is an undeveloped tract of land containing 264.3 acres of estuarine and marine wetlands and 9.5 acres of estuarine and marine deepwater (see Table 1 and Appendix A, Figure 8E) located approximately 3 miles northeast of the FLNG Berth (meeting selection criteria 2). Private DMPA Site E was investigated as a potential long-term solution for the annual placement of maintenance material.

The development of Private DMPA Site E would require infrastructure improvements including access roads, site security infrastructure, water level control outfalls, construction of levees, and effluent collection trench and effluent detention basin would be required to complete DMPA construction and operation activities at this site (see Table 3). No zoning restrictions are present within Private DMPA Site E (see Table 2). Selection criteria 3 would be met as the material would be contained inside constructed levees and any dewatering would be in accordance with USACE Nationwide Permit 16. Private DMPA Site E would be dedicated for use by FLNG for the placement of maintenance material dredged within the FLNG Berth (meeting selection criteria 4). However, Private DMPA Site E does not meet selection criteria 5 as it is estimated to have a capacity of 10 MCY, thereby only accommodating for the placement of maintenance material for a 5-year term.

Private DMPA Site E would require filling activities of existing wetland and open water areas. As such, the development of Private DMPA Site E would require an individual permit through the USACE (expected to take up to 18 months). Additionally, once the permit is obtained, up to 12 months would be required to complete construction of the DMPA. Private DMPA Site E is positioned on land currently under the ownership of FLNG and/or available for long term lease and would not require impacts to properties of a federal interest (meeting selection criteria 7). Private DMPA Site E would meet selection criteria 2, 3, 4, 6, and 7. However, this site does not exhibit a sufficient 15-year term capacity for the disposal of maintenance material (selection criteria 5). As such, Private DMPA Site E does not meet selection criteria 5 and only partially fulfills the Project purpose and need (selection criteria 1).

The vast amount of existing contiguous wetland and open water areas within Private DMPA Site E currently provide valuable habitat for birds, wildlife, and fisheries. Mitigation for impacts to these habitats would be required through USACE permitting.

Private DMPA Site E currently provides potential habitat for 3 species of threatened or endangered birds (red knot, reddish egret, and whooping crane) and the delisted brown pelican. Activities associated with the development of Private DMPA Site E may impact, but would not be expected to adversely impact these species.

4.6.6 Private DMPA Site F

Private DMPA Site F is an undeveloped tract of land containing 122.9 acres of estuarine and marine wetlands (see Table 1 and Appendix A, Figure 8F) located approximately 5 miles north of the FLNG Berth (meeting selection criteria 2). Private DMPA Site F was investigated as a potential long-term solution for the annual placement of maintenance material.

The development of Private DMPA Site F would require infrastructure improvements including site security infrastructure, water level control outfalls, construction of levees, and effluent collection trench and effluent detention basin would be required to complete DMPA construction and operation activities at this site (see Table 3). No zoning restrictions are present within Private DMPA Site F (see Table 2). Selection criteria 3 would be met as the material would be contained inside constructed levees and any dewatering would be in accordance with USACE Nationwide Permit 16. Private DMPA Site F would be dedicated to use by FLNG for the placement of maintenance material dredged within the FLNG Berth (meeting selection criteria 4). However, Private DMPA Site F does not meet selection criteria 5 as it is estimated to have a capacity of 4 MCY, thereby only accommodating for the placement of maintenance material for an 8-year term.

Private DMPA Site F would require filling activities of existing wetlands. As such, the development of Private DMPA Site F would require an individual permit through the USACE (expected to take up to 18 months). Additionally, once the permit is obtained, up to 12 months would be required to complete construction of the DMPA. Private DMPA Site F is positioned on land currently under the ownership of FLNG and/or available for long term lease and would not require impacts to properties of a federal interest (meeting selection criteria 7). Private DMPA Site F would meet selection criteria 2, 3, 4, 6, and 7. However, this site does not exhibit a sufficient 15-year term capacity for the disposal of maintenance material (selection criteria 5). As such, Private DMPA Site F does not meet selection criteria 5 and only partially fulfills the Project purpose and need (selection criteria 1).

The vast amount of existing contiguous wetland areas within Private DMPA Site F currently provides valuable habitat for birds and wildlife species. Mitigation for impacts to these habitats would be required through USACE permitting.

Private DMPA Site F currently provides potential habitat for the delisted brown pelican. Activities associated with the development of Private DMPA Site F may impact but would not be expected to adversely impact the brown pelican.

4.6.7 Conclusion

Based on the screening-level assessment conducted at six potential private DMPA sites, Private DMPA Site C adequately fulfilled the selection criteria necessary to be considered as a practicable alternative and therefore, was selected for further evaluation. Private DMPA Site B was also considered for further evaluation because it partially or fully met all the selection criteria. Private DMPA Site E was also considered for further evaluation because it was the next location that fulfilled most of the selection criteria. Table 9 includes a summary of the results of the screening level analysis against the selection criteria at each potential Private DMPA site.

Table 9:
Selection Criteria Summary for Private DMPA Development Site Alternatives - Summary

Selection Criteria	Private DMPA Site					
	A	B	C	D	E	F

Fulfillment of the Project purpose and need to allow for the long-term placement of maintenance material dredged from the FLNG Berth (selection criteria 1)	P	P	M	X	P	P
Location within 5 miles of FLNG Berth (selection criteria 2)	M	M	M	M	M	M
Dredged material is suitable for placement at a DMPA (selection criteria 3)	M	M	M	M	M	M
Dedicated annual capacity for use by FLNG for placement of maintenance material (selection criteria 4)	M	M	M	M	M	M
Sufficient available capacity to accommodate an annual minimum of 500,000 CY of maintenance material for a term of 15 years (selection criteria 5)	X	P	M	X	P	X
Authorizations and construction timelines allow for utilization prior to the expiration of existing maintenance material placement authorizations (selection criteria 6)	M	M	M	M	M	M
Minimizes impacts to properties of federal interest (selection criteria 7)	M	P	M	M	M	M
Minimizes environmental impacts to the maximum extent practicable (selection criteria 8)	M	M	M	M	M	M
Disposal method requires minimal dredging equipment (selection criteria 9)	M	M	M	M	M	M
Available for disposal activities year-round (selection criteria 10)	M	M	M	M	M	M
Proposed industrial use compatible with existing surrounding land use(s) and aesthetics [a]	X	M	M	P	X	X
Cost of development and maintenance [a]	P	P	M	P	M	P

M = Meets

P = Partially Meets

X = Does Not Meet

[a] Additional consideration above those listed as selection criteria that FLNG has taken into account when evaluating potential private DMPA sites provided for reference.

4.7 ALTERNATIVES CONSIDERED FOR DETAILED ANALYSIS

The alternative screening process was completed based on comprehensive knowledge of the requirements to complete a project in this environment. Based on this analysis, the development of the Private DMPA Site B, Site C, and Site E were considered as the private DMPA alternatives that fulfill the necessary selection criteria to fulfill the Project purpose and need for the long-term placement of maintenance material dredged from within the FLNG Berth. As such, development of Private DMPA Site B, Site C, and Site E were carried forward for further analysis. The no action alternative is also discussed in the following environmental analysis as a baseline from which other alternatives may be compared to the existing environmental conditions. The following sections discuss the impacts associated with the development and operation of the FLNG Private DMPA at Site B, Site C, and Site E. The least environmentally damaging practicable alternative (LEDPA) based on the following analysis will be selected as the FLNG LTDMPA. The construction and operation of the FLNG LTDMPA for the placement of maintenance material dredged from within the FLNG Berth forms the basis for FLNG's requested authorization amendment and is herein referred to as the "proposed Permit modification".

5.0 ENVIRONMENTAL ANALYSIS

5.1 OVERVIEW

This environmental analysis provides details related to the Private DMPA Sites B, C, and E to facilitate a description of existing resources and potential impacts as a result of the construction and operation of the proposed DMPA. The following sections detail the potential impacts to resources located within the Project area. The Project area is defined as local area containing the FLNG Berth and DMPA Sites B, C, and E. Please reference Appendix A, Figure 6 for a map of the Project area.

Previous environmental analysis for the FLNG Berth was conducted by the Federal Energy Regulatory Commission (FERC) in the FEIS for the FLNG Phase I Project in May 2004 (Phase I EIS) and the Final EIS for the Liquefaction Project and Phase II Modification Project in June 2014 (Liquefaction FEIS). Impacts associated with dredging in the Berth are not discussed in the following environmental analysis but can be referenced in the Liquefaction FEIS.

5.1.1 Environmental Setting

The proposed Project area is in Brazoria County, Texas, within the Jones Creek, TX and Freeport, TX USGS 7.5-minute quadrangle. The area is located between the mouth of the Brazos River and Oyster Creek, near the GIWW and adjacent to the Gulf of Mexico and the community of Freeport, Texas. The FLNG Berth is positioned off the south shoreline of the GIWW and west of the Freeport Harbor Entrance Channel. The FLNG Berth is approximately 62.9 acres in size and based on recent bathymetry surveys, it exhibits depths ranging from 29 to 47 ft.

The general Project area is defined as the Mid-Coast Barrier Islands and Coastal Marshes Level IV ecoregion. This ecoregion encompasses a subhumid zone along the Texas coast in which annual precipitation is between 34 to 46 inches, with greater rainfall totals to the north. This ecoregion is characterized by saline, brackish, and freshwater marshes, barrier islands with minor washover fans, and tidal flats. Smooth cordgrass, marshhay cordgrass, and gulf saltgrass dominate in more saline areas. Other native vegetation is mainly grassland composed of seacoast bluestem, sea-oats, common reed, gulfdune paspalum, and soil bind morning-glory. Some areas have clumps of sweetbay, redbay, and dwarf southern live oak trees. Brazoria County is underlain predominantly by the Beaumont formation deposits of varying ratios of clay, mud, sand, and silt that occur on the low uplands adjacent to the county's rivers and bayous. The floodplains in the area extend across the shallow terraces of the Brazos River and Oyster Creek as well as up from the Gulf of Mexico and include zones VE, A and AE, and X.

Private DMPA Site B

The Private DMPA Site B is located south of the city of Freeport, TX, adjacent to the shoreline of the Gulf of Mexico and directly west of Quintana, TX. The site is flat and contains estuarine wetlands with marsh, sand, and open water habitat. The site is completely within FEMA Zone VE flood hazard zone with a Base Flood Elevation of 13 to 15 ft. Refer to Appendix A, Figure 8B for a depiction of the location of Site B.

Private DMPA Site C

The site is located south of the city of Freeport, TX, on the eastern shore of the Brazos River, separated from the river by a levee constructed in 1929 by the USACE. The site is in a relatively flat area located at elevations less than five feet above mean sea level (MSL) and partially within a FEMA 100-year flood zone AW with Base Flood Elevation of 11 ft. and partially within Zone VE with Base Flood Elevation of 12 ft. Refer to Appendix A, Figure 8C for a depiction of the location of Site C.

Private DMPA Site E

The site is located northeast of the city of Freeport, TX, on the western shore of Oyster Creek. The site is in a relatively flat area located at elevations less than three feet above mean sea level (MSL) and within a FEMA 100-year flood zone. Refer to Appendix A, Figure 8E for a depiction of the location of Site E.

5.1.2 Historic and Current Use

Historically, the FLNG Berth and area land uses included commercial, residential, open land, and open water. Cattle grazing was the predominant land use within open land prior to the construction of FLNG infrastructure. Currently, the FLNG Berth serves as an open water basin which will allow vessel access to FLNG docks for loading and offloading of LNG products. The surrounding land use is currently industrial, driven by the location of Brazosport and other facilities surrounding the Freeport Harbor Channel, and some residential such as the communities of Quintana, Surfside and Freeport. Open water surrounding the berth, the GIWW and Freeport Harbor Channel, is used for navigation and access to industrial facilities, and some undeveloped land remains in the area today as well.

Historically, the Private DMPA Sites B, C, and E land uses included open land, open water, and wetland habitat. Historically, cattle grazing was the predominate land use within open land portions of the surrounding areas. Currently, land located to the north of Site C is utilized by the USACE for the placement of dredged material and land located to the south is utilized for industrial and commercial purposes. Land to the west of Site E is used for an industrial complex and surrounding open land is currently wetland habitat or open water habitat. Beyond the Brazos River to the west and Oyster Creek to the east is the Justin Hurst Wildlife Management Area and the Brazoria National Wildlife Refuge, respectively. Private DMPA Site B is located adjacent to the Gulf of Mexico and is surrounded by marine and estuarine marsh habitat and some navigable waterways utilized by area industry. The communities of Quintana and Surfside Beach are located near the sites and contain beaches and coastal dune habitat along the Gulf of Mexico, as well as small residential communities.

5.2 ENVIRONMENTAL IMPACTS

The potential environmental impacts associated with the disposal of maintenance material within the selected alternatives are described below.

5.2.1 Historic and Cultural Resources

No Action Alternative

The No Action Alternative would not result in any impacts to historical or cultural resources in the Project area. Please reference the Cultural Resources Report, as an attachment to the SWG-2013-00147 permit modification request, for an overview of existing cultural resources in the region and historical context of the area.

Private DMPA Site B

There are no recorded Texas State Historical resources located within the site. The nearest Historical Marker to the site is Bryan Mound, located 1.9 miles away (THC 2018). There are no National Register properties or districts near the site. A cultural resources survey was not conducted for this specific site. It is anticipated that cultural resources would not be affected by the development of this site as the LTDMPA.

Private DMPA Site C

A Phase I cultural resources investigation was conducted for the proposed Private DMPA Site C in August 2015. The results of the cultural resources investigation indicate that there are no previously recorded archaeological sites or historic structures occurring within the project area, and no new cultural resources were identified during the field effort. The nearest Historical Marker to the site is Bryan Mound located 1.24 miles away. There are no National Register properties or districts in the vicinity of the site. It is anticipated that cultural resources would not be affected by the development of this site as the LTDMPA.

Private DMPA Site E

There are no recorded Texas State Historical resources located within the site. The nearest Historical Marker to the site is The Lively, located 1.7 miles away (THC 2018). There are no National Register properties or districts near the site. A cultural resources survey was not conducted for this specific site. It is anticipated that cultural resources would not be affected by the development of this site as the LTDMPA.

5.2.2 Sediment and Water Quality

No Action Alternative

The No Action Alternative would not result in any impacts to sediment or water quality in the Project area, as dredging material from the FLNG Berth would not be feasible without a DMPA authorized for disposal. Without a LTDMPA authorized for the disposal of dredged material from the FLNG Berth, sedimentation and shoaling in the berth will continue until the berth is no longer operable. Sediment that potentially contains contaminants will accumulate in the Freeport Channel and potentially resuspend over time affecting the local turbidity of the area. The current use of the channel creates a dynamic water quality environment in which the water column is constantly disturbed by vessel traffic and associated discharges.

Private DMPA Site B, C, and D

The Private DMPA is proposed to be constructed as an upland confined dredge material placement area. The construction of the DMPA will affect jurisdictional Waters of the US, as discussed in Section 5.2.5 Wetlands and Special Aquatic Sites. All impacts to WOUS will be permitted through the USACE and mitigation will be provided according to the permit requirements. Once constructed, all dredged material will be placed within a leveed and controlled containment area and will therefore not directly impact water quality of any natural water body due to the discharge of material outside the DMPA. Decant effluent will meet the TCEQ limit of 300 mg/l of total suspended solids in the return water from the dredge disposal site prior to discharge. The Brazos River segment 1201 is classified as a tidal stream and is not listed as impaired by the TCEQ. Sediment and elutriate sampling for material to be dredged from the FLNG Berth was conducted by the FERC in the Phase I EIS and the Final EIS for the Liquefaction FEIS and no causes for concern were found. Sediment and decant effluent will be routinely tested according to TCEQ standards to ensure quality is within the acceptable limits for all constituents prior to discharge, therefore, water quality is not anticipated to be impacted by the proposed project.

FLNG has previously conducted field sampling of the material to be dredged with the FLNG Berth for the authorization for disposal in the Freeport Maintenance ODMDS, in accordance with the USACE and USEPA-approved SAP. Based on the results of the chemical analysis, there is not cause for concern for the dredging or placement of material within the proposed LTDMPA.

5.2.3 Endangered Species

No Action Alternative

There are 10 threatened or endangered species and two candidate species with federal or state listings by the U.S. Fish and Wildlife Service (USFWS 2015) or Texas Parks and Wildlife Department (TPWD 2015) that potentially occur in Brazoria County near the project area. These species are the Piping Plover, Red Knot, Sprague's Pipit, Whooping Crane, West Indian Manatee, Smooth Pimpleback mollusk, Texas Fawnfoot mollusk, Green Sea Turtle, Hawksbill Sea Turtle, Kemp's Ridley Sea Turtle, Leatherback Sea Turtle, and Loggerhead Sea Turtle. There are also several migratory bird species listed that are not mentioned here. The No Action Alternative would not result in any impacts to threatened or endangered species within the Project area, as construction of a new DMPA would not occur. Without a LTDMPA authorized for the disposal of dredged material from the FLNG Berth, sedimentation and shoaling in the berth will continue until the berth is no longer operable.

Increases in turbidity and sedimentation would result within the FLNG Berth during the period of disposal activities. Sea turtles and marine mammals are mobile species and have the ability to relocate to the abundant amount of similar habitat located adjacent to the areas where the disposal activities would occur. Additionally, Freeport LNG proposes to use a hydraulic dredge, which significantly reduces the chance of causing impacts to sea turtles over other dredge types such as hopper dredges. As such, impacts to these species are not anticipated.

Private DMPA Site B

Private DMPA Site B is located adjacent to the shore of the Gulf of Mexico. The length of the shore that intersects the site is designated as Critical Habitat for Piping Plover. The vast amount of existing wetlands and open water areas within Private DMPA Site B currently provide valuable functioning habitat for a variety birds, wildlife, and fisheries species. Mitigation for impacts to these habitats would be required through USACE permitting.

Private DMPA Site B currently provides potential habitat for 5 species of threatened or endangered sea turtles (green, hawksbill, Kemp's ridley, leatherback, loggerhead), 5 species of threatened or endangered birds (peregrine falcon, piping plover, red knot, reddish egret, and whooping crane), and the delisted brown pelican. Although an endangered species survey was not conducted for this site, it is highly likely that Piping Plover birds are located adjacent to the site during certain times of the year and potentially utilizing portions of the site for habitat. Adverse impacts to sea turtles and piping plovers could occur if construction activities were to occur during sea turtle nesting season or piping plover wintering season, as suitable sea turtle nesting and piping plover wintering habitat is located immediately adjacent to the site. Reference Table 4 for the habitat assessment of species in the placement alternatives.

Private DMPA Site C

A background review of state and federal listed species for the area was conducted in October 2015. FLNG Private DMPA Site C currently provides potential habitat for 1 species of threatened aquatic reptile (alligator snapping turtle) and 2 species of protected birds (brown pelican and white-faced ibis). Activities associated with the development of the FLNG Private DMPA Site C may impact but is not likely to adversely impact these species. A detailed impact assessment for each species is included as an attachment to the SWG-2013-00147 permit modification request. Reference Table 4 for the habitat assessment of species in the placement alternatives.

Private DMPA Site E

Private DMPA Site E is adjacent to the Brazoria National Wildlife Refuge which could potentially increase the likelihood of a threatened or endangered species utilizing the site for habitat. Private DMPA Site E currently provides potential habitat for 3 species of threatened or endangered birds (red knot, reddish egret, and whooping crane) and the delisted brown pelican. Activities associated with the development of Private DMPA Site E may impact, but would not be expected to adversely impact these species. Reference Table 4 for the habitat assessment of species in the placement alternatives.

5.2.4 Fish and Wildlife Values (including Essential Fish Habitat)

No Action Alternative

The No Action Alternative would not result in any impacts to threatened or endangered species within the Project area, as construction of a new DMPA would not occur. Without a LTDMPA authorized for the disposal of dredged material from the FLNG Berth, sedimentation and shoaling in the berth will continue until the berth is no longer operable. The proposed dredging can result in temporary disturbance to fishery resources and habitat due to increased turbidity in the water column from fine material suspension entrainment and burial of species (especially benthic species). Studies by the USACE and others have found that benthic organism populations regenerate rapidly after dredging. Since many of the potential impacts on marine habitats and species are associated with water quality, the measures reference in Section 3.4.4.2 will also aid in reducing impacts on marine habitat and species.

Private DMPA Site B, C, and E

Sites B, C, and E contain similar wildlife habitat types of wetland, open water, and some coastal uplands that may be utilized by local wildlife and fish. During construction, impacts will occur to wetland habitat and other coastal habitat that may be valuable to wildlife and some fish species. Wetland impacts will be mitigated according to the permit requirements, and wildlife values of the general project area are not anticipated to be significantly impacted by construction activities as construction noise and disturbances will be temporary. Once construction is complete, normal operation of the DMPA will not significantly impact fish or wildlife on the site, or values of fishes and wildlife in the area. According to NOAA Fisheries Essential Fish Habitat Mapper the Private DMPA Sites B and C and E are not located within Essential Fish Habitat, therefore no impacts to EFH are anticipated due to development or operation of the site (NOAA, 2018).

5.2.5 Wetlands and Special Aquatic Sites

No Action Alternative

The No Action Alternative would not result in any impacts to wetlands or special aquatic sites within the Project area, as construction of a new DMPA would not occur. Without a LTDMPA authorized for the disposal of dredged material from the FLNG Berth, sedimentation and shoaling in the berth will continue until the berth is no longer operable.

Private DMPA Site B

Private DMPA Site B is located adjacent to Gulf of Mexico and contains estuarine emergent wetlands, unconsolidated sand and mud flat, and open water areas totaling 317 acres. Reference Table 9 below for a summary of all anticipated wetland and waterbody impacts from each Private DMPA site considered in this analysis. Mitigation of impacts to WOUS will be mitigated for the project in accordance with USACE requirements, as proposed in the SWG-20103-00147 Permit Modification request.

Private DMPA Site C

A wetland delineation and functional assessment was conducted for the proposed Private DMPA Site C to assess the environmental impacts to wetlands and other WOUS resulting from the construction of the project and placement of dredged material within the DMPA Site C. Reference the permit modification request attachment for the wetlands delineation and functional assessment report. Based on the wetland and waterbodies delineated during the wetland delineation and functional assessment survey, construction of the project is anticipated to impact a total of 196.52 acres of wetlands including 174.7 acres of palustrine emergent, 19.1 acres of palustrine scrub/shrub wetlands and 2.7 acres of open water. Reference Table 9 below for a summary of all anticipated wetland and waterbody impacts from each Private DMPA site considered in this analysis. Mitigation of impacts to WOUS will be mitigated for the project in accordance with USACE requirements, as proposed in the SWG-20103-00147 Permit Modification request.

Private DMPA Site E

Private DMPA Site E is located adjacent to tidal portions of Oyster Creek and contains Estuarine emergent wetlands, unconsolidated sand and mud flat, and open water areas totaling 273.8 acres. Reference Table 10 below for a summary of all anticipated wetland and waterbody impacts from each Private DMPA site considered in this analysis. Mitigation of impacts to WOUS will be mitigated for the project in accordance with USACE requirements, as proposed in the SWG-20103-00147 Permit Modification request.

Table 10:
Summary of Wetland/Waterbody Impacts for Each Alternative

Site	Palustrine Emergent	Palustrine Scrub-shrub	Estuarine Emergent	Open Water	Total (Acres)
Private DMPA Site B[1]	43.2	-	237.5	0.3	317.0
Private DMPA Site C[2]	174.7	19.1	-	2.7	196.5
Private DMPA Site E	-	-	264.3	9.5	273.8

1. Areas for DMPA Site B and E are calculated using National Wetland Inventory data from US Fish and Wildlife (USFWS 2018) and the proposed project layout which is assumed to impact the entire property.
2. Areas for DMPA Site C are calculated using delineated wetland boundaries from the Wetland Delineation Report and the proposed project layout which can be referenced in the USACE SWG-2013-00147 permit modification application

5.2.6 Shoreline Erosion and Accretion

No Action Alternative

The No Action Alternative would not result in any impacts to shoreline erosion within the Project area, as construction of a new DMPA would not occur. Without a LTDMPA authorized for the disposal of dredged material from the FLNG Berth, sedimentation and shoaling in the berth will continue until the berth is no longer operable. Shoreline protection of the FLNG Berth was permitted and constructed under SWG-2013-00147. With the shoreline protection in place, the proposed maintenance dredging activities are not expected to impact shoreline erosion and accretion.

Private DMPA Site B

Development of Private DMPA Site B would require constructing a levee immediately adjacent to the beach/piping plover critical habitat. Shore-parallel structures can lead to beach erosion by narrowing the

beach as the shoreline retreats. (Morton 1988) Creating hard structures along coastlines can increase erosion in the vicinity of the structure and potentially impact beach habitat including critical habitat for piping plover located along the shore directly adjacent to the site. Impacts to shoreline erosion are anticipated as a result of the construction of the DMPA at Site B.

Private DMPA Site C

As the Private DMPA Site C is not located on the shoreline or in tidal waters, and is an upland confined DMPA, development of the site or the placement of dredged material into the site will not impact shoreline erosion or accretion.

Private DMPA Site E

Development of Private DMPA Site E would require constructing a levee immediately adjacent to Oyster Creek. Creating hard structures along waterbodies can increase erosion in areas in the vicinity of the structure. Open shallow water, oyster habitat, and wetlands located adjacent to Private DMPA Site E could be impacted by such erosion activities. Additionally, creating hard structures, such as a levee or access roads adjacent to Oyster Creek and within the active floodway of the waterbody can alter the sedimentation regime of the tidal river and lead to accretion in shallow areas, destroying wetland and benthic habitat or burying oyster reefs. Impacts are anticipated to occur to Oyster Creek and nearby tidally influenced water bodies because of the construction of the DMPA levees at Site E.

5.2.7 Recreation and Aesthetics

No Action Alternative

The No Action Alternative would not result in any impacts to recreation or aesthetics within the Project area, as construction of a new DMPA would not occur. Without a LTDMPA authorized for the disposal of dredged material from the FLNG Berth, sedimentation and shoaling in the berth will continue until the berth is no longer operable.

Private DMPA Site B

Private DMPA Site B is privately owned and is therefore not currently available for recreational use by the public. The beaches and shoreline of the Gulf of Mexico located directly south of the site are utilized for recreational fishing, and is directly adjacent to Bryan Beach Park, a park providing fishing, camping, and beach access. The DMPA perimeter levee is proposed to be 25 ft high, above natural ground elevation. Because the DMPA would be located parallel to the coastline, directly adjacent to the beach area, the aesthetics of the beach area and surrounding estuarine habitat would be negatively impacted by the construction of the levee.

Private DMPA Site C

As the Private DMPA Site C is currently privately owned by FLNG and is not accessible for public recreation. There are no recreation activities that occur on the site proposed for development, therefore construction and operation of the site will have no effect on recreation activities. The current land use of the proposed DMPA Site C area is natural wetland habitat and open water. The surrounding land use and aesthetics is dominated by the Federal DMPA to the north, the Bryan Mound industrial and commercial site to the south, the Brazos River levee to the east, and other DMPAs to the west. The development of the site would require infrastructure improvements including access roads, site security infrastructure, construction of levees, and an effluent collection trench. However, because the area is surrounded by similar federal and industrial land uses, the impact to area aesthetics is anticipated to be minor.

Private DMPA Site E

Private DMPA Site E is currently privately owned by FLNG and is not accessible for public recreation. There are no recreation activities that occur on the site proposed for development, therefore construction and operation of the site will have no effect on recreation activities. The DMPA Site E is located adjacent to Oyster Creek, which is a navigable waterway often frequented by recreational paddlers, boaters, anglers, and nature seekers. Aesthetics of the waterway would be affected by the construction of the DMPA site in this location due to the required height of the levee. The surrounding land use is mostly flat, wetland and open water habitat and does not contain much development currently. Additionally, the Brazoria National Wildlife Refuge is located on the adjacent bank of Oyster Creek. The DMPA site would be visible from the refuge and potentially have a negative impact on the recreation users and aesthetics of the area.

5.2.8 Socioeconomics and Land Use

No Action Alternative

The No Action Alternative would not result in any impacts to socioeconomic climate or land use within the Project area, as construction of a new DMPA would not occur. Without a LTDMPA authorized for the disposal of dredged material from the FLNG Berth, sedimentation and shoaling in the berth will continue until the berth is no longer operable. If the FLNG Berth becomes inoperable due to lack of authorized DMPA, negative socioeconomic impacts could occur because of lack of jobs in the area due to the terminal closing as well as loss of revenue from the industry brought to the area by the FLNG terminal.

The estimated population in 2014 in Freeport TX was 12,191, a 4% decrease since 2000. The median resident age, income, and house value are all below state averages. The city has about 1800 residents who work in the city, others commute to the nearby Brazosport area, Lake Jackson, or Houston. The most common industries listed in 2016 were construction and manufacturing. The most common occupations in 2016 by residents of Freeport are listed as Construction, extraction, and production. Nearest hospitals and medical facilities are located in Lake Jackson, TX about 6 miles away from the city (Advameg 2018).

Private DMPA Site B

The current land use of the proposed Private DMPA Site C is natural estuarine emergent wetland habitat and some open water areas. There are some maintenance roads that traverse the site, used to access adjacent industrial sites and the bank of the GIWW, which is located north of the site. Surrounding beach areas are utilized for public recreation. There are no residences located in the vicinity of the site. No zoning restrictions are present within Private DMPA Site B. The change in land use from undeveloped site to DMPA site is consistent with other properties in the region. However, because the site is not located directly adjacent to any other developed DMPA and is adjacent to undeveloped coastal habitat and Gulf of Mexico beach, impacts to land use as a result of the development of the site to a DMPA would be significant.

Socioeconomic impacts as a result of the proposed project are expected to be positive overall. The project will create jobs in the area's most popular occupation and industry, construction. The authorization of a DMPA for use by FLNG will allow the continuous operation of the Quintana Island Terminal which provides economic value to the region and also provides jobs and income to the local community. There are no negative socioeconomic impacts anticipated by the proposed DMPA Site B.

Private DMPA Site C

The current land use of the proposed Private DMPA Site C area is natural wetland habitat and open water. The surrounding land use includes other federal DMPA facilities and industrial complexes. While the W-3

(Waterfront-Heavy) District zoning is consistent with DMPA development, developing the DMPA within the portions of the site zoned as R-1 (Single Family Residential) would not be consistent with current zoning regulations; however, the area zoned as R-1 does not currently contain any residential properties. The change in land use from undeveloped site to DMPA site is consistent with other properties in the area. Additionally, because the site is dominated by wetland habitat and is within the regulatory floodplain, development of any other type such as commercial or residential is unlikely to occur in future years. Therefore, impacts to land use as a result of the development of the site to a DMPA will have insignificant impacts to the overall regional land use configuration or City of Freeport zoning code.

Socioeconomic impacts as a result of the proposed project are expected to be positive overall. The project will create jobs in the area's most popular occupation and industry, construction. The authorization of a DMPA for use by FLNG will allow the continuous operation of the Quintana Island Terminal which provides economic value to the region and also provides jobs and income to the local community. There are no negative socioeconomic impacts anticipated by the proposed DMPA Site C.

FLNG PRIVATE DMPA SITE E

The current land use of the proposed Private DMPA Site E area is natural wetland habitat and open water. The surrounding land use includes one industrial complex, but mostly natural area of wetland and open water. The area is not within the city limits of Freeport and therefore has no zoning restrictions. The change in land use from undeveloped site to DMPA site is consistent with other properties in the region. However, because the site is not located directly adjacent to any other developed DMPA and is adjacent to a natural waterbody, Oyster Creek, impacts to land use as a result of the development of the site to a DMPA will have significant impacts to land use of the region.

Socioeconomic impacts as a result of the proposed project are expected to be positive overall. The project will create jobs in the area's most popular occupation and industry, construction. The authorization of a DMPA for use by FLNG will allow the continuous operation of the Quintana Island Terminal which provides economic value to the region and also provides jobs and income to the local community. There are no negative socioeconomic impacts anticipated by the proposed DMPA Site E.

5.2.9 Navigation

No Action Alternative

The No Action Alternative would not result in any impacts to navigation within the Project area, as construction of a new DMPA would not occur.

Private DMPA Sites B, C, and E

Navigation will be unaffected by the development of the Private DMPA Site C because the Private DMPA Sites B, C, and E are not located within navigable waters. Although Private DMPA Sites B and E are located adjacent to navigable waterways, construction and operation activities will be confined within the site boundaries; therefore, adjacent waterways are not anticipated to be affected. Any outfall structure will adhere to Section 10 of the CWA permitting requirements and will not interfere with navigation of a waterway.

5.2.10 Federal Projects

There are no known federal projects proposed to utilize Private DMPA Site B, Site D, or Site E. Site B and C are adjacent to federal DMPA's and Site E is adjacent to a federal National Wildlife Refuge, however impacts to these areas are not anticipated because construction and operation activities will be confined

within the site boundaries. Site D and E are privately owned by FLNG and construction and operation of the site will therefore not interfere with any federal projects. As previously discussed, The Freeport Maintenance ODMDS is still available for federal use and authorization of a LTDMPA for use by FLNG will free up capacity at the ODMDS for continual use for federal projects.

5.2.11 Mineral Needs

There are no wells or leases within Private DMPA Sites B or E. There are several plugged and abandoned dry hole wells located on the Private DMPA Site C site. Placement of material above the plugged wells will not impact the well. There are no other active mineral leases or wells located on the project site. Nearby oil wells located outside of the proposed project boundary will not be impacted by the project. There are several pipelines that traverse the Site C project site, including two operated by Phillips 66, two operated by Exxon Mobil, and one operated by the US Department of Energy. The construction of and placement of dredged material within the DMPA Site C is not anticipated to affect any existing pipeline infrastructure.

5.2.12 Other Federal, State, or Local Requirements

A USACE Section 404 permit will be required due to anticipated discharges into waters of the US. A Texas Coastal Zone consistency certification is required for the dredging of material at the FLNG berth and placement of material within the LTDMPA. Additionally, FLNG is coordinating with the USACE to determine the necessary coordination and clearances necessary for a water quality certification administered either by the Texas Railroad Commission or Texas Commission on Environmental Quality (TCEQ).

5.2.13 Other Factors

The following factors were not included in the current analysis as they do not pertain to the FLNG LTDMPA or FLNG Berth site for the proposed activities: floodplain values; safety; energy needs; floodplain hazards; economics; water supply and conservation; air pollution; and food and fiber production. These factors were evaluated originally for the USACE Permit and the results of that evaluation remain unchanged with the proposed Permit modification.

5.2.14 LEDPA

Based on the environmental analysis detailed above, the development of the Private DMPA Site C as the proposed FLNG Long Term Dredged Material Placement Area (LTDMPA) is considered the least environmentally damaging practicable alternative (LEDPA) that fulfills the Project purpose and need for the long-term placement of maintenance material dredged within the FLNG Berth

5.3 CUMULATIVE AND SECONDARY IMPACTS

The Council on Environmental Quality regulations for implementing the National Environmental Policy Act define cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or persons undertake such actions” (Title 40 Code of Federal Regulations Section 1508.7). Cumulative impacts may result when the environmental effects associated with a proposed project are added to temporary (construction-related) or permanent (operations-related) impacts associated with past, present, or reasonably foreseeable projects. Although impacts might be insignificant if they were to occur in isolation on an individual project basis, the additive or synergistic effects of multiple projects through space and/or time could be significant. Impacts include both direct effects (caused by the action and occurring concurrently with and proximal to the action) and indirect effects (which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable).

Consideration of criteria was integral in analyzing the projects that may contribute to cumulative impacts in combination with impacts from the proposed LTDMPA project. An action (i.e., an existing or proposed project development) must meet three criteria to warrant inclusion in a cumulative impacts analysis. It must:

- affect a resource or resources potentially affected by the proposed project for which the cumulative impacts analysis is being undertaken;
- cause this impact within all, or part of, the project area; and
- cause this impact within all, or part of, the timespan for the potential impact from the proposed project.

The resources potentially affected by the proposed project include tidal segments of the Brazos River, the city of Freeport, TX and Brazosport, TX and surrounding residences and industry, and wetland and wildlife resources of the surrounding area in Brazoria County. The project area is defined as the proposed LTDMPA site and associated FLNG Berth. The surrounding area of Freeport and Brazosport and industry within the port of Freeport is also included in the affected project area. The timespan considered for the potential impact from the proposed project is 15 years, the length of time the LTDMPA is proposed to maintain capacity for dredge material placement from maintenance dredging of the FLNG Berth. Projects considered for analysis of cumulative impact are described in the table below:

Table 11:
Activities and Projects Considered in the Cumulative Impacts Analysis

Project	Project Description	Location	Approximate Distance	Estimated Timeframe
Liquefied Natural Gas Terminal Projects				
Freeport LNG Liquefaction Project	Liquefaction plant (three trains), Pre-treatment Facility, and interconnecting pipeline/utility line system	Quintana, TX	3.8 miles	Construction 2014 Operation 2020
Other FLNG Projects				
FLNG Train 4 Project	Expansion of the existing Liquefaction Project including 10.6 mile 42inch pipeline	Quintana, TX	3.8 miles	Construction 2018 Operation 2022
Other Utilities and Industrial Facilities				
MEGlobal (EQUATE Petrochemicals Co.)	New monoethylene glycol facility	Oyster Creek, TX	4 miles	Construction underway Operation 2019
Port and Harbor Channel Developments				
Port Freeport & U.S. Army Corps of Engineers Freeport Harbor Channel Improvement Project	Channel widening from 400 feet up to 600 feet; increase depth from 45 feet to 55 feet	Freeport, TX	2.4 mile	Construction 2014 Operation 2021
Port Freeport Velasco Terminal Development	Additional berth expansion	Freeport, TX	2.3 miles	Operation 2021
FEDERAL AND STATE AGENCY PROJECTS				
Active Federal DMPA Sites	All active Federal DMPA sites in the immediate area	Freeport, TX	<500 feet (closest is north of LTDMPA Site)	Various

Table 11:
Activities and Projects Considered in the Cumulative Impacts Analysis

Project	Project Description	Location	Approximate Distance	Estimated Timeframe
RESIDENTIAL DEVELOPMENTS				
8 housing developments with a total of about 144 residential lots and 655 RV campsites		Freeport, TX	3 miles (northwest of Terminal)	Various
2 housing development with a total of 94 single-family homes and 92 RV campsites		Oyster Creek, TX	1.0 mile (west of Pipeline Corridor)	Various

5.3.1 FLNG Berth Dredging Impacts

Cumulative and secondary impacts associated with the maintenance dredging of the FLNG Berth and the federal maintenance dredging project of the Freeport Harbor include impacts to the benthic macroinfaunal and microinfaunal communities located within the dredge footprint and temporary impacts to water quality and dissolved oxygen. Incidental mortality to benthic organisms are likely to occur during dredging and transport of material to the LTDMPA. Benthic communities will be allowed to regenerate at the FLNG Berth between maintenance dredging events. The repeated dredging of the FLNG Berth over time could reduce the abundance and diversity of benthic organisms; however, the initial dredge of the FLNG Berth created additional submerged bottom, and that habitat is plentiful in the area. Therefore, no large-scale impacts to benthic communities would be anticipated as a result of the proposed Project. Temporary impacts to water quality including increased suspended solids and decreases in dissolved oxygen are anticipated to occur based on the nature of dredging operations. Turbidity is most common near the bottom and will likely be confined to deeper water in the berth or immediately adjacent water bottoms. Increased turbidity could cause fish in the surrounding areas to be displaced temporarily but is not expected to cause permanent displacement of mobile organisms. The current use of the channel creates a turbulent water environment and vessel traffic is expected to continue at current rates with future industrial developments in the port. The federally proposed widening of the channel will also cause temporary sediment suspension and turbidity in the project area and therefore, increased turbidity within shallow water areas of the GIWW or Freeport Harbor Channel as a result of this project or due to cumulative effects of this project is not anticipated. Additionally, continued dredging of the berth would allow a layer of higher salinity water to develop near the bottom of the water column. These areas have been shown to support fisheries species present in the surrounding area, especially during events where freshwater dominates the environment. The cumulative impacts of the proposed FLNG project over time along with ongoing projects is expected to have minimal impacts to the FLNG Berth.

5.3.2 Dredged Material Placement Area Impacts

Cumulative and secondary impacts associated with the proposed placement of dredged material at the ODMDS from the FLNG Project as well as other past, ongoing, and future projects were assessed in the prior permit amendment. Cumulative impacts associated with the construction of an upland confine LTDMPA for placement of dredged material from the FLNG Project are discussed below.

As discussed in Section 5.2, use of the proposed LTDMPA site for construction of an upland confined DMPA is consistent with regional land use patterns and would not cause indirect impacts to land use or

regional development trends. The construction of the proposed LTDMPA site will impact wetlands vegetation and wildlife of the immediate project area. Freeport LNG will ensure the avoidance of indirect impacts (e.g., from storm water runoff) on nearby wetlands through adherence to permit conditions and implementation of best management practices. In total, 196.5 acres of wetlands will be impacted in the project area, and mitigation is proposed. Several of the projects listed above will likely impact wetlands. Because each of the projects will need to obtain applicable permits from the USACE, each project would be expected to appropriately mitigate for impacts on wetland resources and minimize any cumulative wetland effects caused by development of the area.

Construction and operation of projects listed above will also result in temporary impacts on vegetation communities, and will likely result in the permanent conversion of vegetated habitats to developed, industrial land. Based on a desktop review, many of the projects are located within developed or open areas, and appear to require minimal vegetation clearing. Vegetation in the vicinity of the Project and other projects have been affected by ongoing industrial development and construction and maintenance of existing roads, railroads, natural gas and oil pipelines, utility lines, and electrical transmission line rights-of-way. Given the limited impacts on vegetation and the extensive industrial development in the vicinity, cumulative impacts on vegetation are expected to be minimal.

Impacts to aquatic areas outside the project area will not occur during construction of the LTDMPA. Potential direct impacts on fish and wildlife habitat during construction and operation of the Project will be limited to the potential for increased suspended sediment concentrations from erosion and stormwater runoff from construction areas and accidental spills during sediment transport from the berth to the LTDMPA. Freeport LNG will ensure the avoidance of impacts on aquatic wildlife through adherence to permit conditions and implementation of best management practices. Based on desktop review, many of the projects included in this cumulative analysis are located on or adjacent to surface waters and appear to require use of the surface waters. As noted previously, the proponents of each of the projects will need to obtain applicable permits from the USACE. Because these projects require USACE authorization, resource agencies will have the opportunity to review each of the project's potential impacts on fish and wildlife values and ensure that the project will have a de minimis effect. Therefore, the cumulative impacts on aquatic resources will be minimal.

Short-term impacts on wildlife potentially occurring during construction associated with LTDMPA construction and operation include increased noise, lighting, and human activity, which could disrupt breeding and/or feeding behavior of wildlife in the vicinity of the Project. Construction activities could result in temporary avoidance of the area, and could inhibit the movement of wildlife. Potentially, some smaller, less mobile fauna could become entrapped in excavations or could be inadvertently injured or killed by construction equipment, although no negative population-level effects are expected. Because the Project area supports currently operating industrial facilities within the larger Port Freeport, Oyster Creek, and Brazosport areas, wildlife present are likely fairly tolerant of industrial activity and noise. Therefore, cumulative impacts during construction and operation of the LTDMPA will be negligible to terrestrial wildlife.

Brazoria National Wildlife Refuge, Justin Hurst Wildlife Management Area, and two sensitive wildlife areas (Quintana Neotropical Bird Sanctuary and the Town of Quintana's Xeriscape Park) are located within the Project vicinity. The Brazoria National Wildlife Refuge is located east of the area, and visual impacts will be limited to construction of the proposed LTDMPA perimeter levee, which is expected to have temporary and minor impacts on visual resources. The Bryan Beach unit of the Justin Hurst Wildlife Management Area is on the southeast corner of Quintana Island, and the Quintana Neotropical Bird Sanctuary is located approximately 0.3 miles south of the FLNG Berth. Because construction and operation of the LTDMPA

Project will be in a similar location as other DMPAs and industrial sites, and consistent with existing construction activities, visual impacts will be permanent but not cumulatively significant.

Potential for cumulative noise impacts associated with the LTDMPA will be operation of heavy equipment at the LTDMPA Site (e.g., bulldozers, backhoes, cranes, rollers, and trucks). Construction activities will be limited to daytime hours. Therefore, most construction noise will not have nighttime impacts on residents near the city of Freeport. Additionally, due to the temporary nature of these activities, no associated long-term impacts on noise levels are anticipated.

The surrounding project area of the LTDMPA site is well established in industrial and port activities and therefore, will not be significantly impacted by the construction of additional industrial-based sites. Overall, cumulative impacts from the construction and operation of the LTDMPA are expected to be minor and insignificant.

6.0 CONCLUSION

Based on the environmental analysis detailed above, the development of the Private DMPA Site C and as the proposed FLNG LTDMPA is considered the LEDPA that fulfills the Project purpose and need for the long-term placement of maintenance material dredged within the FLNG Berth. As discussed in Section 4.4, the Freeport Maintenance ODMDS will still be utilized for the disposal of dredged material from the FLNG berth in the event that the volume or timing of the dredging activity becomes consequently feasible and beneficial for the overall project to do so. Capacity in the LTDMPA will be reserved for an estimated 15-year period for material from the FLNG Project. The proposed LTDMPA site will allow for the continuous operation of the FLNG terminal by providing the necessary capacity and availability for the disposal of routine annual maintenance dredging material from the FLNG Berth.

7.0 REFERENCES

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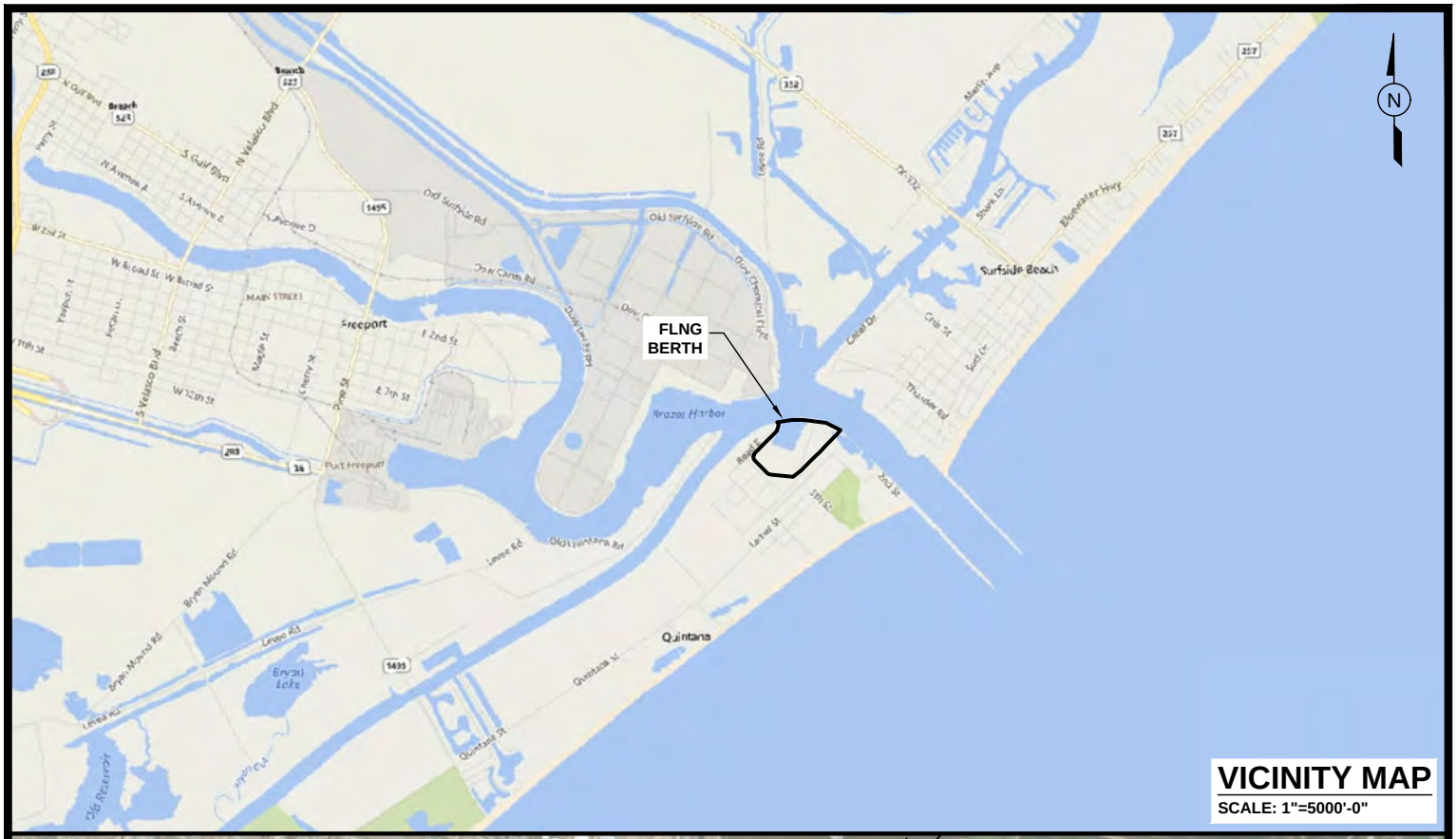
Appendix A

Project Figures



VICINITY MAP

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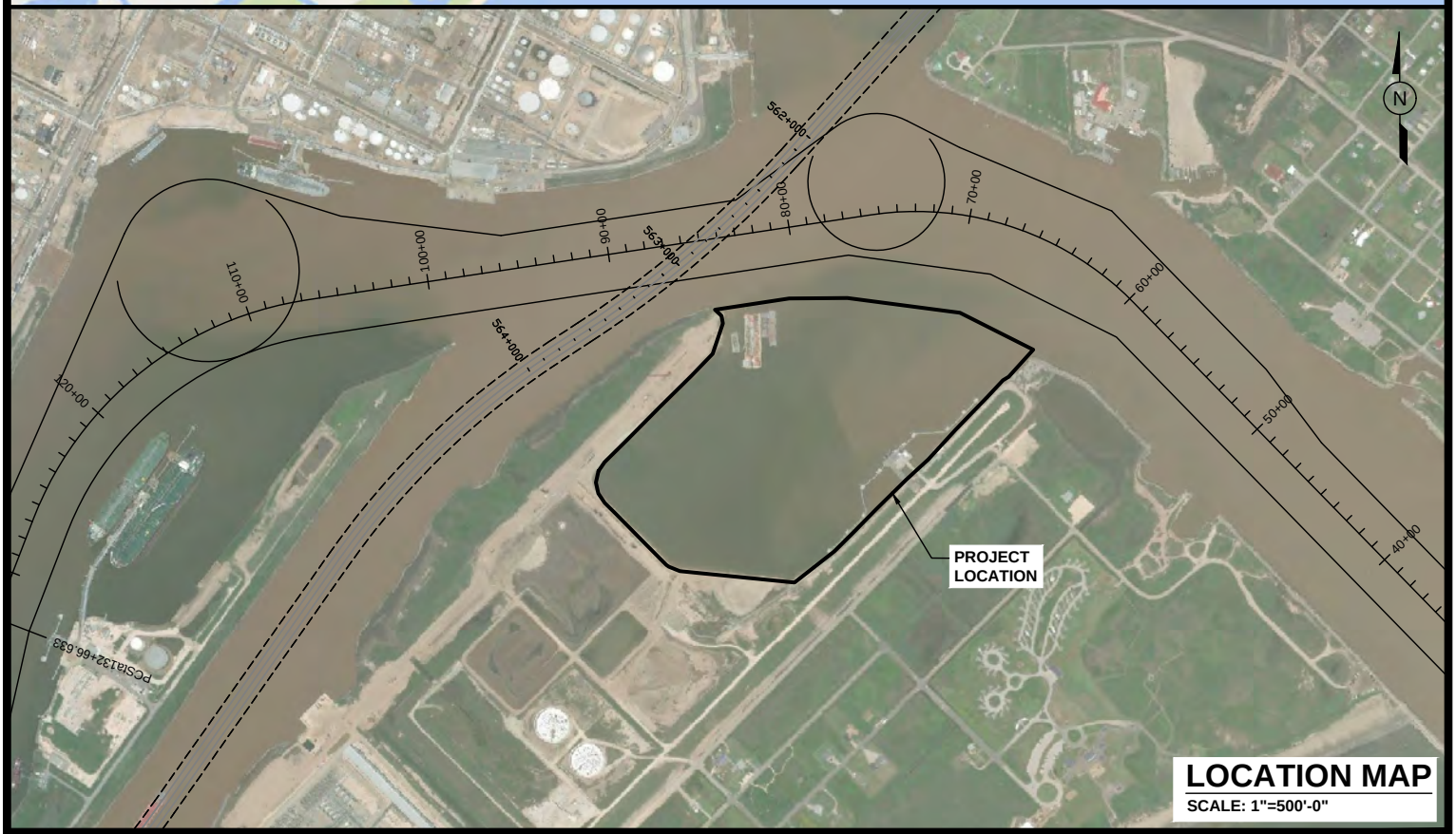

LOCATION MAP

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PURPOSE:	ENVIRONMENTAL ANALYSIS FOR USACE PERMIT MODIFICATION	OWNER:	FREEPORT LNG DEVELOPMENT, L.P.	LLOYD ENGINEERING, INC HOUSTON TEXAS, USA LICENSE NO. F-002846	DESIGN BY: MW DRAWN BY: JV SCALE: AS NOTED DATE: 08/25/2017
		APPLIED BY:	LLOYD ENGINEERING		
		APPLIC. No:	SWG-2013-00147		
LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		SHEET No: FIGURE 1
		WATER BODY:	GULF OF MEXICO		
		DATUM:	MLLW		

FILE NAME: C:\Users\John\Dropbox\3ddesign\Lloyd\025-FLNG-LTDMPA\Permit-EnvirAnalysis\FIG1_VIC MAP.dwg LAYOUT NAME: FIG-1 PLOTTED: Thursday, February 01, 2018 - 10:57am USER: John

OFFSHORE DISPOSAL ALT. ANALYSIS

SCALE: 1"=5000'-0"

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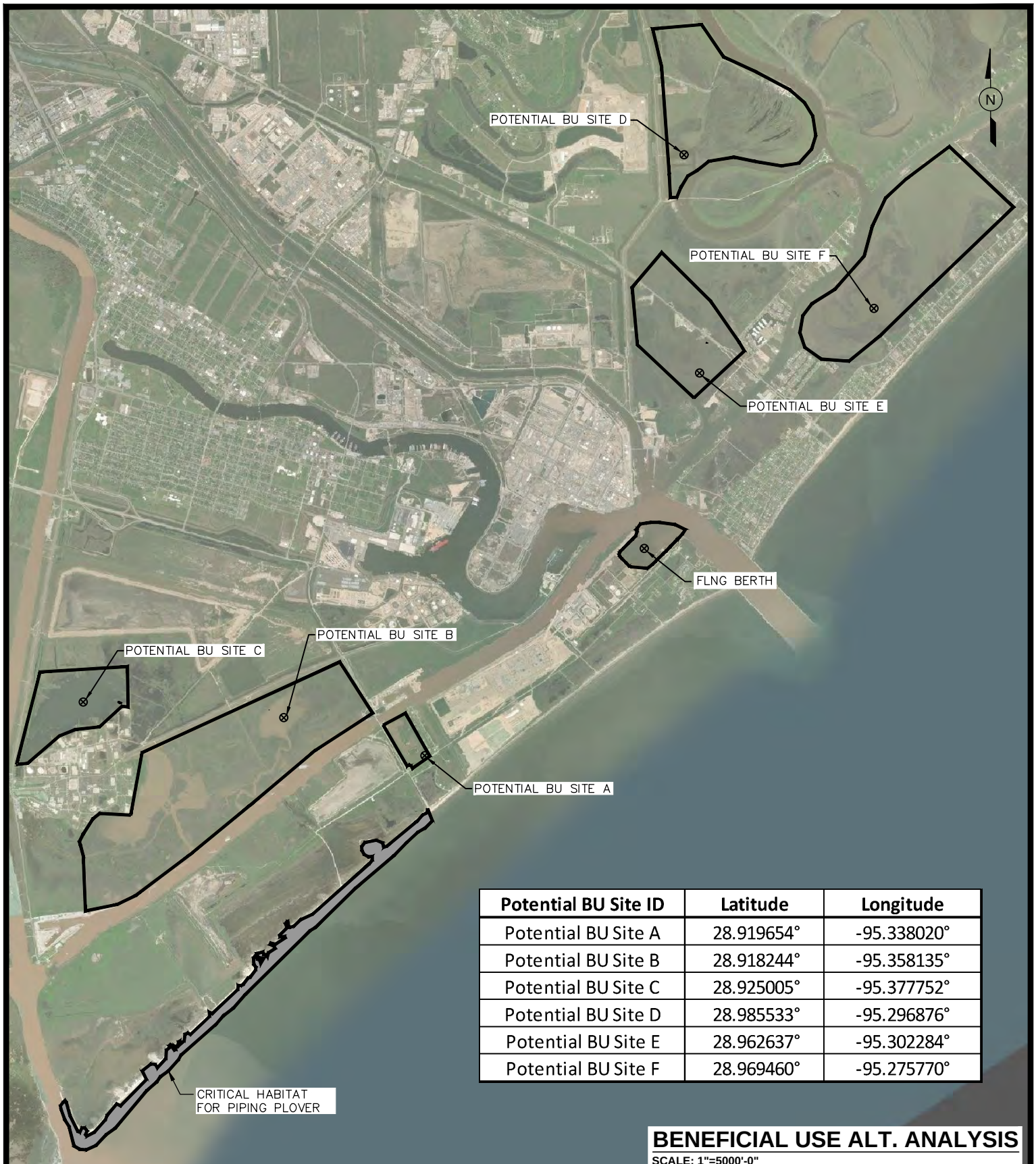
		APPLIED BY:	LLOYD ENGINEERING
		APPLIC. No:	SWG-2013-00147
LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS
		WATER BODY:	GULF OF MEXICO
		DATUM:	MLLW

LLOYD ENGINEERING, INC
HOUSTON TEXAS, USA
LICENSE NO. F-002846

DESIGN BY:	MW
DRAWN BY:	JV
SCALE:	1"=5000'-0"
DATE:	08/25/2017
SHEET No:	FIGURE 2

FILE NAME: C:\Users\Camilo Alvarez\Dropbox\Lloyd\025-FLNG-LTDMPA\Permit-EnvirAnalysis\FIG-2.dwg LAYOUT NAME: FIG-2 PLOTTED: Thursday, January 18, 2018 - 11:45am USER: Camilo Alvarez



Potential BU Site ID	Latitude	Longitude
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Potential BU Site B	28.918244°	-95.358135°
Potential BU Site C	28.925005°	-95.377752°
Potential BU Site D	28.985533°	-95.296876°
Potential BU Site E	28.962637°	-95.302284°
Potential BU Site F	28.969460°	-95.275770°

BENEFICIAL USE ALT. ANALYSIS

SCALE: 1"=5000'-0"

PURPOSE:	ENVIRONMENTAL ANALYSIS FOR USACE PERMIT MODIFICATION	OWNER:	FREEPORT LNG DEVELOPMENT, L.P.	LLOYD ENGINEERING, INC HOUSTON TEXAS, USA LICENSE NO. F-002846	DESIGN BY: MW
		APPLIED BY:	LLOYD ENGINEERING		DRAWN BY: JV
		APPLIC. No:	SWG-2013-00147		SCALE: 1"-5000'-0"
LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		DATE: 08/25/2017
		WATER BODY:	GULF OF MEXICO		SHEET No: FIGURE 3
		DATUM:	MLLW		

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		APPLIED BY:	LLOYD ENGINEERING		DRAWN BY: JV
		APPLIC. No:	SWG-2013-00147		SCALE: 1"-500'-0"
LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		DATE: 08/25/2017
		WATER BODY:	GULF OF MEXICO		SHEET No: FIGURE 4A
		DATUM:	MLLW		

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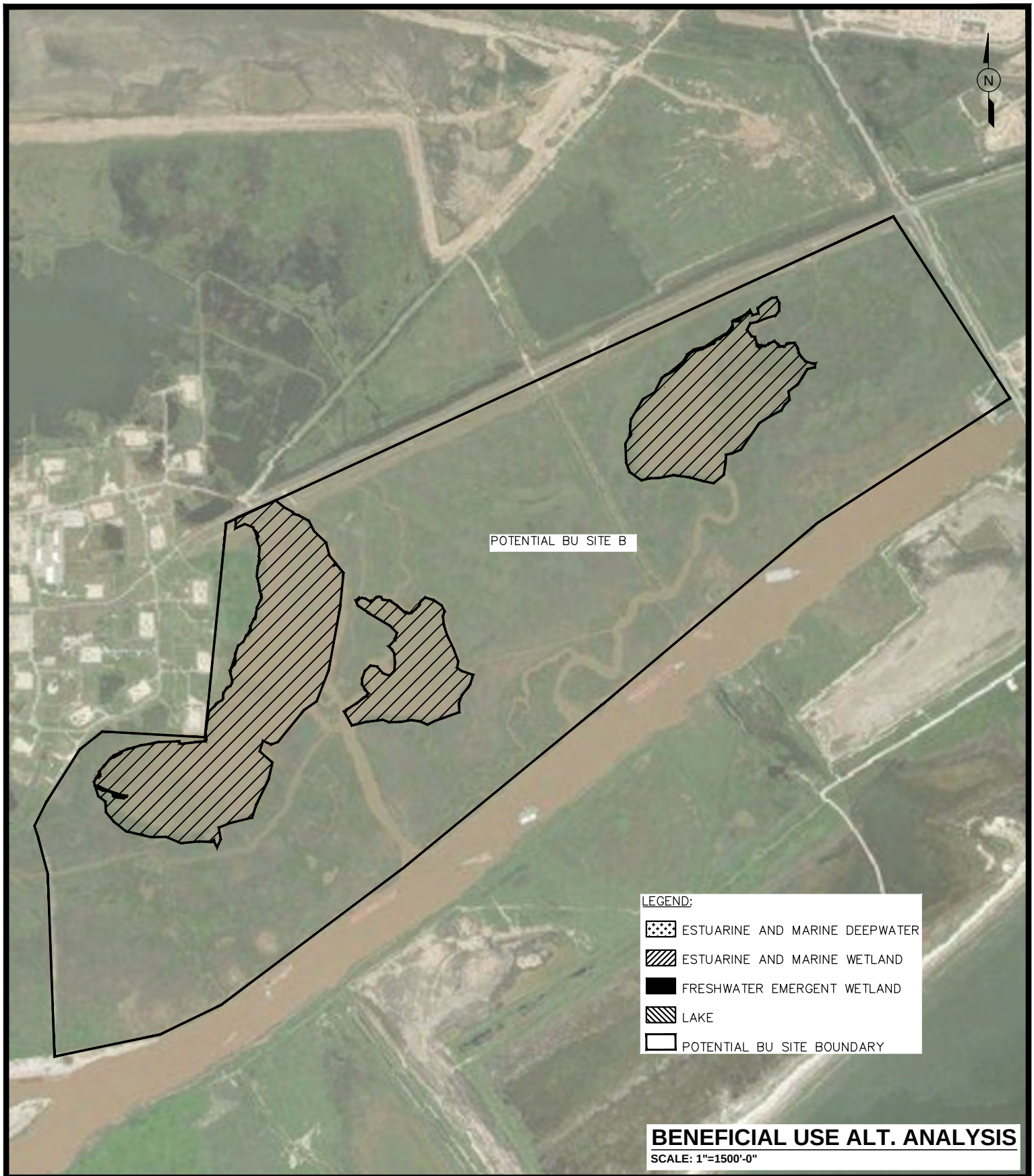

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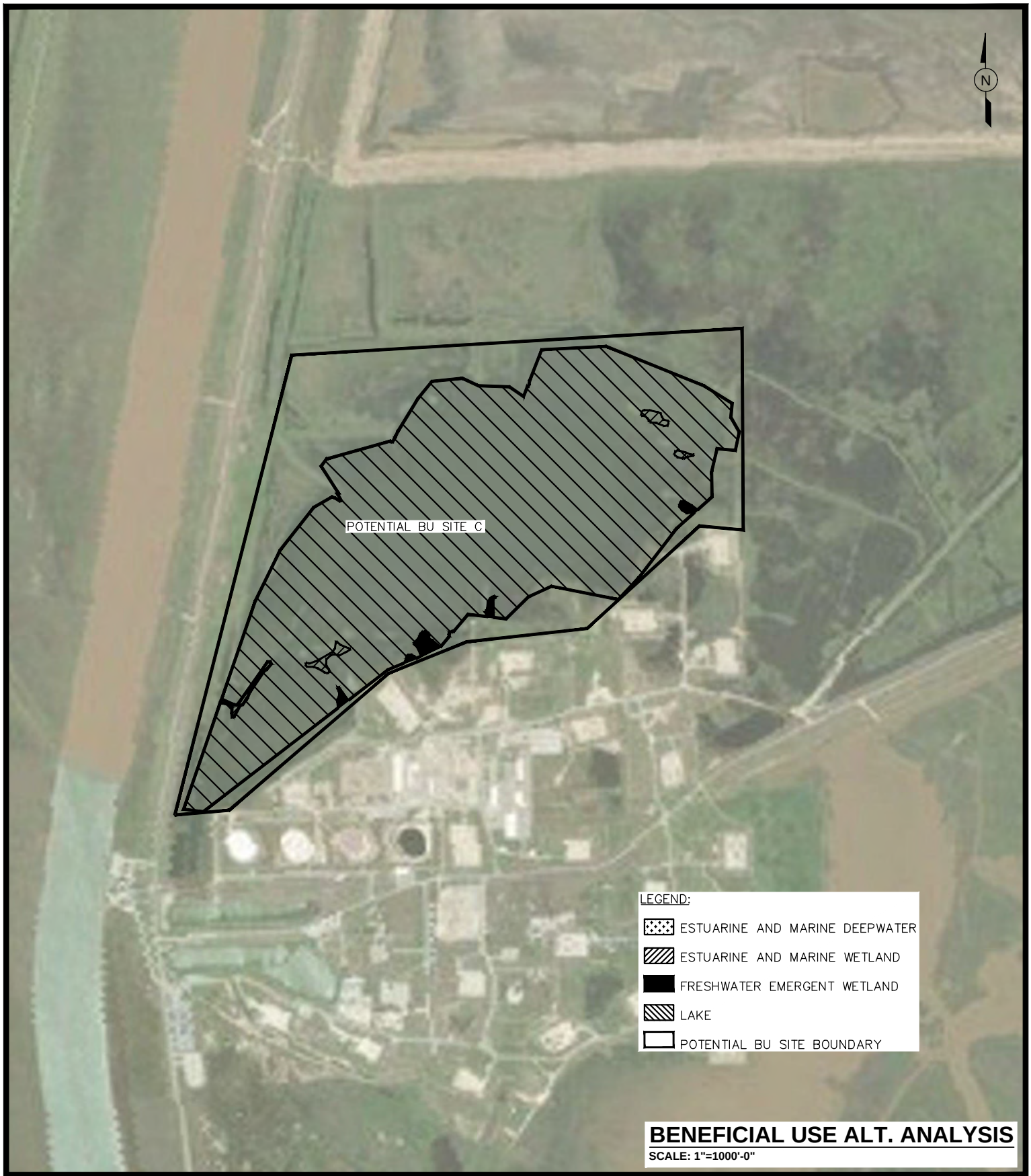

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LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		DATE: 08/25/2017
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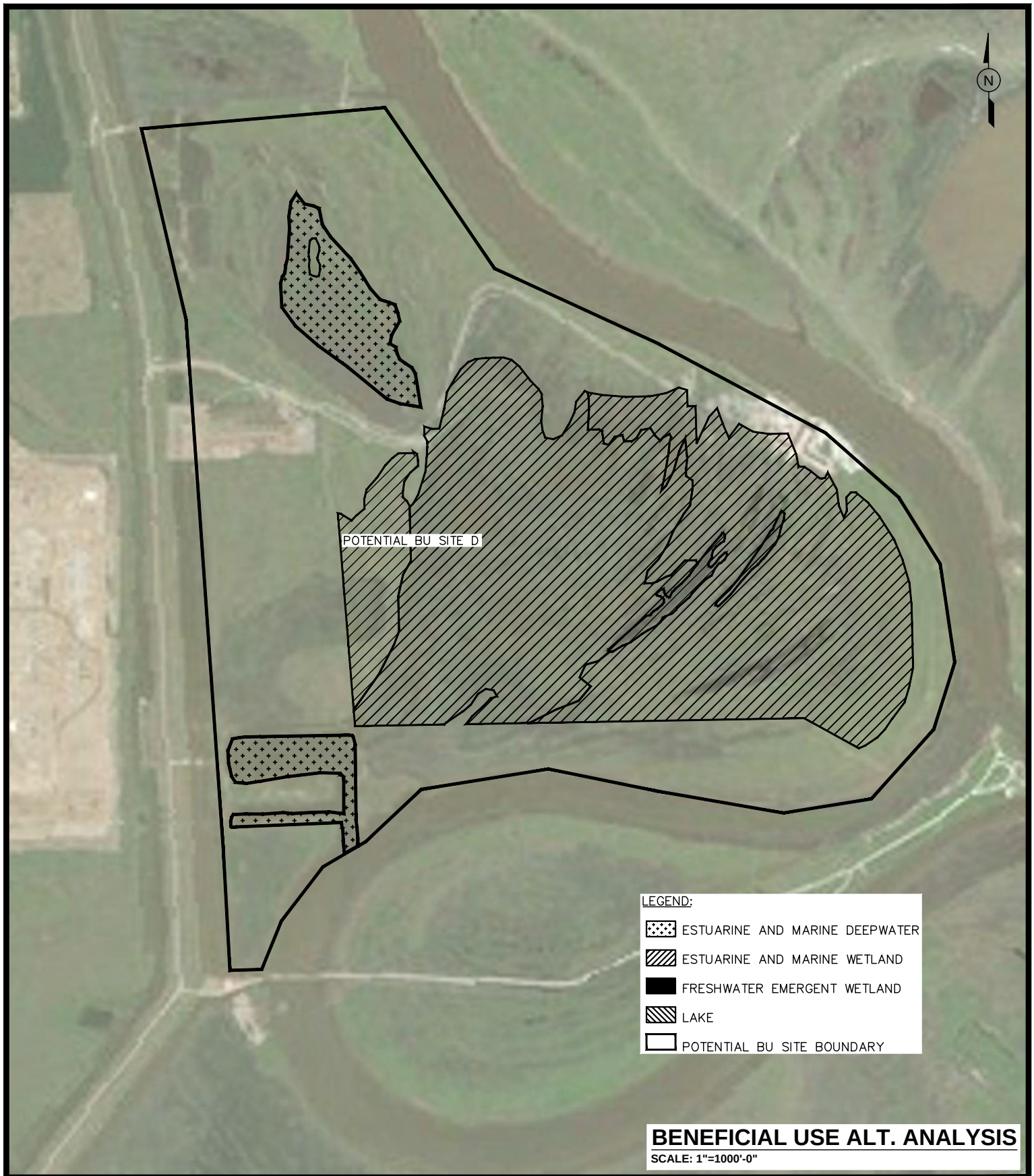

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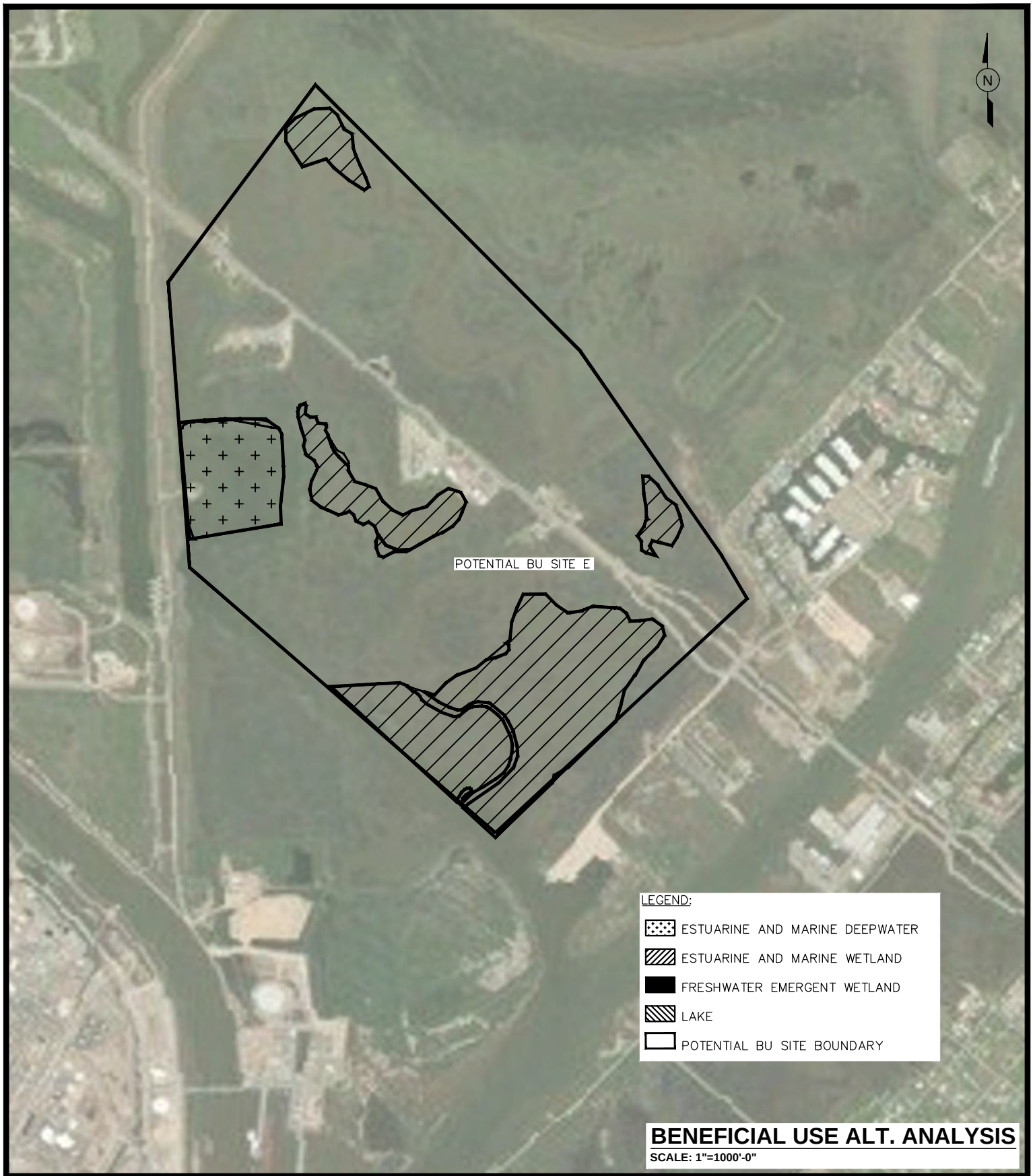

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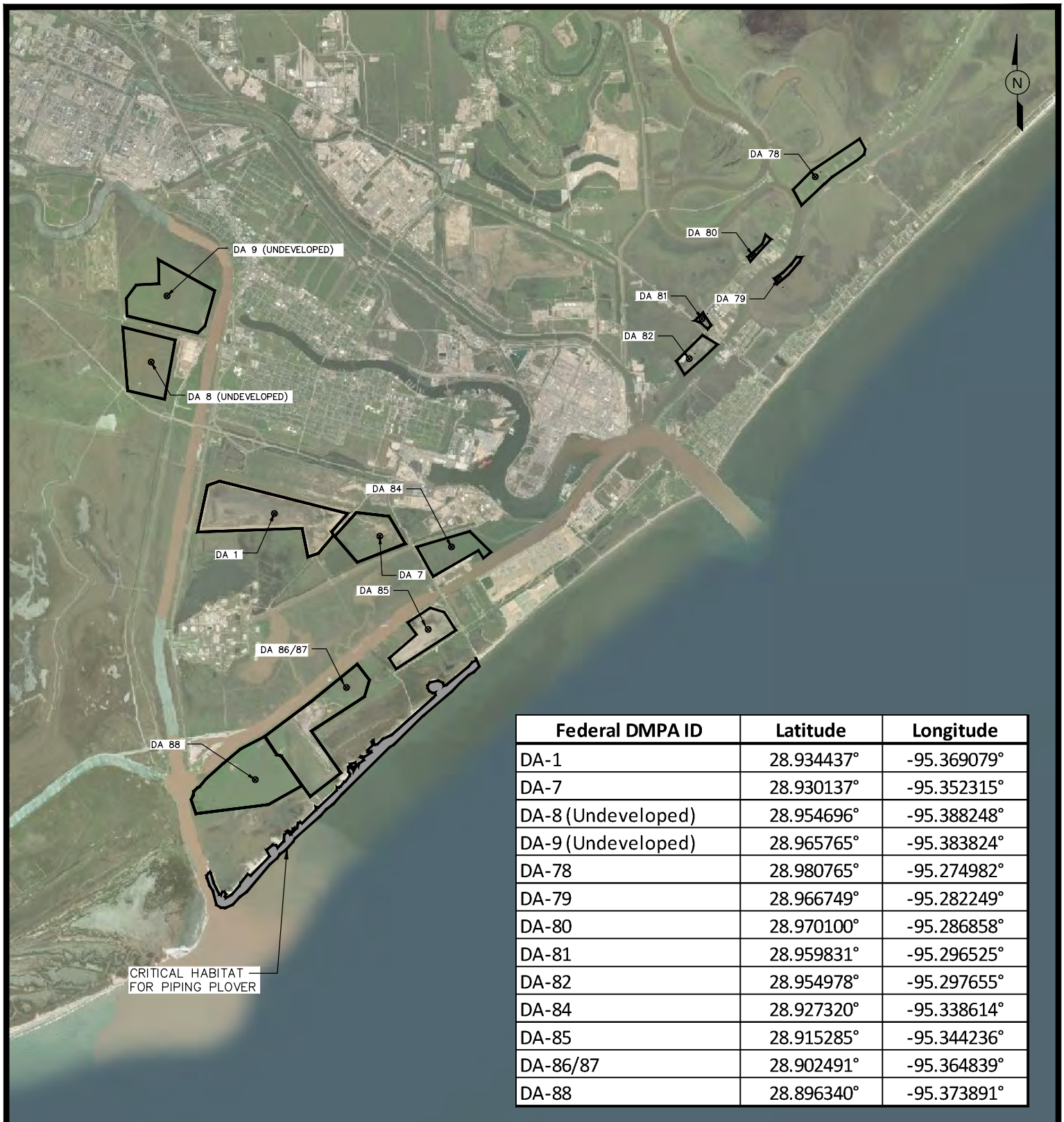

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DA-7	28.930137°	-95.352315°
DA-8 (Undeveloped)	28.954696°	-95.388248°
DA-9 (Undeveloped)	28.965765°	-95.383824°
DA-78	28.980765°	-95.274982°
DA-79	28.966749°	-95.282249°
DA-80	28.970100°	-95.286858°
DA-81	28.959831°	-95.296525°
DA-82	28.954978°	-95.297655°
DA-84	28.927320°	-95.338614°
DA-85	28.915285°	-95.344236°
DA-86/87	28.902491°	-95.364839°
DA-88	28.896340°	-95.373891°

FEDERAL DMPA ALT. ANALYSIS

SCALE: 1"=7000'-0"

PURPOSE:	ENVIRONMENTAL ANALYSIS FOR USACE PERMIT MODIFICATION	OWNER:	FREEPORT LNG DEVELOPMENT, L.P.	LLOYD ENGINEERING, INC HOUSTON TEXAS, USA LICENSE NO. F-002846	DESIGN BY: MW
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LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		DATE: 08/25/2017
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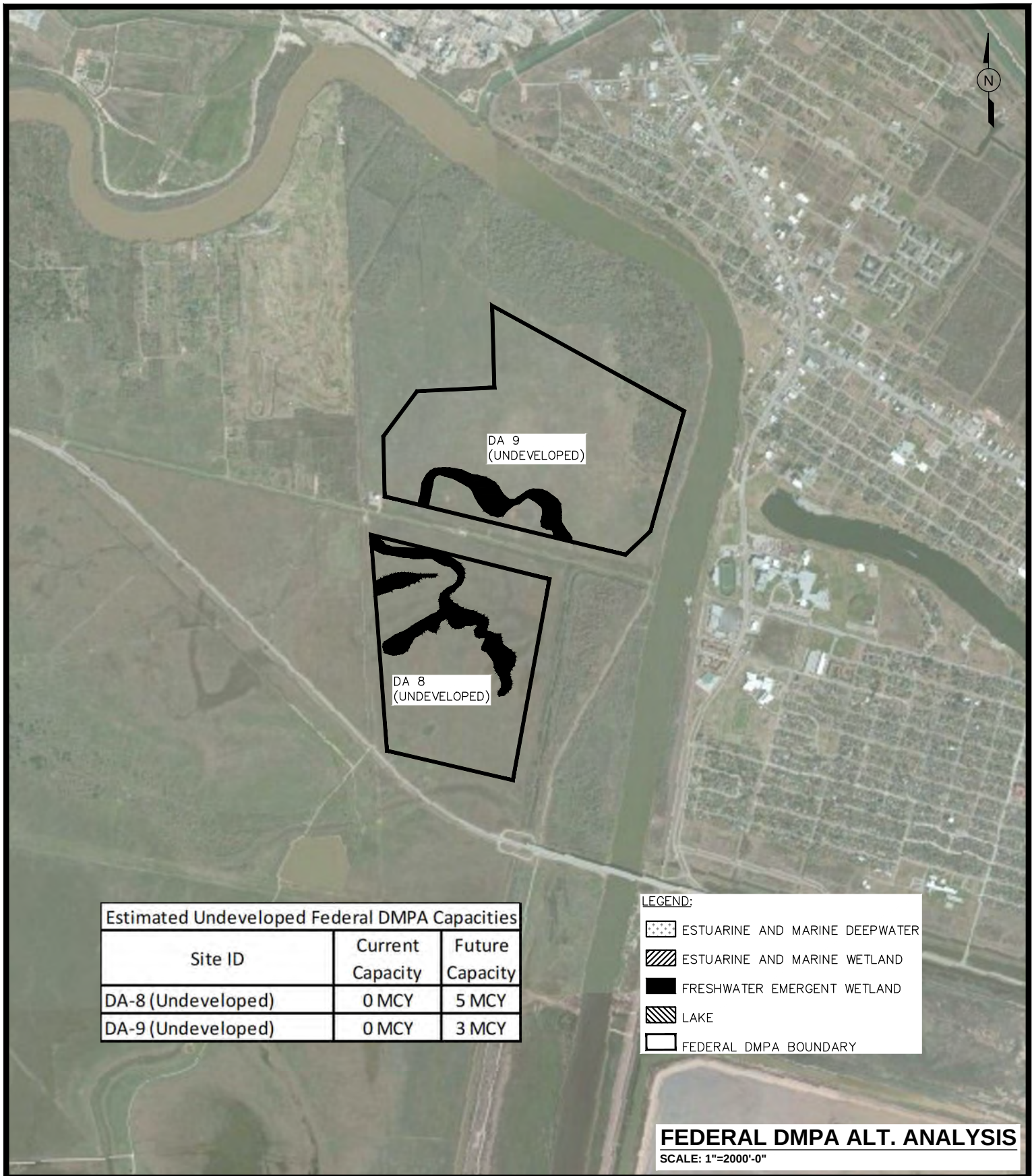

Estimated Undeveloped Federal DMPA Capacities		
Site ID	Current Capacity	Future Capacity
DA-8 (Undeveloped)	0 MCY	5 MCY
DA-9 (Undeveloped)	0 MCY	3 MCY

FEDERAL DMPA ALT. ANALYSIS

SCALE: 1"=2000'-0"

PURPOSE:	ENVIRONMENTAL ANALYSIS FOR USACE PERMIT MODIFICATION	OWNER:	FREEPORT LNG DEVELOPMENT, L.P.	LLOYD ENGINEERING, INC HOUSTON TEXAS, USA LICENSE NO. F-002846	DESIGN BY: MW
		APPLIED BY:	LLOYD ENGINEERING		DRAWN BY: JV
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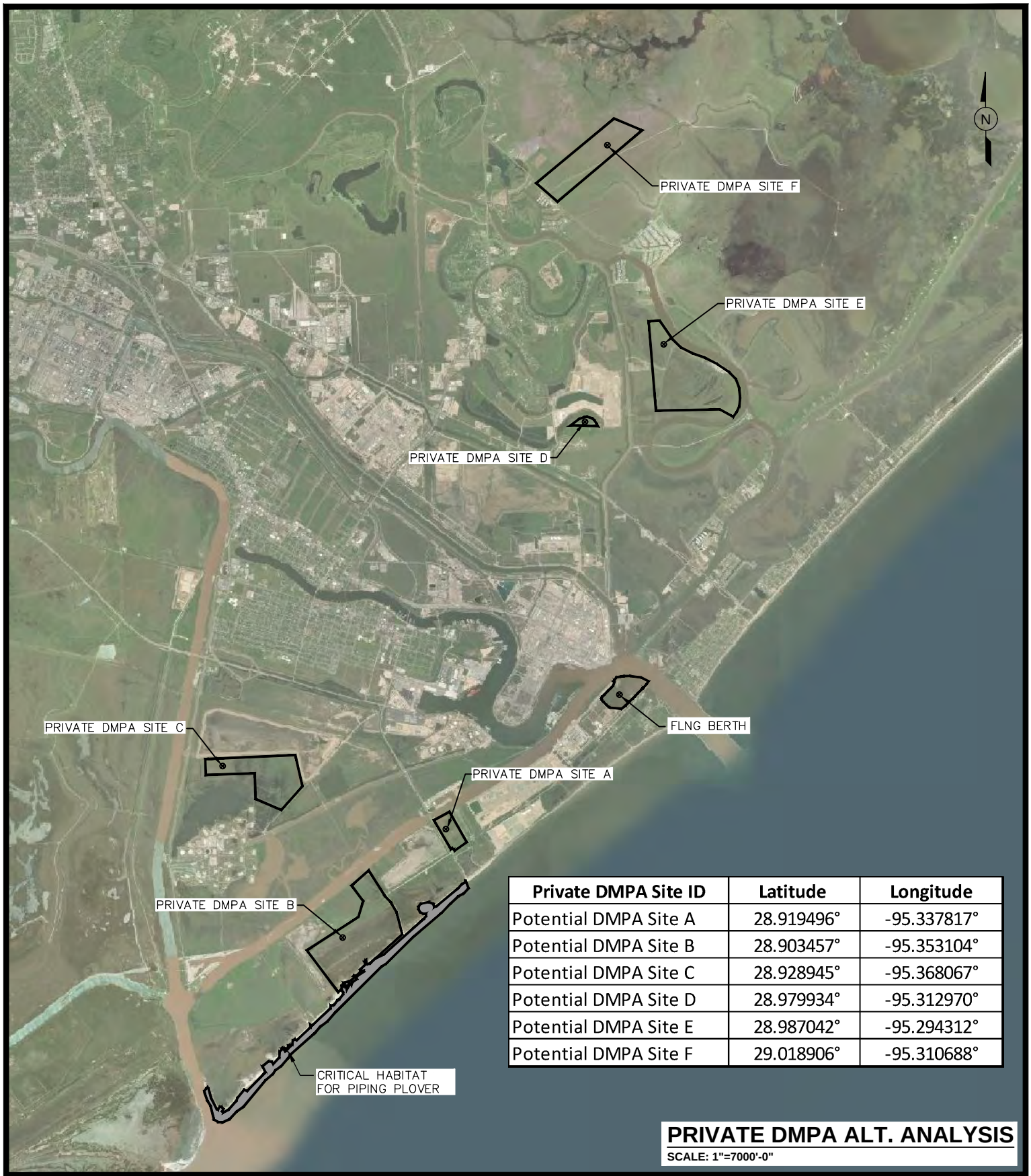
LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		DATE: 08/25/2017
		WATER BODY:	GULF OF MEXICO		SHEET No: FIGURE 6
		DATUM:	MLLW		

FILE NAME: C:\Users\Camilo Alvarez\Dropbox\Lloyd\025-FLNG-LTDMPA\Permit-EnvirAnalysis\FIG-6.dwg LAYOUT NAME: FIG-6 PLOTTED: Wednesday, January 31, 2018 - 1:39pm USER: Camilo Alvarez



Private DMPA Site ID	Latitude	Longitude
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Potential DMPA Site B	28.903457°	-95.353104°
Potential DMPA Site C	28.928945°	-95.368067°
Potential DMPA Site D	28.979934°	-95.312970°
Potential DMPA Site E	28.987042°	-95.294312°
Potential DMPA Site F	29.018906°	-95.310688°

PRIVATE DMPA ALT. ANALYSIS

SCALE: 1"=7000'-0"

PURPOSE:	ENVIRONMENTAL ANALYSIS FOR USACE PERMIT MODIFICATION	OWNER:	FREEPORT LNG DEVELOPMENT, L.P.	LLOYD ENGINEERING, INC HOUSTON TEXAS, USA LICENSE NO. F-002846	DESIGN BY: MW
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LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		DATE: 08/25/2017
		WATER BODY:	GULF OF MEXICO		SHEET No: FIGURE 7
		DATUM:	MLLW		

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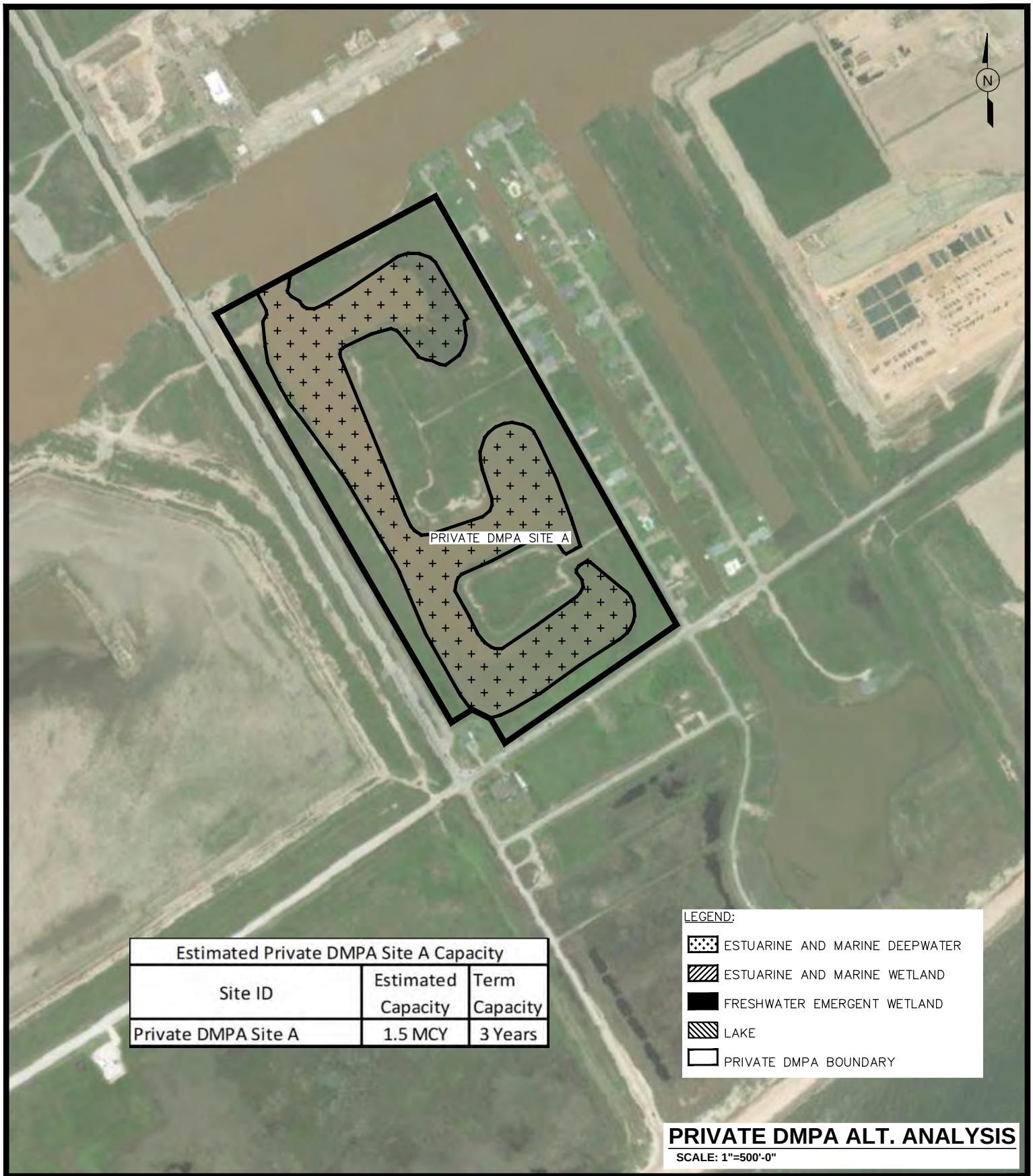


Estimated Private DMPA Site A Capacity		
Site ID	Estimated Capacity	Term Capacity
Private DMPA Site A	1.5 MCY	3 Years

LEGEND:

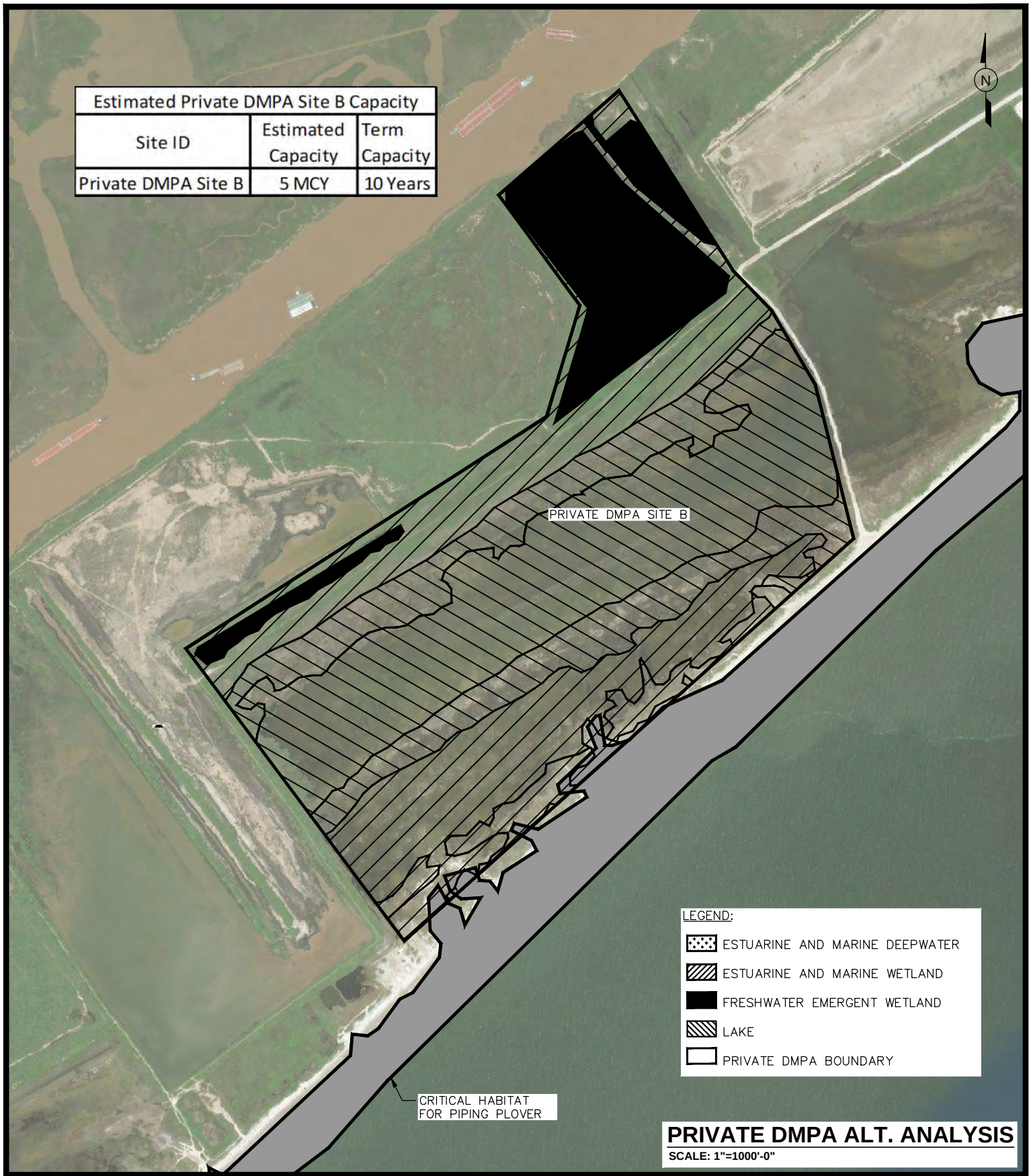
- ESTUARINE AND MARINE DEEPWATER
- ESTUARINE AND MARINE WETLAND
- FRESHWATER EMERGENT WETLAND
- LAKE
- PRIVATE DMPA BOUNDARY

PRIVATE DMPA ALT. ANALYSIS

SCALE: 1"=500'-0"

PURPOSE:	ENVIRONMENTAL ANALYSIS FOR USACE PERMIT MODIFICATION	OWNER:	FREEPORT LNG DEVELOPMENT, L.P.	LLOYD ENGINEERING, INC HOUSTON TEXAS, USA LICENSE NO. F-002846	DESIGN BY: MW
		APPLIED BY:	LLOYD ENGINEERING		DRAWN BY: JV
		APPLIC. No:	SWG-2013-00147		SCALE: 1"-500'-0"
LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		DATE: 08/25/2017
		WATER BODY:	GULF OF MEXICO		SHEET No: FIGURE 8A
		DATUM:	MLLW		

FILE NAME: C:\Users\Camilo Alvarez\Dropbox\Lloyd\025-FLNG-LTDMPA\Permit-EnvirAnalysis\FIG-8A.dwg LAYOUT NAME: FIG-8A PLOTTED: Wednesday, January 31, 2018 - 1:43pm USER: Camilo Alvarez



PRIVATE DMPA ALT. ANALYSIS

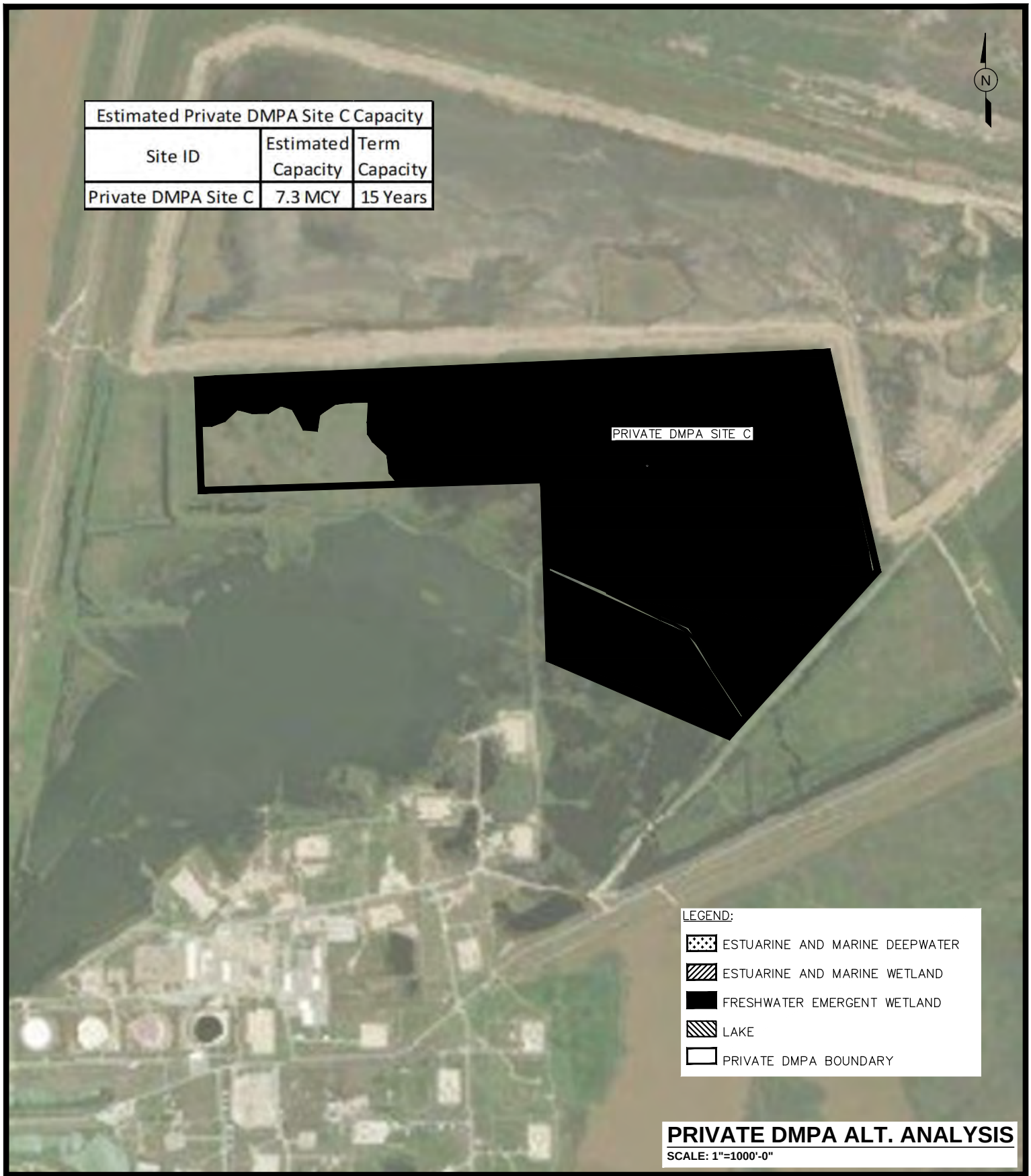
SCALE: 1"=1000'-0"

PURPOSE:	ENVIRONMENTAL ANALYSIS FOR USACE PERMIT MODIFICATION	OWNER:	FREEPORT LNG DEVELOPMENT, L.P.
		APPLIED BY:	LLOYD ENGINEERING
		APPLIC. No:	SWG-2013-00147
LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS
		WATER BODY:	GULF OF MEXICO
		DATUM:	MLLW

LLOYD ENGINEERING, INC
HOUSTON TEXAS, USA
LICENSE NO. F-002846

DESIGN BY:	MW
DRAWN BY:	JV
SCALE:	1"-1000'-0"
DATE:	08/25/2017
SHEET No:	FIGURE 8B

FILE NAME: C:\Users\Camilo Alvarez\Dropbox\Lloyd\025-FLNG-LTDMPA\Permit-EnvirAnalysis\FIG-8B.dwg LAYOUT NAME: FIG-8B PLOTTED: Wednesday, January 31, 2018 - 1:46pm USER: Camilo Alvarez



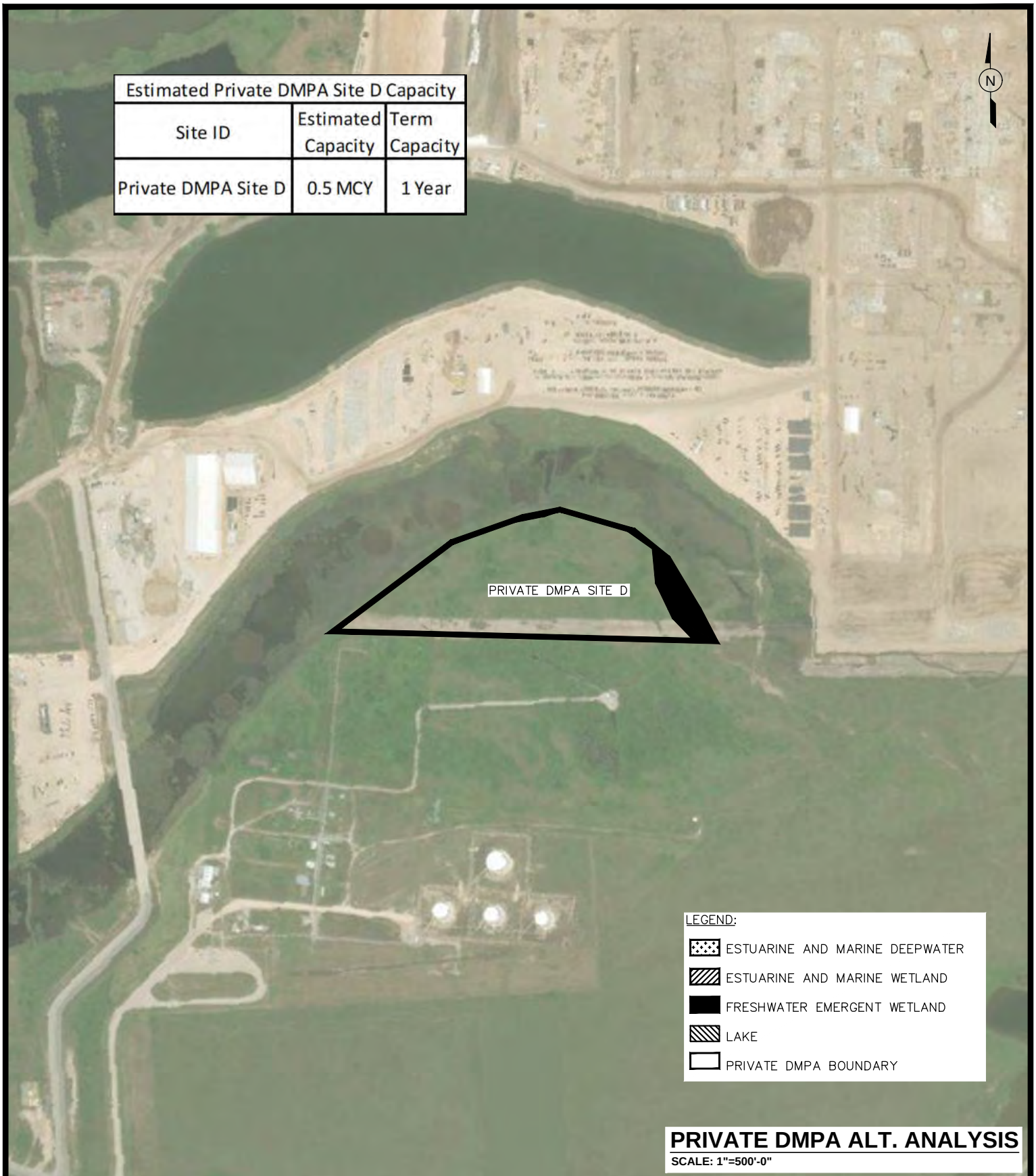
PRIVATE DMPA ALT. ANALYSIS

SCALE: 1"=1000'-0"

PURPOSE:	ENVIRONMENTAL ANALYSIS FOR USACE PERMIT MODIFICATION	OWNER:	FREEPORT LNG DEVELOPMENT, L.P.	LLOYD ENGINEERING, INC HOUSTON TEXAS, USA LICENSE NO. F-002846	DESIGN BY: MW
		APPLIED BY:	LLOYD ENGINEERING		DRAWN BY: JV
		APPLIC. No:	SWG-2013-00147		SCALE: 1"-1000'-0"
LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		DATE: 08/25/2017
		WATER BODY:	GULF OF MEXICO		SHEET No: FIGURE 8C
		DATUM:	MLLW		

FILE NAME: C:\Users\Camilo Alvarez\Dropbox\Lloyd\025-FLNG-LTDMPA\Permit-EnvirAnalysis\FIG-8C.dwg LAYOUT NAME: FIG-8C PLOTTED: Wednesday, January 31, 2018 - 1:17pm USER: Camilo Alvarez

Estimated Private DMPA Site D Capacity		
Site ID	Estimated Capacity	Term Capacity
Private DMPA Site D	0.5 MCY	1 Year

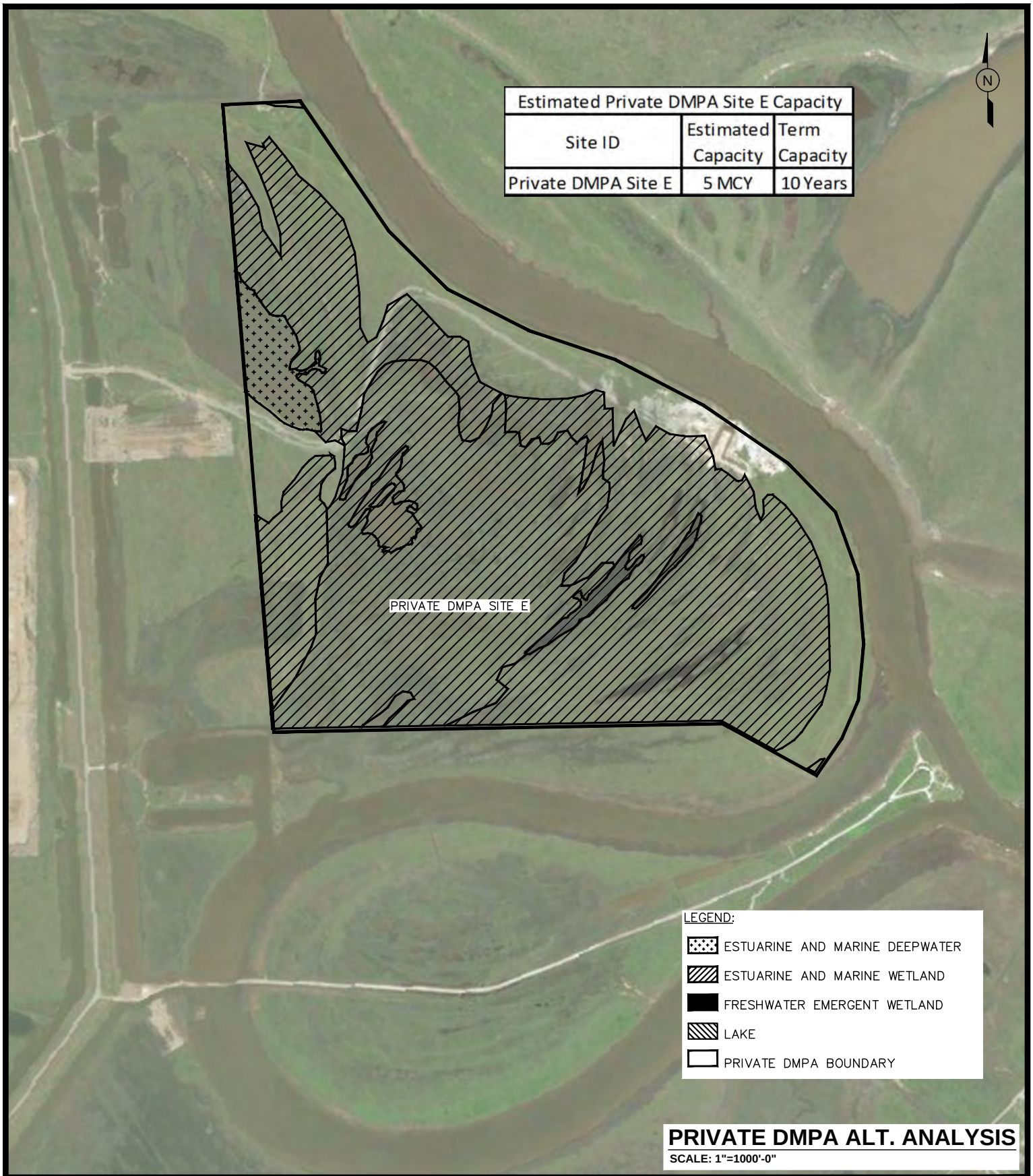


PRIVATE DMPA ALT. ANALYSIS

SCALE: 1"=500'-0"

PURPOSE:	ENVIRONMENTAL ANALYSIS FOR USACE PERMIT MODIFICATION	OWNER:	FREEPORT LNG DEVELOPMENT, L.P.	LLOYD ENGINEERING, INC HOUSTON TEXAS, USA LICENSE NO. F-002846	DESIGN BY: MW
		APPLIED BY:	LLOYD ENGINEERING		DRAWN BY: JV
		APPLIC. No:	SWG-2013-00147		SCALE: 1"-500'-0"
LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		DATE: 08/25/2017
		WATER BODY:	GULF OF MEXICO		SHEET No: FIGURE 8D
		DATUM:	MLLW		

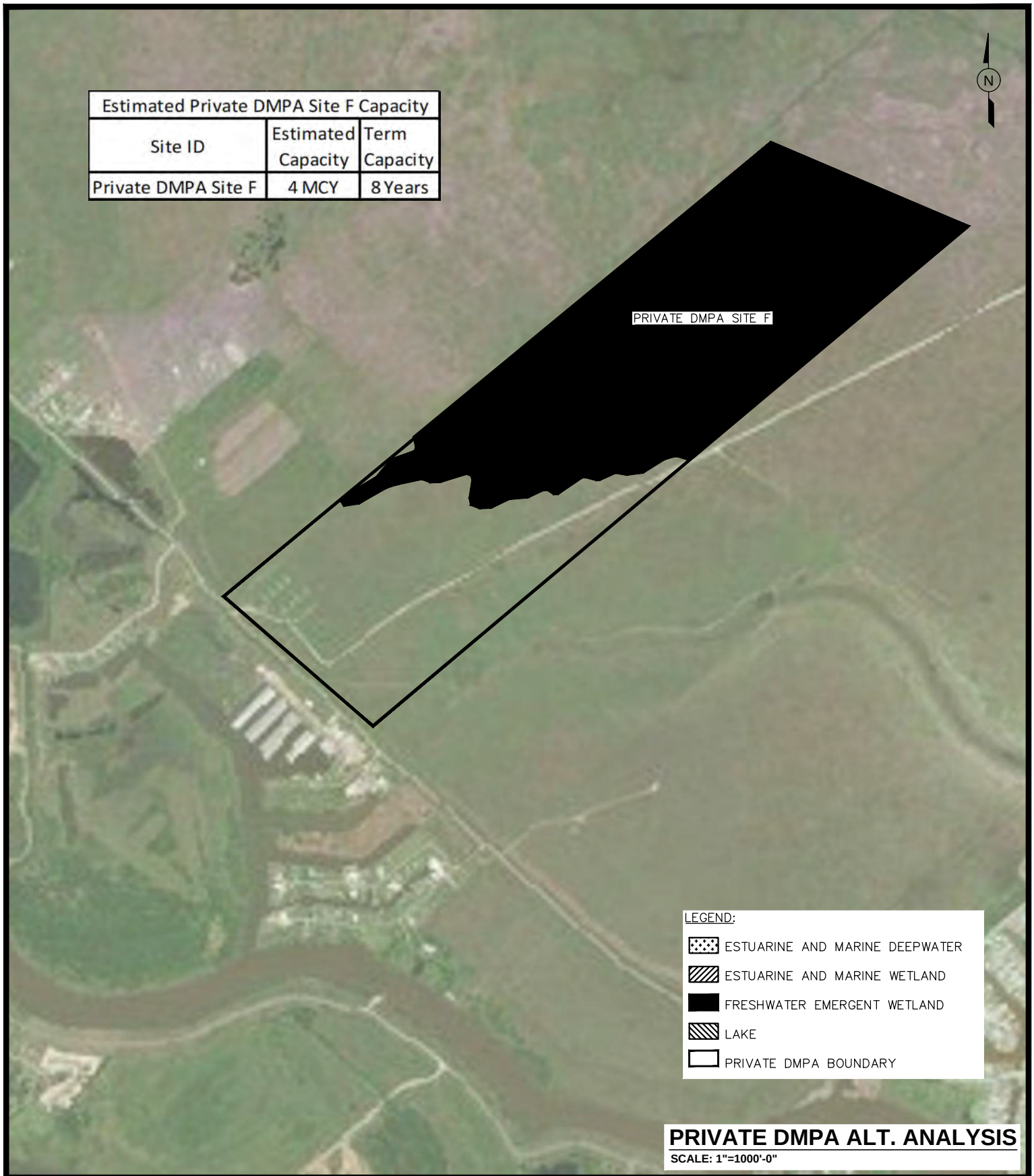
FILE NAME: C:\Users\Camilo Alvarez\Dropbox\Lloyd\025-FLNG-LTDMPA\Permit-EnvirAnalysis\FIG-8D.dwg LAYOUT NAME: FIG-8D PLOTTED: Wednesday, January 31, 2018 - 1:27pm USER: Camilo Alvarez



PRIVATE DMPA ALT. ANALYSIS

SCALE: 1"=1000'-0"

PURPOSE:	ENVIRONMENTAL ANALYSIS FOR USACE PERMIT MODIFICATION	OWNER:	FREEPORT LNG DEVELOPMENT, L.P.	LLOYD ENGINEERING, INC HOUSTON TEXAS, USA LICENSE NO. F-002846	DESIGN BY: MW
		APPLIED BY:	LLOYD ENGINEERING		DRAWN BY: JV
		APPLIC. No:	SWG-2013-00147		SCALE: 1"-1000'-0"
LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		DATE: 08/25/2017
		WATER BODY:	GULF OF MEXICO		SHEET No: FIGURE 8E
		DATUM:	MLLW		



PRIVATE DMPA ALT. ANALYSIS

SCALE: 1"=1000'-0"

PURPOSE:	ENVIRONMENTAL ANALYSIS FOR USACE PERMIT MODIFICATION	OWNER:	FREEPORT LNG DEVELOPMENT, L.P.	LLOYD ENGINEERING, INC HOUSTON TEXAS, USA LICENSE NO. F-002846	DESIGN BY: MW
		APPLIED BY:	LLOYD ENGINEERING		DRAWN BY: JV
		APPLIC. No:	SWG-2013-00147		SCALE: 1"-1000'-0"
LOCATION:	FREEPORT, TEXAS	COUNTY:	BRAZORIA COUNTY, TEXAS		DATE: 08/25/2017
		WATER BODY:	GULF OF MEXICO		SHEET No: FIGURE 8F
		DATUM:	MLLW		

FILE NAME: C:\Users\Camilo Alvarez\Dropbox\Lloyd\025-FLNG-LTDMPA\Permit-EnvirAnalysis\FIG-8F.dwg LAYOUT NAME: FIG-8F PLOTTED: Wednesday, January 31, 2018 - 1:32pm USER: Camilo Alvarez

Appendix B

FLNG Marine Basin Sedimentation Study

Freeport LNG
Liquefaction Project and Phase II Developments
Environmental Analysis

Appendix B

FLNG Marine Basin Sedimentation Study

LLOYD
ENGINEERING, INC.

August 22, 2016

Mr. Tony Galt
Marine Operations Manager
Freeport LNG

Subject: FLNG Marine Basin Sedimentation Study
Freeport, Texas

Dear Tony,

Lloyd Engineering, Inc. (LEI) is pleased to present our findings, in accordonce with our propasal, doted 02/18/16, to study the naturally occurring sedimentation within the FLNG marine basin. LEI has evaluated existing (observed) sedimentation patterns, and developed and analyzed existing current diversion structure and/or conceptual dredging solutions that may reduce sedimentation within the basin. The FLNG terminal is located on the Freeport Harbor Channel, at the Lower Turning Basin, approximately 1,500 feet from the Gulf Intracoastal Waterway (GIWW). This study was completed in conjunction with the modeling capabilities of Mott MacDonald.

Figure 1 - Project Location

Assumptions:

The following assumptions were made during the development of this study:

- LEI will utilize existing historical pre and post dredging hydrographic surveys from within the basin and the adjacent channel.
- LEI will utilize historical dredging records within the FLNG basin including volume dredged, date of dredging, ond design dredging template.
- LEI will provide a dredging solution on a conceptuol level only, as part of this scope.
- No new data will be collected as part of this scope. LEI will use the proposed berth/expansion layout in this study.
- No model validation will be performed. However, sedimentation volumetric rates will be reviewed and compared with the observed rates to ensure the simulations are sufficiently accurate to provide recommendations.

6565 West Loop S., Ste. 708 • Bellaire, TX 77401 • PHONE (832)426-4656 • FAX (832)804-8056
www.lloydeng.com

- No vessel maneuverability analysis will be performed related to the current diversion structure as part of this scope of work.

Basin Sedimentation Analysis

A sedimentation analysis of the Freeport LNG basin was conducted by comparing historical hydrographic surveys of the basin collected from May 22, 2009 through October 23, 2015. The surveys were categorized into 5 comparisons (to ideally capture the period from a post-dredge to a pre-dredge event when possible) throughout the survey timeline. The analysis was conducted between each successive survey to determine the average sedimentation between each survey. Table 1 shows the dates of the surveys analyzed.

Table 1: Information on Historical Dredging Activities and Survey Schedules

Year	Month/Day	Purpose of Survey	Comparison
2009	May 22	Condition	Comparison 1
	November 05	Condition	
2010	March 04	**Pre-Dredge**	
	October 13	**Post-Dredge**	Comparison 2
2011	March 08	Condition	
	July 13	Condition	
	November 02	**Pre-Dredge**	
	November 28	**Post-Dredge**	Comparison 3
2012	June 07	Condition	
	November 14	Condition	
2013	January 07	Condition	
	April 12	**Pre-Dredge**	
	May 06	**Post-Dredge**	Comparison 4
	November 01	Condition	
2014	May 19	Condition	
	November 25	Condition	
2015	February 06	**Pre-Dredge**	
	March 03	**Post-Dredge**	Comparison 5
	May 19	Condition	
	October 23	Condition	

The common overlapping area for all the available surveys was identified and used as the analysis basin area to compute the depth difference between each successive survey. The average depth difference within the basin area was then calculated to determine the average sedimentation within the basin for that time period. Figure 2 shows a contour difference plot of the LNG basin between November 28, 2011 and June 7, 2012.

Figure 2 - contour difference plot of the LNG basin between November 28, 2011 and June 7, 2012

Table 2: Sedimentation Rate Calculations (Existing Basin)

Start Date	End Date	Time Elapsed [yrs]	Average Difference [ft]	Sedimentation Rate [ft/yr]
Comparison 1				
5/22/2009 (Condition)	11/5/2009 (Condition)	0.46	1.2	2.7
11/5/2009 (Condition)	3/4/2010 (Pre-Dredge)	0.33	2.5	7.8
Comparison 2				
10/13/2010 (Post-Dredge)	3/8/2011(Condition)	0.40	0.9	2.3
3/8/2011(Condition)	7/13/2011 (Condition)	0.35	0.8	2.4
7/13/2011 (Condition)	11/2/2011 (Pre-Dredge)	0.31	0.5	1.6
Comparison 3				
11/28/2011 (Post-Dredge)	6/7/2012 (Condition)	0.53	4.1	7.8
6/7/2012 (Condition)	11/14/2012 (Condition)	0.44	3.4	7.7
11/14/2012 (Condition)	1/7/2013 (Condition)	0.15	0.0	-0.1
1/7/2013 (Condition)	4/12/2013 (Pre-Dredge)	0.26	0.2	0.8
Comparison 4				
5/6/2013 (Post-Dredge)	11/1/2013 (Condition)	0.49	2.0	4.0
11/1/2013 (Condition)	5/19/2014 (Condition)	0.54	1.6	2.9
5/19/2014 (Condition)	11/25/2014 (Condition)	0.52	0.9	1.8
11/25/2014 (Condition)	2/6/2015 (Pre-Dredge)	0.2	1.4	7.0
Comparison 5				
3/3/2015 (Post-Dredge)	5/19/2015 (Condition)	0.21	1.5	7.2
5/19/2015 (Condition)	10/23/2015 (Condition)	0.43	2.4	5.5

The results from Table 2 show a high variability in the sedimentation rates within the basin. This is primarily due to the influence of the Brazos River on the sedimentation in the basin. The annual rate was validated by comparing volumes between dredge events. The variable scale plot in Figure 3 below shows the Brazos River Discharge data collected from the USGS observation station located in Rosharon, TX (blue) vs. the average measured sedimentation within the FLNG basin (red) relative to the comparisons found in Table 2.

The plot appears to suggest a strong correlation between high discharge in the Brazos River and high sedimentation within the basin.

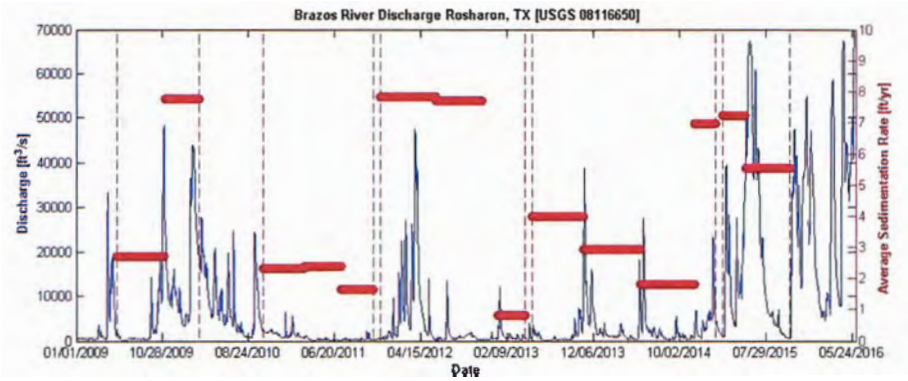


Figure 3. Brazos River Discharge and Sedimentation Rates

In addition to sedimentation rates, the spatial distribution of material throughout the basin was analyzed to determine any distinct sedimentation patterns within the basin. Figure 4 shows the typical distribution of material within the basin over time. The surveys showed that more material tends to deposit on the eastern end of the basin near the Freeport Navigation Channel. This corresponds to observations made that the basin tends to silt in faster adjacent to the Freeport Navigation Channel.

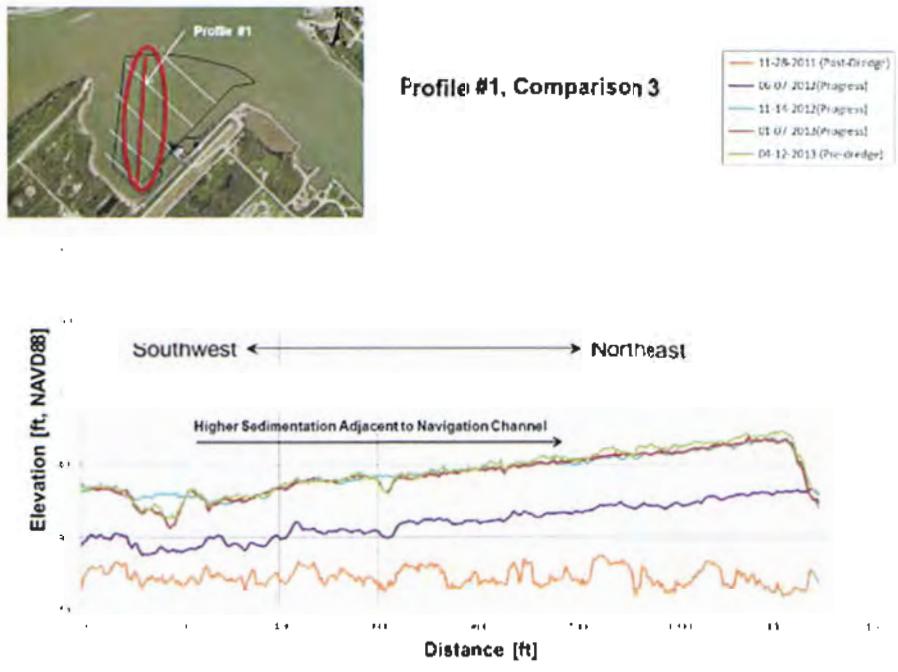


Figure 4. Survey Comparison 3 Profile

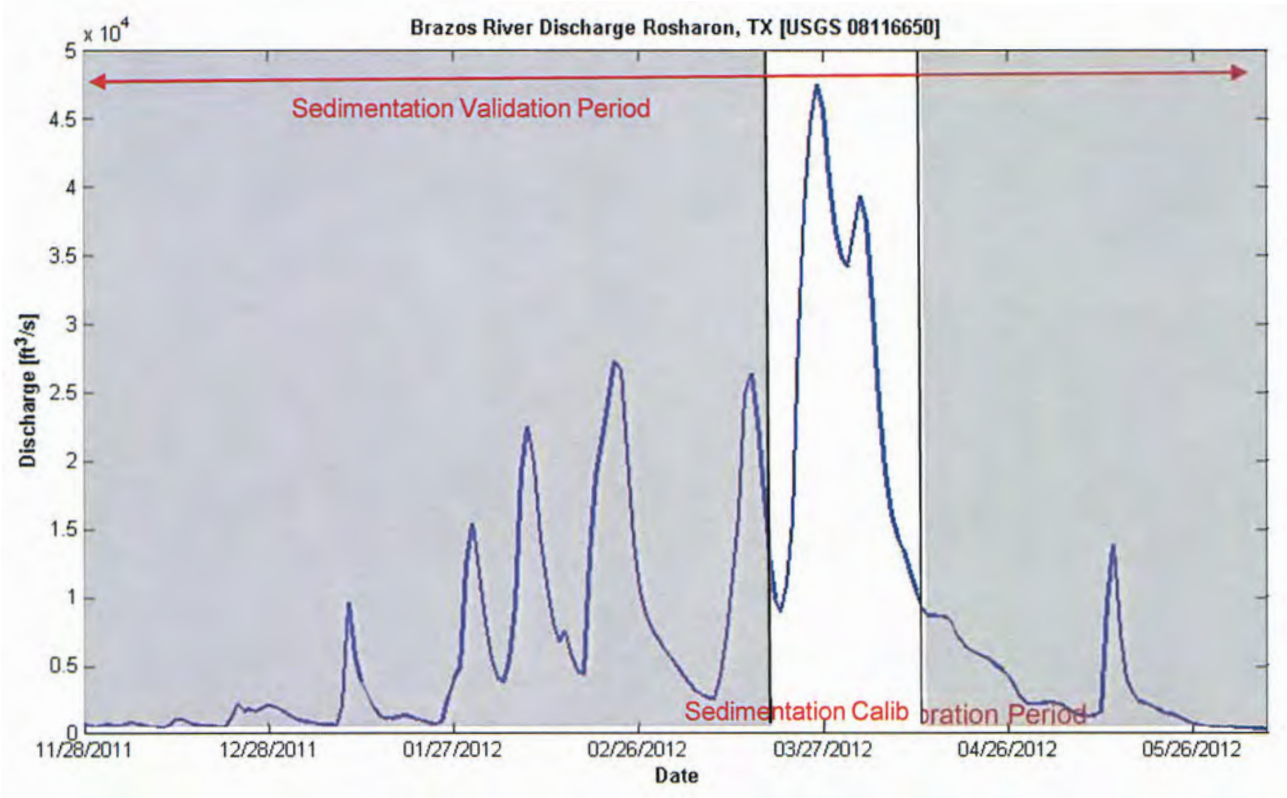
Hydrodynamic and Sedimentation Modeling

Hydrodynamic and Sedimentation modeling of the project site was performed using MORPHO (Kivva *et al.*, 2006). MORPHO is a 2-D model that simulates depth-averaged surface water flow, sediment transport, and bottom-change morphology in the near-shore zone. The model was used to evaluate tidal and riverine generated currents as well as sediment transport patterns and sedimentation in the project vicinity and proposed basin.

Calibration and Validation

In order to ensure the accuracy of the model, an extensive calibration and validation was performed. Three distinct periods were chosen:

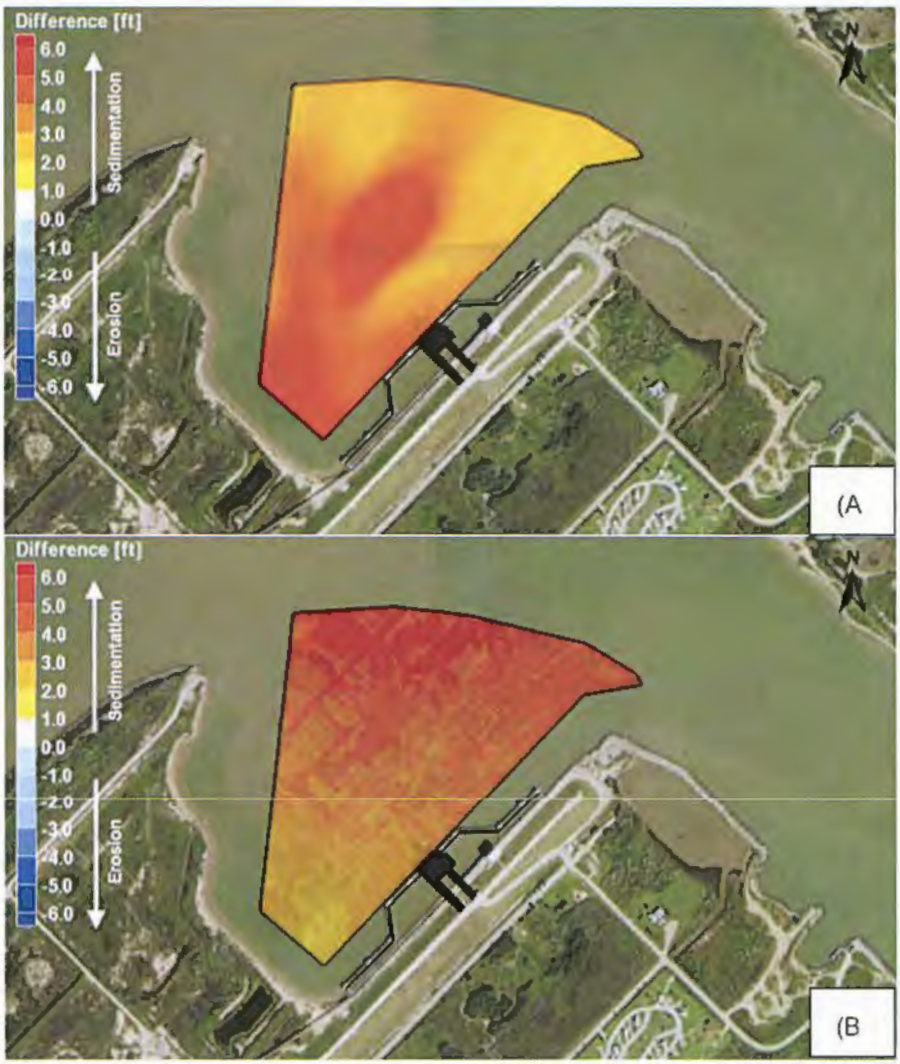
- Hydrodynamic Calibration: March 12, 2015 to March 21, 2015 due to the availability of both water level and velocity data in the vicinity of the project site.
- Sedimentation Calibration: March 20, 2012 to April 15, 2012 to overlap a high discharge event in the Brazos River.
- Sedimentation Validation: November 28, 2011 to June 7, 2012 to match the actual dredging survey comparison event and also to a time when high sedimentation in the FLNG basin and high discharges from Brazos River were observed. See below.



In order to calibrate the sedimentation model, a target sedimentation volume within the basin was determined. This target quantity was determined by scaling the observed sedimentation in the basin from November 28, 2011 to June 7, 2012 (6 month period). Prior to scaling, based on several discharge tests performed using the model it was determined that when the discharge from the Brazos River is less than 8,000 CFS the sediment does not reach the basin.

Using this threshold, the ratio of sedimentation during the modeling period to the total observed period (around 6 months) and for an entire year (September 25, 2011 to September 24, 2012) was calculated. It was estimated that 53% of the observed sedimentation (6 month period) occurred during the model calibration period (March 20, 2012 to April 15, 2012) and 48% of the total annual sedimentation would have accurred the model calibration period. Applying this ta the observed sedimentation volume target sedimentation of 100,700 CY was chosen to calibrate the model. After the sedimentation model was calibrated the resulting sedimentation within the basin was approximately 100,874 CY. The results from the model were then extrapolated to the period from November 28, 2011 to June 7, 2012 in order to compare the modeled sedimentation patterns with those measured.

The comparison between the measured and modeled sedimentation in the basin can be seen in the figures below:



The calibration and validation results indicate that the model is accurately reproducing the hydrodynamics processes responsible for depositing the observed amount of sediment within the basin. This calibrated and validated model of the project site can now be used to test the expansion of the basin or installation of conceptual sediment diversion structures.

The calibrated model shows the highest sediment concentrations reaching the FLNG basin during peak ebb tides. The ebb tide allows flows originating from the Brazos River to enter the GIWW and reach the project site. During ebb tides, high water velocities also occur in the GIWW east of the project site. The water flows west and transports sediment from this area directly into the Freeport Channel. Although the concentrations from this area are not as high as those from the Brazos River, this area represents a constant influx of sediment to the Freeport Channel. A part of this sediment rich flow entering the Freeport Channel enters the FLNG basin in the form of a gyre and drops the sediment load in the basin due to sudden decrease in velocities, shown below:

During slack tides (period during which the water is completely unstressed i.e. not moving in either direction) the flows from the Brazos River and GIWW in the project area are reduced. At this time the gyre forming within the basin begins to shift out towards the Freeport Navigation channel with the center of the gyre shifting to the eastern end of the basin. During these times, water velocities reduce significantly in the area, allowing suspended sediments in the water column to drop out.

During flood tides the flows from the GIWW are forced back towards the east and west away from the project site, reducing the amount of sediment reaching the project site from the Brazos River and from the GIWW east of Freeport. The Flood tide does push flows from the Gulf back into the basin which would deposit remaining suspended sediment back into the basin.

Apart from the short term sediment deposition, the daily fluctuation of flows at the project site due to tides would serve to redistribute deposited sediment over time. The ebb tide flow patterns indicated that sediment would likely migrate towards the center of the basin, while during slack tides sediment would be forced towards the eastern end of the basin by the flows. Finally, during flood tides the flow patterns indicated that sediment would flow towards the north eastern end of the basin. The effect of the tides would also vary depending on the discharges from the Brazos River. During high discharge events the ebb tide would combine with the flows from the Brazos to increase velocities through the GIWW west of Brazos Floodgates while flood tide velocities would be reduced as the water would flow against the currents generated by the river discharges.

Extended Basin Modeling

The calibrated model was updated to include the expanded FLNG basin (designed at –46.5 ft NAVD88) and run for the same 1-month duration used earlier as the model calibration period (March 20, 2012 to April 15, 2012) to determine how the expanded FLNG basin would affect the hydrodynamics and sedimentation within the project site.

The extended basin modeling resulted in the larger basin filling in with approximately 122,200 CY of material throughout the modeling period; this is approximately 21% more sediment than what was observed in the smaller basin (as shown in Table 4). It should be noted that even though the sedimentation volume has increased for the large basin, the overall sedimentation height actually reduces by approximately 17% due to the sedimentation occurring over a much larger basin area. This may potentially reduce the dredging frequency. It was observed that most of the material is depositing in the center of the basin due to eddy formation resulting in low velocities in the center of the basin. Per the sedimentation analysis of the smaller basin, long term tidal, wind wave and vessel propwash effects would likely cause more sediment to deposit on the eastern end of the basin closer to the Freeport Channel.

Table 4. Large Basin Sedimentation Modeling Results

Alternative	Modeled Sedimentation [ft]	Modeled Sedimentation [CY]	Computed Annual Sedimentation [ft/yr]	Computed Annual Sedimentation [CY/yr]	Sedimentation Change
Existing	2.1	100,900	4.1	194,000	N/A
Expanded Basin	1.7	122,200	3.4	235,000	+21%

Sediment Diversion/Dredging Alternatives Analysis

We used the results from the modeling to determine the feasibility of additional measures to reduce the sedimentation in the FLNG Basin. We examined diversion structures in the GIWW, Freeport Harbor Channel, and the Lower Turning Basin; as well as alternative dredging design and maintenance procedures for the basin to incorporate a sedimentation reduction feature.

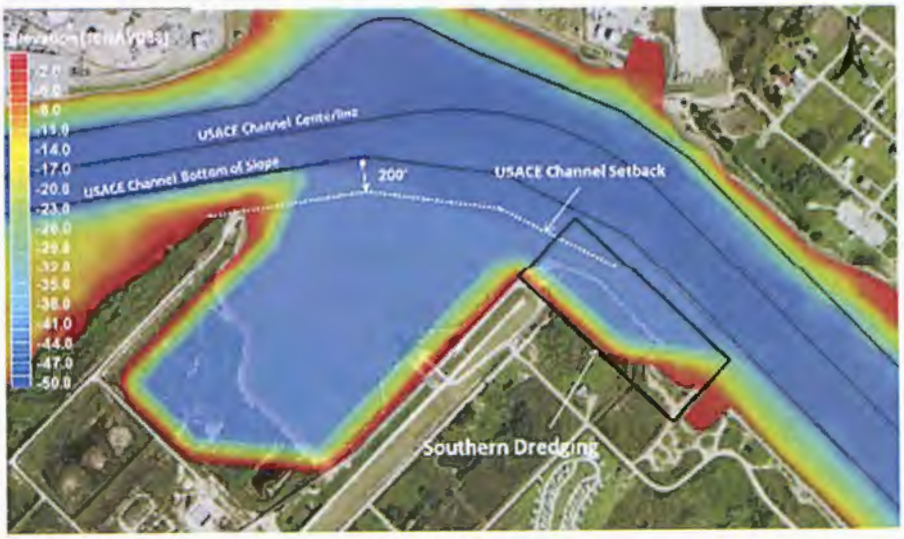
The modeling showed that, for the basin, high velocity currents along with high sediment concentration flows east along the GIWW from Brazos to Freeport. These flows then turn towards the Freeport Channel during an ebb tide on interaction with flows moving west from the Galveston Bay towards Freeport. As the flows reaches the southern end of the basin part of the flow is diverted into the basin where a large eddy forms. This eddy diverts the sediment rich high velocity water from the Freeport Channel into the basin where the velocities decrease significantly and the sediment is allowed to settle into the basin. The sediment diversion/dredging alternatives were developed to divert the ebb flow away from the basin and out towards the Freeport channel.

Below shows the Ebb flows in the basin:

Several alternatives were developed and tested which included the dredging and structural alternatives, but are not included in this report. The alternatives shown are representative of the most feasible alternatives tested.

Southern Dredging

The area adjacent to the shoreline along the Freeport channel just south of the project site was dredged in order to channel the flow being diverted into the basin south towards the Freeport inlet. The goal of dredging this area is to reduce the diversion of ebb flows from the Freeport Channel into the FLNG basin. These flows can carry large quantities of sediment and cause deposition into the basin due to the gyred flows that form. The southern dredging alternative and the modeled flow pattern for this alternative are shown below: The modeling shows a 10% reduction in siltation for this option.



This option would require additional United States Army Corps of Engineers permitting. The additional dredging and modification of the rock groins to the south of the basin would trigger the need to modify our existing Corps permit. It most likely would need to include a section 408 permit review and a real estate instrument by the Corps. The timeline to complete the modification requests and documents needed, review and approval time, is approximately 18 months. This does not include any engineering or construction time. Engineering could be completed in conjunction with the review time by the USACE.

Another alternative that we initially looked at was to place locks at the GIWW and Brazos River. The main source of material is coming from the discharge of the Brazos. Having the locks in place and operating properly would significantly reduce the amount of material making its way down the GIWW.

We propose that these locks be similar to the locks at the Colorodo River. With the locks closed, especially at high tide, there would be a major decrease in the amount of sediment traveling east along the GIWW.

Locks at the Colorado River

This option would require Corps permitting as well. However, FLNG would also have to come to agreement with USACE and the Texas Department of Transportation on a public private partnership to construct the locks. It would most likely be in the form of a section 204 agreement, Construction of Water Resources Development Projects by Non-Federal Interest. The agreement negotiations and finalization, permitting, review and approvals are estimated to take 36 months. This does not include any engineering or construction time. Engineering could be completed in conjunction with the review time by the USACE.

Conclusions and Recommendations

Sedimentation analysis and modeling was conducted to develop solutions and alternatives for the reduction of dredging within the Freeport LNG basin. Prior to the development of the numerical model, a sedimentation analysis was performed which showed the average elevation change in the basin due to sedimentation was approximately 4.1 ft/yr. The results also showed a strong correlation between Brazos River discharge and sedimentation within the basin where periods of higher discharges tend to increase the sedimentation rates in the basin. A functional sedimentation model was developed that simulates with good certainty the sedimentation volumes within the basin. The sedimentation model was then used to develop and test conceptual structural and dredging alternatives for the basin. The model incorporates tidal and riverine inputs as the driving factors behind the sedimentation of the FLNG basin. Insight gained from the analysis of existing surveys was also used to develop the model and to develop an advanced maintenance alternative that addresses the spatial distribution of sediment throughout the basin.

A number of options were considered to reduce the amount of sedimentation that is deposited into the FLNG basin. We looked at dredging deeper, adding diversion structures, additional dredging and combinations of the like. Due to navigation concerns, hard diversion structures were ruled out, as they constricted vessel movements in the basin. Dredging deeper caused the velocity of the ebb current to drop to a critical point, where additional sedimentation was deposited. A feasible option was to remove the southern point of the basin. This removed a hard point, where the current hit the point and then diverted material into the basin.

The modeling and sedimentation results were also used to determine the approximate volume of dredging for the basin prior to 2018. The analysis produced an estimate of approximately 863,000 CY for dredging on December 31, 2017. This estimate is subject to variability due to the unpredictability of the natural processes driving the sedimentation in the basin.

We believe that further modeling and analysis should be completed to investigate the possibility and advantages of adding locks at the GIWW and Brazos intersection. It is our opinion that preventing the sediment to travel east along the GIWW will greatly reduce siltation in the basin. LEI, along with HM, believe that the best depiction of the sediment *movement is shown in a movie of the modeling runs. The link below is to the movie.*
https://www.dropbox.com/s/cn8ynjeu4fgbyql/zoomed%20out%20sediment%20concentration_MMLogo.avi?dl=0

Should you have any questions, please feel free to contact me directly. We look forward to continuing our excellent working relationship with FLNG.

Sincerely,
Lloyd Engineering, Inc.
TXBPE # 2846

P.O. Parker, P.E.
Executive Vice President

Copy: Stan Lloyd, P.E.

Appendix C

Parcel ID Numbers for Each Non-Federal Placement Alternative

Freeport LNG
Liquefaction Project and Phase II Developments
Environmental Analysis

Appendix C

Parcel ID Numbers for Each Non-Federal Placement Alternative

FLNG Beneficial Use Parcel Tract ID

POTENTIAL BU SITE A			
Property ID	**Acreage**	**Latitude**	**Longitude**
194549	0.233 ac	-95.337943	28.922056
194548	0.191 ac	-95.338157	28.922011
194547	0.112 ac	-95.33835	28.921925
194546	0.124 ac	-95.338493	28.921835
194545	0.145 ac	-95.33865	28.921748
194544	0.139 ac	-95.338811	28.921662
194552	0.135 ac	-95.337612	28.921581
194543	0.146 ac	-95.338966	28.921578
591338	0.862 ac	-95.340252	28.921315
194542	0.134 ac	-95.339113	28.921495
194553	0.136 ac	-95.337525	28.92143
194541	0.234 ac	-95.339346	28.921353
194554	0.150 ac	-95.337434	28.921276
194555	0.189 ac	-95.337361	28.921095
194657	0.380 ac	-95.340136	28.920938
194556	0.215 ac	-95.337261	28.920929
194565	0.206 ac	-95.338364	28.920857
194566	0.171 ac	-95.338589	28.920883
194567	0.169 ac	-95.338772	28.92082
194568	0.215 ac	-95.338926	28.920689
194557	0.251 ac	-95.33716	28.920749
194656	0.264 ac	-95.340109	28.920709
194558	0.315 ac	-95.337243	28.920597
194564	0.163 ac	-95.338289	28.920621
194559	0.227 ac	-95.337459	28.920489
194563	0.179 ac	-95.33819	28.920503
194560	0.179 ac	-95.337628	28.920421
194655	0.209 ac	-95.340039	28.920517
194561	0.366 ac	-95.337838	28.920314
194562	0.350 ac	-95.338083	28.9203
194569	0.261 ac	-95.338716	28.920397
194589	0.260 ac	-95.336807	28.920197
194588	0.214 ac	-95.337001	28.920234
194587	0.151 ac	-95.33722	28.920134
194570	0.214 ac	-95.33861	28.920186
194653	0.231 ac	-95.339827	28.920185
194590	0.162 ac	-95.336667	28.920026
194586	0.143 ac	-95.337405	28.920045
194652	0.245 ac	-95.339713	28.920013
194571	0.229 ac	-95.338518	28.920005
194651	0.246 ac	-95.3396	28.919843
194572	0.241 ac	-95.338428	28.919826
194592	0.108 ac	-95.336523	28.91977
194650	0.256 ac	-95.339491	28.919675
194593	0.158 ac	-95.336451	28.919632
194573	0.234 ac	-95.338345	28.919655
194594	0.163 ac	-95.336371	28.919477
194574	0.229 ac	-95.338271	28.91949
194595	0.180 ac	-95.336293	28.919323
194575	0.237 ac	-95.338204	28.919323
194596	0.181 ac	-95.336216	28.91917
194576	0.289 ac	-95.338115	28.919143
194647	0.286 ac	-95.339152	28.919151
194581	0.137 ac	-95.337382	28.919137

FLNG Beneficial Use Parcel Tract ID

POTENTIAL BU SITE A Cont.			
Property ID	**Acreage**	**Latitude**	**Longitude**
194597	0.201 ac	-95.336135	28.919019
194646	0.280 ac	-95.339043	28.918982
194580	0.105 ac	-95.337536	28.919013
194598	0.275 ac	-95.336046	28.918841
194579	0.100 ac	-95.337729	28.918949
194577	0.147 ac	-95.338133	28.918892
194578	0.094 ac	-95.337912	28.918886
194645	0.298 ac	-95.338934	28.918814
194599	0.202 ac	-95.336581	28.91864
194644	0.289 ac	-95.338834	28.918638
194614	0.215 ac	-95.335876	28.91857
194643	0.295 ac	-95.338726	28.918466
194615	0.174 ac	-95.335756	28.918436
194616	0.150 ac	-95.335641	28.918304
194613	0.191 ac	-95.336365	28.918257
194642	0.282 ac	-95.33863	28.918288
194612	0.165 ac	-95.336541	28.918152
194617	0.143 ac	-95.335526	28.918158
194611	0.153 ac	-95.336702	28.918078
194641	0.275 ac	-95.338536	28.918109
194610	0.175 ac	-95.336858	28.917992
194609	0.188 ac	-95.337028	28.917902
194606	0.127 ac	-95.337481	28.917976
194640	0.252 ac	-95.338448	28.917928
194619	0.241 ac	-95.335348	28.917789
194607	0.120 ac	-95.337399	28.917828
194639	0.237 ac	-95.338356	28.917753
194620	0.283 ac	-95.335532	28.917627
194608	0.149 ac	-95.337233	28.917721
194624	0.148 ac	-95.336286	28.917219
194625	0.155 ac	-95.336452	28.917134
194626	0.147 ac	-95.336612	28.917052
194627	0.161 ac	-95.336771	28.916968
194628	0.163 ac	-95.336936	28.916884
194629	0.165 ac	-95.337098	28.916799
194630	0.229 ac	-95.337281	28.916683
0	17.694 ac	-95.337868	28.919356
0	0.717 ac	-95.336691	28.91834

POTENTIAL BU SITE B			
Property ID	**Acreage**	**Latitude**	**Longitude**
162699	191.197 ac	-95.363881	28.916562
179987	114.268 ac	-95.364131	28.910892
162699	191.188 ac	-95.363881	28.916562
0	31.220 ac	-95.353222	28.921874
0	1.779 ac	-95.355088	28.920868
0	0.395 ac	-95.355328	28.920625
169669	73.454 ac	-95.356636	28.926301
169685	6.464 ac	-95.353072	28.919651
0	20.079 ac	-95.350888	28.923774
0	31.219 ac	-95.353222	28.921874
169639	351.255 ac	-95.349909	28.927853
0	31.220 ac	-95.353222	28.921874
0	31.219 ac	-95.353222	28.921874

FLNG Beneficial Use Parcel Tract ID

POTENTIAL BU SITE B Cont.			
Property ID	**Acreage**	**Latitude**	**Longitude**
169669	73.454 ac	-95.356636	28.926301
0	31.219 ac	-95.353222	28.921874
169669	73.454 ac	-95.356636	28.926301
169639	351.255 ac	-95.349909	28.927853
162699	191.197 ac	-95.363881	28.916562
162699	34.728 ac	-95.369584	28.916482
151808	41.075 ac	-95.37282	28.914538
179987	114.268 ac	-95.364131	28.910892
163985	13.090 ac	-95.372411	28.912156
163984	30.226 ac	-95.370737	28.91043
162695	28.612 ac	-95.376066	28.911261
162694	64.287 ac	-95.372499	28.907083
162699	191.188 ac	-95.363881	28.916562
162699	34.728 ac	-95.369584	28.916482
162699	191.197 ac	-95.363881	28.916562
162699	191.188 ac	-95.363881	28.916562
162699	34.728 ac	-95.369584	28.916482
162699	34.728 ac	-95.369584	28.916482
162699	191.188 ac	-95.363881	28.916562
162699	34.728 ac	-95.369584	28.916482

POTENTIAL BU SITE C			
Property ID	**Acreage**	**Latitude**	**Longitude**
162701	335.699 ac	-95.376193	28.933967
162699	113.155 ac	-95.375437	28.92622
162703	54.318 ac	-95.373347	28.923019
162703	30.952 ac	-95.381304	28.921393
162703	24.546 ac	-95.375957	28.921094
162703	84.072 ac	-95.376925	28.91646
162703	123.853 ac	-95.382107	28.916256
162703	54.318 ac	-95.373347	28.923019
162703	30.952 ac	-95.381304	28.921393
162703	30.952 ac	-95.381304	28.921393
162703	24.546 ac	-95.375957	28.921094

POTENTIAL BU SITE D			
Property ID	**Acreage**	**Latitude**	**Longitude**
191329	5.005 ac	-95.300905	28.991408
191268	4.978 ac	-95.301881	28.991391
191328	4.920 ac	-95.300852	28.989506
191330	4.945 ac	-95.301829	28.989489
191268	5.039 ac	-95.302818	28.989475
191268	5.021 ac	-95.29989	28.987748
191332	5.133 ac	-95.30287	28.991379
191327	5.083 ac	-95.29986	28.989522
0	2.586 ac	-95.298082	28.988541
191313	4.956 ac	-95.30114	28.987732
191268	4.862 ac	-95.302693	28.980218
191268	5.180 ac	-95.300974	28.980034
191268	4.527 ac	-95.302719	28.980883
191275	4.782 ac	-95.302666	28.979531
0	32.928 ac	-95.296613	28.978817

FLNG Beneficial Use Parcel Tract ID

POTENTIAL BU SITE E			
Property ID	**Acreage**	**Latitude**	**Longitude**
191048	0.143 ac	-95.308511	28.961759
191048	0.047 ac	-95.306459	28.961741
191048	1.170 ac	-95.307551	28.961234
191048	4.005 ac	-95.307611	28.963761
191048	1.509 ac	-95.307906	28.963098
191048	0.276 ac	-95.308233	28.962375
0	37.830 ac	-95.305746	28.959058
0	0.983 ac	-95.306408	28.964442
191090	4.953 ac	-95.298276	28.962363
191104	4.808 ac	-95.297737	28.961578
652493	4.909 ac	-95.297213	28.960795
191091	0.235 ac	-95.29812	28.960227
652484	1.118 ac	-95.298632	28.960738
191049	4.066 ac	-95.304998	28.968989
191050	5.564 ac	-95.304836	28.967881
0	1.103 ac	-95.304092	28.966338
0	9.167 ac	-95.303291	28.966641
191095	5.046 ac	-95.300872	28.959128
191097	5.604 ac	-95.301996	28.959099
191019	4.971 ac	-95.299478	28.956985
191017	5.090 ac	-95.300459	28.956974
191010	4.805 ac	-95.300171	28.955468
652484	2.791 ac	-95.299723	28.960049
0	0.848 ac	-95.300319	28.959757
191011	3.425 ac	-95.301606	28.954981
191090	1.275 ac	-95.297759	28.958516
191021	4.378 ac	-95.298523	28.957088
191015	3.526 ac	-95.302	28.957629
191023	0.744 ac	-95.304474	28.957926
191031	0.412 ac	-95.305495	28.957866
191024	5.690 ac	-95.303636	28.95738
191029	4.600 ac	-95.302891	28.956746
191012	2.642 ac	-95.301538	28.955886
191024	3.419 ac	-95.30269	28.956123
191091	3.748 ac	-95.298579	28.958969
0	4.874 ac	-95.30026	28.958077
0	1.615 ac	-95.304939	28.958162
0	1.010 ac	-95.300976	28.956152
0	1.349 ac	-95.302262	28.956669
0	0.138 ac	-95.305242	28.957755
191093	4.858 ac	-95.29957	28.958938
191029	4.600 ac	-95.302891	28.956746
191024	3.419 ac	-95.30269	28.956123
191048	5.001 ac	-95.30509	28.960367
191053	4.945 ac	-95.305115	28.961192
191036	4.650 ac	-95.302875	28.960294
634141	1.740 ac	-95.302436	28.961936
191053	4.840 ac	-95.302797	28.961129
191053	4.878 ac	-95.305201	28.963731
191053	5.403 ac	-95.305169	28.962878
191053	4.970 ac	-95.305142	28.962016
0	1.558 ac	-95.303938	28.961437

FLNG Beneficial Use Parcel Tract ID

POTENTIAL BU SITE F			
Property ID	**Acreage**	**Latitude**	**Longitude**
190661	4.949 ac	-95.271825	28.972784
190661	4.946 ac	-95.272293	28.972419
190661	4.944 ac	-95.272761	28.972054
190661	4.942 ac	-95.273228	28.971689
190671	4.885 ac	-95.26721	28.976421
190616	5.040 ac	-95.271541	28.975865
190616	5.051 ac	-95.27281	28.974866
190664	4.953 ac	-95.27089	28.973514
190662	4.951 ac	-95.271357	28.973149
190734	4.739 ac	-95.27489	28.966524
190724	3.066 ac	-95.269638	28.971269
190661	4.937 ac	-95.274164	28.970959
190724	1.573 ac	-95.270402	28.971262
190661	4.553 ac	-95.274543	28.970531
190661	0.372 ac	-95.27568	28.971353
190724	0.376 ac	-95.268859	28.970644
190724	2.155 ac	-95.269632	28.970356
190651	5.055 ac	-95.275344	28.97287
190724	1.589 ac	-95.268563	28.972695
190724	1.768 ac	-95.269011	28.972297
190651	0.545 ac	-95.275931	28.972155
190661	4.939 ac	-95.273696	28.971324
190659	2.175 ac	-95.275078	28.969317
190730	3.598 ac	-95.272801	28.968609
190731	4.372 ac	-95.273058	28.968065
190732	3.351 ac	-95.273779	28.967943
190733	4.804 ac	-95.273929	28.967239
190672	4.744 ac	-95.27442	28.966888
190725	2.618 ac	-95.2683	28.970776
190672	4.549 ac	-95.270201	28.970187
190672	4.527 ac	-95.270688	28.969872
190660	1.626 ac	-95.274395	28.969666
190727	2.640 ac	-95.271576	28.969933
190728	3.136 ac	-95.271951	28.969443
190729	2.768 ac	-95.272488	28.969177
190616	5.061 ac	-95.274078	28.973868
190630	1.221 ac	-95.276331	28.973498
190672	0.659 ac	-95.268334	28.97317
190725	2.057 ac	-95.269387	28.971852
190616	4.656 ac	-95.267742	28.976088
190616	4.422 ac	-95.274274	28.976333
190626	0.997 ac	-95.27588	28.977073
190670	3.958 ac	-95.268379	28.975876
190627	1.394 ac	-95.276231	28.976594
190626	4.237 ac	-95.27471	28.975923
190669	4.174 ac	-95.2688	28.975457
190628	1.600 ac	-95.276599	28.976153
190627	3.787 ac	-95.275082	28.975448
190667	4.305 ac	-95.269118	28.974987
190672	3.236 ac	-95.264568	28.975175
190616	1.812 ac	-95.277034	28.975772
190616	4.960 ac	-95.269487	28.974609
190719	3.819 ac	-95.264809	28.974641
190628	3.131 ac	-95.275458	28.97501
190629	2.792 ac	-95.277311	28.97522

FLNG Beneficial Use Parcel Tract ID

POTENTIAL BU SITE F Cont.			
Property ID	**Acreage**	**Latitude**	**Longitude**
190720	1.692 ac	-95.265606	28.974753
190665	4.958 ac	-95.269954	28.974244
190630	4.075 ac	-95.277489	28.97455
190616	3.210 ac	-95.27587	28.974635
0	4.956 ac	-95.270422	28.973879
190629	2.374 ac	-95.276138	28.974099
190623	1.211 ac	-95.273435	28.978755
190624	1.083 ac	-95.273994	28.978522
190620	1.991 ac	-95.270491	28.978313
190621	2.868 ac	-95.271189	28.978138
190619	0.575 ac	-95.269779	28.978429
190622	3.435 ac	-95.271803	28.977905
0	2.553 ac	-95.272628	28.975821
190616	4.596 ac	-95.269036	28.977805
190623	3.241 ac	-95.272306	28.977621
190625	0.955 ac	-95.274499	28.978175
190624	4.192 ac	-95.272842	28.977364
190616	0.764 ac	-95.27494	28.977826
0	4.934 ac	-95.266702	28.976753
0	2.710 ac	-95.271562	28.975039
190625	4.211 ac	-95.273339	28.977017
190616	5.030 ac	-95.270273	28.976863
190616	0.844 ac	-95.275455	28.97748
190616	3.995 ac	-95.273804	28.976674
0	1.631 ac	-95.265945	28.976687
190667	4.305 ac	-95.269118	28.974987
190616	4.960 ac	-95.269487	28.974609
190745	1.727 ac	-95.281668	28.962447
190640	3.032 ac	-95.283958	28.963251
190616	0.161 ac	-95.281687	28.963352
190642	2.909 ac	-95.284871	28.962455
190744	1.755 ac	-95.281199	28.962822
190643	1.618 ac	-95.285202	28.962254
190672	1.852 ac	-95.282094	28.962035
0	0.342 ac	-95.28228	28.961777
190746	1.199 ac	-95.282657	28.961776
190747	0.625 ac	-95.283356	28.961574
190616	2.331 ac	-95.281785	28.964495
190627	4.701 ac	-95.278178	28.96398
190616	1.700 ac	-95.2822	28.964372
0	1.281 ac	-95.281738	28.963141
190740	4.696 ac	-95.278648	28.963616
190741	4.691 ac	-95.279118	28.963253
190616	0.601 ac	-95.281949	28.963999
190616	2.757 ac	-95.28356	28.963411
190742	4.600 ac	-95.279601	28.96291
190616	3.129 ac	-95.284318	28.963054
190641	3.260 ac	-95.284616	28.962779
190743	3.229 ac	-95.280387	28.962894
190636	2.505 ac	-95.280061	28.966659
190638	2.559 ac	-95.280489	28.966334
190616	4.998 ac	-95.278715	28.965942
190639	3.268 ac	-95.280602	28.965713
190616	2.458 ac	-95.280829	28.965296
190672	4.712 ac	-95.277239	28.964707

FLNG Beneficial Use Parcel Tract ID

POTENTIAL BU SITE F Cont.			
Property ID	**Acreage**	**Latitude**	**Longitude**
190616	2.454 ac	-95.281148	28.965024
190739	4.707 ac	-95.277708	28.964343
190616	2.331 ac	-95.281469	28.964756
0	2.147 ac	-95.278744	28.967112
190634	2.488 ac	-95.279234	28.967337
190635	2.550 ac	-95.279633	28.966987

FLNG Private DMPA Parcel Tract ID

PRIVATE DMPA SITE A			
Property ID	**Acreage**	**Latitude**	**Longitude**
194549	0.233 ac	-95.337943	28.922056
194548	0.191 ac	-95.338157	28.922011
194550	0.175 ac	-95.337803	28.921898
194536	0.145 ac	-95.339253	28.921978
194547	0.112 ac	-95.33835	28.921925
194537	0.143 ac	-95.339407	28.921922
194546	0.124 ac	-95.338493	28.921835
194545	0.145 ac	-95.33865	28.921748
194551	0.130 ac	-95.337698	28.921733
194544	0.139 ac	-95.338811	28.921662
194539	0.142 ac	-95.339605	28.921636
194552	0.135 ac	-95.337612	28.921581
194543	0.146 ac	-95.338966	28.921578
591338	0.862 ac	-95.340252	28.921315
194542	0.134 ac	-95.339113	28.921495
194553	0.136 ac	-95.337525	28.92143
194540	0.135 ac	-95.339516	28.921482
194541	0.234 ac	-95.339346	28.921353
194554	0.150 ac	-95.337434	28.921276
194555	0.189 ac	-95.337361	28.921095
194657	0.380 ac	-95.340136	28.920938
194556	0.215 ac	-95.337261	28.920929
194565	0.206 ac	-95.338364	28.920857
194566	0.171 ac	-95.338589	28.920883
194567	0.169 ac	-95.338772	28.92082
194568	0.215 ac	-95.338926	28.920689
194557	0.251 ac	-95.33716	28.920749
194656	0.264 ac	-95.340109	28.920709
194558	0.315 ac	-95.337243	28.920597
194564	0.163 ac	-95.338289	28.920621
194559	0.227 ac	-95.337459	28.920489
194563	0.179 ac	-95.33819	28.920503
194560	0.179 ac	-95.337628	28.920421
194655	0.209 ac	-95.340039	28.920517
194561	0.366 ac	-95.337838	28.920314
194562	0.350 ac	-95.338083	28.9203
194569	0.261 ac	-95.338716	28.920397
194589	0.260 ac	-95.336807	28.920197
194588	0.214 ac	-95.337001	28.920234
194654	0.211 ac	-95.339937	28.920351
194587	0.151 ac	-95.33722	28.920134
194570	0.214 ac	-95.33861	28.920186
194653	0.231 ac	-95.339827	28.920185
194590	0.162 ac	-95.336667	28.920026
194586	0.143 ac	-95.337405	28.920045
194652	0.245 ac	-95.339713	28.920013
194571	0.229 ac	-95.338518	28.920005
194585	0.214 ac	-95.337591	28.919931
194591	0.099 ac	-95.336582	28.919886
194651	0.246 ac	-95.3396	28.919843
194572	0.241 ac	-95.338428	28.919826
194584	0.301 ac	-95.337748	28.919784
194592	0.108 ac	-95.336523	28.91977

FLNG Private DMPA Parcel Tract ID

PRIVATE DMPA SITE A Cont.			
Property ID	**Acreage**	**Latitude**	**Longitude**
194650	0.256 ac	-95.339491	28.919675
194593	0.158 ac	-95.336451	28.919632
194573	0.234 ac	-95.338345	28.919655
194583	0.297 ac	-95.337678	28.919569
194594	0.163 ac	-95.336371	28.919477
194649	0.275 ac	-95.339377	28.919504
194574	0.229 ac	-95.338271	28.91949
194595	0.180 ac	-95.336293	28.919323
194582	0.265 ac	-95.337582	28.919353
194648	0.288 ac	-95.339263	28.919328
194575	0.237 ac	-95.338204	28.919323
194596	0.181 ac	-95.336216	28.91917
194576	0.289 ac	-95.338115	28.919143
194647	0.286 ac	-95.339152	28.919151
194581	0.137 ac	-95.337382	28.919137
194597	0.201 ac	-95.336135	28.919019
194646	0.280 ac	-95.339043	28.918982
194580	0.105 ac	-95.337536	28.919013
194598	0.275 ac	-95.336046	28.918841
194579	0.100 ac	-95.337729	28.918949
194577	0.147 ac	-95.338133	28.918892
194578	0.094 ac	-95.337912	28.918886
194645	0.298 ac	-95.338934	28.918814
194599	0.202 ac	-95.336581	28.91864
194644	0.289 ac	-95.338834	28.918638
194614	0.215 ac	-95.335876	28.91857
194600	0.175 ac	-95.336769	28.918565
194601	0.190 ac	-95.336942	28.918492
194643	0.295 ac	-95.338726	28.918466
194615	0.174 ac	-95.335756	28.918436
194602	0.183 ac	-95.33711	28.918412
194603	0.192 ac	-95.337279	28.918339
194616	0.150 ac	-95.335641	28.918304
194613	0.191 ac	-95.336365	28.918257
194604	0.162 ac	-95.337562	28.918312
194642	0.282 ac	-95.33863	28.918288
194612	0.165 ac	-95.336541	28.918152
194617	0.143 ac	-95.335526	28.918158
194611	0.153 ac	-95.336702	28.918078
194641	0.275 ac	-95.338536	28.918109
194605	0.121 ac	-95.337564	28.918126
194610	0.175 ac	-95.336858	28.917992
194618	0.177 ac	-95.335411	28.917985
194609	0.188 ac	-95.337028	28.917902
194606	0.127 ac	-95.337481	28.917976
194640	0.252 ac	-95.338448	28.917928
194619	0.241 ac	-95.335348	28.917789
194607	0.120 ac	-95.337399	28.917828
194639	0.237 ac	-95.338356	28.917753
194620	0.283 ac	-95.335532	28.917627
194608	0.149 ac	-95.337233	28.917721
194638	0.241 ac	-95.338256	28.917575
194621	0.175 ac	-95.335776	28.91749

FLNG Private DMPA Parcel Tract ID

PRIVATE DMPA SITE A Cont.			
Property ID	**Acreage**	**Latitude**	**Longitude**
194622	0.149 ac	-95.335958	28.917394
194637	0.222 ac	-95.338154	28.917402
194623	0.148 ac	-95.336123	28.917308
194624	0.148 ac	-95.336286	28.917219
194636	0.238 ac	-95.338052	28.917231
194625	0.155 ac	-95.336452	28.917134
194626	0.147 ac	-95.336612	28.917052
194635	0.228 ac	-95.337948	28.917058
194627	0.161 ac	-95.336771	28.916968
194628	0.163 ac	-95.336936	28.916884
194634	0.237 ac	-95.337844	28.916886
194629	0.165 ac	-95.337098	28.916799
194630	0.229 ac	-95.337281	28.916683
0	2.836 ac	-95.336524	28.920243
0	0.824 ac	-95.338725	28.921967
0	17.694 ac	-95.337868	28.919356
0	7.588 ac	-95.339508	28.918813
0	0.375 ac	-95.338432	28.920382
0	0.426 ac	-95.337442	28.920227
0	0.465 ac	-95.337884	28.919357
0	0.717 ac	-95.336691	28.91834

PRIVATE DMPA SITE B			
Property ID	**Acreage**	**Latitude**	**Longitude**
163175	14.717 ac	-95.351157	28.912479
162715	0.643 ac	-95.352238	28.912737
162720	120.191 ac	-95.351492	28.905854
179987	120.327 ac	-95.357247	28.908024
162716	19.602 ac	-95.349063	28.907785
163175	1.403 ac	-95.350598	28.910887
162716	10.319 ac	-95.351409	28.909653
163176	12.383 ac	-95.348202	28.908047
162716	14.446 ac	-95.34842	28.905473
162717	26.455 ac	-95.360585	28.905111
162719	27.904 ac	-95.36196	28.903884
164001	8.713 ac	-95.361168	28.90043
162716	74.594 ac	-95.354389	28.90155
162718	78.812 ac	-95.357564	28.899459
164003	9.963 ac	-95.360702	28.900244
0	26.694 ac	-95.329479	28.920887
0	2.898 ac	-95.347389	28.907576
162716	19.602 ac	-95.349063	28.907785
163176	12.383 ac	-95.348202	28.908047

PRIVATE DMPA SITE C			
Property ID	**Acreage**	**Latitude**	**Longitude**
162709	131.112 ac	-95.370217	28.932274
162699	113.155 ac	-95.375437	28.92622
162703	54.318 ac	-95.373347	28.923019
663312		0	0

FLNG Private DMPA Parcel Tract ID

PRIVATE DMPA SITE D			
Property ID	**Acreage**	**Latitude**	**Longitude**
655979	29.744 ac	-95.309241	28.979279
655979	30.290 ac	-95.315468	28.980296
218366	130.697 ac	-95.312012	28.985434
218368	62.850 ac	-95.31479	28.977404
218368	40.678 ac	-95.309368	28.977016

PRIVATE DMPA SITE E			
Property ID	**Acreage**	**Latitude**	**Longitude**
191297	5.076 ac	-95.29891	28.991436
191268	5.135 ac	-95.299911	28.991421
191329	5.005 ac	-95.300905	28.991408
191328	4.920 ac	-95.300852	28.989506
191268	5.075 ac	-95.292228	28.987824
191268	5.021 ac	-95.29989	28.987748
191312	4.908 ac	-95.301098	28.986242
191268	5.095 ac	-95.290842	28.984548
191297	5.329 ac	-95.293641	28.984495
191268	5.027 ac	-95.298251	28.984421
191268	4.986 ac	-95.290791	28.982519
191268	5.015 ac	-95.298203	28.98239
191268	5.266 ac	-95.297835	28.989557
191268	5.003 ac	-95.292194	28.986355
191288	5.095 ac	-95.294785	28.986319
191288	5.011 ac	-95.295481	28.98446
191299	4.850 ac	-95.294575	28.984475
0	0.531 ac	-95.301459	28.993367
191268	5.298 ac	-95.288254	28.980332
191268	2.447 ac	-95.289671	28.980233
191339	2.341 ac	-95.290038	28.980219
491421	4.770 ac	-95.290603	28.980256
491421	4.633 ac	-95.29137	28.980278
191268	5.437 ac	-95.292246	28.980349
191278	4.425 ac	-95.293196	28.980451
191268	4.625 ac	-95.294213	28.980575
191268	4.400 ac	-95.29542	28.980679
191268	4.172 ac	-95.296724	28.980715
491421	4.478 ac	-95.298017	28.980627
491421	4.452 ac	-95.29917	28.980491
491421	4.476 ac	-95.300156	28.980283
191268	5.180 ac	-95.300974	28.980034
191283	4.906 ac	-95.299661	28.99273
191283	5.176 ac	-95.296091	28.989807
191326	5.021 ac	-95.298857	28.989538
191327	5.083 ac	-95.29986	28.989522
191268	5.311 ac	-95.295391	28.989144
191268	7.040 ac	-95.293382	28.989102
191268	5.706 ac	-95.291237	28.987223
191268	5.875 ac	-95.290496	28.987043
191268	5.123 ac	-95.293522	28.987804
191268	5.060 ac	-95.294822	28.987786
191268	4.950 ac	-95.297391	28.987782
191268	5.078 ac	-95.296122	28.98777
191268	7.457 ac	-95.289414	28.986907

FLNG Private DMPA Parcel Tract ID

PRIVATE DMPA SITE E Cont.			
Property ID	**Acreage**	**Latitude**	**Longitude**
191268	5.506 ac	-95.288156	28.986113
191317	5.061 ac	-95.293487	28.986339
191268	5.143 ac	-95.296087	28.986303
191268	4.837 ac	-95.297352	28.986287
191268	4.978 ac	-95.299854	28.986257
191287	2.696 ac	-95.289671	28.984571
191285	2.525 ac	-95.290147	28.984561
191268	5.000 ac	-95.291764	28.98453
191296	5.082 ac	-95.292687	28.984512
191268	5.168 ac	-95.296419	28.984453
191268	4.846 ac	-95.297344	28.984434
191268	4.946 ac	-95.300093	28.984399
191297	4.893 ac	-95.300996	28.984386
191283	5.527 ac	-95.287716	28.98463
191283	5.374 ac	-95.287642	28.984015
191281	5.170 ac	-95.287625	28.983428
191288	5.080 ac	-95.289851	28.982537
191290	4.885 ac	-95.291713	28.982505
191295	4.994 ac	-95.292636	28.982486
191268	4.862 ac	-95.294512	28.98244
191268	5.024 ac	-95.295426	28.982431
191268	5.041 ac	-95.287599	28.982862
191302	4.833 ac	-95.297289	28.982409
191268	4.953 ac	-95.30005	28.982363
191306	4.918 ac	-95.300958	28.982346
191280	5.965 ac	-95.287103	28.982223
191268	6.276 ac	-95.287296	28.981578
191268	5.298 ac	-95.287678	28.980923
191283	5.786 ac	-95.300067	28.99395
0	3.757 ac	-95.296486	28.981362
646420	4.556 ac	-95.289081	28.980027
191284	5.515 ac	-95.28791	28.985293
191268	5.241 ac	-95.297894	28.991427
191268	5.697 ac	-95.296952	28.990359
191288	5.060 ac	-95.298633	28.987766
191288	5.006 ac	-95.298595	28.98627
191288	5.026 ac	-95.299176	28.984413
191288	5.146 ac	-95.293584	28.982472
191288	5.131 ac	-95.296367	28.982427
191268	5.018 ac	-95.299131	28.98238
191310	5.136 ac	-95.301069	28.994603
191336	4.726 ac	-95.299834	28.993273
0	1.485 ac	-95.300876	28.992406
0	2.586 ac	-95.298082	28.988541
191313	4.956 ac	-95.30114	28.987732
0	3.483 ac	-95.296947	28.985512
0	0.966 ac	-95.289358	28.983598

PRIVATE DMPA SITE F			
Property ID	**Acreage**	**Latitude**	**Longitude**
573376	11.312 ac	-95.317713	29.017582
168799	307.964 ac	-95.305913	29.01828
168799	198.258 ac	-95.310011	29.020653

Appendix D

Contaminant Assessment Report FLNG Terminal, Dock 1 Project

Freeport LNG
Liquefaction Project and Phase II Developments
Environmental Analysis

Appendix D

Contaminant Assessment Report FLNG Terminal Dock 1 Project

CONTAMINANT ASSESSMENT REPORT
FLNG TERMINAL, DOCK 1 PROJECT
BRAZORIA COUNTY, TEXAS

Prepared for:

Freeport LNG
333 Clay Street, Suite 5050
Houston, Texas 77002

Prepared by:

Lloyd Engineering, Inc
6565 West Loop South, Suite 708
Bellaire, Texas 77401

October 2016

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Acronyms and Abbreviations

ASTM	American Society for Testing and Materials
AWQC	ambient water quality criteria
BDL	below detection limit
°C	degrees Celsius
CFR	Code of Federal Regulations
cm	centimeter
CMC	criteria maximum concentration
COC	contaminant(s) of concern
cy	cubic yards
DA 85	Upland Confined Dredge Material Placement Area 85
DMPA	dredged material placement area
DO	dissolved oxygen
EPA	U.S. Environmental Protection Agency
ERL	effects range low
ERM	effects range medium
ft	feet/foot
FLNG	Freeport LNG
GPS	global positioning system
ITM	*Evaluation of Dredged Material Proposed For Discharge in Waters of the U.S. - Testing Manual*. *Inland Testing Manual*.
LDL	laboratory detection limit
L	liter
LRL	laboratory reporting limit
MDL	method detection limit
mg	milligram
mph	miles per hour
µg	microgram
µm	micrometer
mm	millimeter
mS	millisiemens
NWP	Nationwide Permit
NELAC	National Environmental Laboratory Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
NOAA	National Oceanic and Atmospheric Administration
NTU	nephlometric turbidity unit
NWDLS	North Water District Laboratory Services, Inc.
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCL	protective concentration levels
psu	practical salinity unit

QA	quality assurance
QC	quality control
%sat	percent saturation
SAP	sampling and analysis plan
SOP	standard operating procedure
SQuiRT	Screening Quick Reference Tables
SU	standard unit
TAC	Texas Administrative Code
TDL	target detection limit
TRRP	Texas Risk Reduction Program
TSWQS	Texas Surface Water Quality Standards
UCPA	upland confined placement area
USACE	U.S. Army Corps of Engineers
WQS	water quality standard

1.0 Objectives

The objectives of this dredging application and testing are to:

a. Collect sediment and water samples from the berth area at Dock 1 of the Freeport LNG (FLNG) Terminal, which adequately characterizes the materials to be dredged, as described below in Section 2.

b. Analyze the dredged material samples for chemical contaminants of concern (COC) and physical characteristics in order to determine the suitability of the material to be placed in Upland Confined Placement Area 85 (DA 85) in Freeport, Texas.

c. Document the field sampling and results of physical and chemical analyses and quality control measures.

d. Collect sufficient data to determine whether unacceptable adverse impacts would result from dredging and dredged material placement operations.

2.0 Overview

Freeport LNG is providing the following contaminant assessment, prepared by Lloyd Engineering, INC (LEI), to the U.S. Army Corps of Engineers (USACE) Galveston District as part of permit application SWG-2003-02110, for the proposed FLNG Terminal, Dock 1 project located in Freeport, Brazoria County, Texas. FLNG is requesting authorization from USACE under Nationwide Permit (NWP) 35 (Maintenance Dredging) for dredging and placement of material into DA 85 . Refer to Figure 1 for a depiction of the location of the proposed project.

This document presents the results of the sampling and analyses of sediment, water, elutriate chemistry, and sediment grain size within the Dock 1 dredge footprint. The proposed dredging activities associated would result in the removal of approximately 320,000 cubic yards (cy) of sediment, of which only 150,000 cy would be placed in DA85. The remaining material will be placed at an FLNG owned and operated Dredged Material Placement Area (DMPA) or other approved placement area.

3.0 Approach

Site water and sediment samples were collected by LEI on behalf of FLNG, to characterize the maintenance material proposed to be dredged in association with the FLNG Terminal, Dock 1. Sediment and water samples were collected within the proposed dredge footprint by LEI personnel and tested by National Environmental Laboratory Accreditation Program (NELAP)-certified laboratories to determine whether adverse impacts would be expected as a result of proposed activities. Chemical and grain-size analyses were performed on all sediment samples collected within the proposed dredge footprint. In addition, chemical analyses were conducted on all water and elutriate samples. All sampling procedures strictly followed LEI standard operating procedure (SOP) outlined in the sampling and analysis plan (SAP) for the collection, testing, and analyses of sediment and water samples (Appendix A).

The resource documents listed below were used for guidance when developing the sampling protocol and analyses to place 150,000 cy of the 320,000 cy of dredge material from the FLNG Terminal, Dock 1 dredge footprint at DA 85:

a. U.S. Environmental Protection Agency (EPA) and USACE (1998). *Evaluation of Dredged Material Proposed for Discharge in Waters of the US - Testing Manual. Inland Testing Manual* (ITM).

b. EPA and USACE (1995). *QA/QC Guidance for Sampling and Analysis of Sediments, Water and Tissues for Dredged Material Evaluations (Chemical Evaluations)*. EPA-823-B-95-001.

c. USACE (2003). *Evaluation of Dredged Material Proposed for Disposal at Island, Nearshore, or Upland Confined Disposal Facilities – Testing Manual*.

4.0 Sample Collection

4.1 Overview

The SAP for the proposed project was prepared by LEI and approved by the USACE Galveston District on July 19, 2016, prior to initiating sampling (Appendix A). Samples were collected and tested to determine the potential for adverse impacts resulting from the proposed dredging and material placement operations associated with the proposed project. Field sampling protocol and laboratory analyses were conducted according to the same methodology used by the USACE Galveston District for routine sediment, water, and elutriate analyses prior to dredging.

4.2 Sampling Sites

Samples were collected August 4, 2016, from a total of six USACE pre-approved sampling locations within the proposed dredge footprint. The six sampling sites and one duplicate were selected based on their distribution within the proposed dredge footprint, to accurately characterize the material proposed to be removed and relocated. Table 1 provides the global positioning system (GPS) coordinates of the sampling locations, as well as, lists the analyses that were conducted at each of the sampling locations.

All sampling locations were navigated to and documented using a handheld GPS unit. Figure 1 depicts the USACE-approved sampling locations and the actual sampling locations from which sediment and water samples were collected.

Table 1
Sample Location Details and Analyses
FLNG Terminal, Dock 1 Project, Brazoria County, Texas

Sampling Station ID	Sample Matrix	Original Proposed GPS Coordinates (Latitude, Longitude)	Revised Sampled GPS Coordinates (Latitude, Longitude)	Station Type	Analyses[1]
QI-16-01	Sediment, Water	28°56'24.24"N	95°18'16.83"W	Open Water	W, S, E, GS
QI-16-02	Sediment, Water	28°56'24.64"N	95°18'20.56"W	Open Water	W, S, E, GS
QI-16-03	Sediment, Water	28°56'22.12"N	95°18'20.54"W	Open Water	W, S, E, GS
QI-16-04	Sediment, Water	28°56'22.16"N	95°18'25.43"W	Open Water	W, S, E, GS
QI-16-05	Sediment, Water	28°56'19.41"N	95°18'26.08"W	Open Water	W, S, E, GS
QI-16-06	Sediment, Water	28°56'27.12"N	95°18'28.62"W	Open Water	W, S, E, GS
Duplicate	Sediment, Water	Duplicate	Duplicate	Open Water	W, S, E, GS

[1] W = water sample collected for analysis of water chemistry
S = sediment sample collected for analysis of sediment chemistry
E = water and sediment samples collected for chemical analysis of elutriate
GS = sediment sample collected for grain-size analysis

Figure 1. Sediment and Water Sampling Locations for Maintenance Dredging at Dock 1, FLNG Terminal, Brazoria County, Texas

4.3 Water Quality

At each sampling location, *in situ* standard water quality parameters were measured using a YSI 6920 V2 multi-parameter data sonde instrument. *In situ* water quality measurements are recorded any time a water sample is collected, as the data is used not only for quality control purposes, but a set of parameters (salinity, pH, and water temperature) are used to calculate EPA's acute criteria maximum concentration [CMC] for ammonia in saltwater (listed in the summary results tables for water and elutriate, Tables 4 and 5, respectively). Water quality parameters measured and recorded in the field included dissolved oxygen (DO), milligrams/liter (mg/L) and percent saturation (%sat); pH, standard units (SU); salinity, practical salinity units (psu); specific conductivity, millisiemens per centimeter (mS/cm); water temperature, degrees Celsius (^{o}C); turbidity, nephlometric turbidity units (NTU); total water depth in feet (ft), at sampling location; and profile depth in ft, at which the measurement was taken.

4.4 Water Samples

Water samples for chemical analyses were collected using a non-contaminating peristaltic pump with Teflon tubing. Each water sample was collected between one-third and midway to the bottom of the water column. Prior to filling sample containers, the peristaltic pump was allowed to run in order to purge the existing hose and ensure that the water collected was representative of the sample location. Water samples were then collected in pre-cleaned polyethylene or glass bottles containing preservatives that were provided by North Water District Laboratory Services, Inc. (NWDLS), in accordance with EPA standards.

Water samples for metals analysis, with the exception of mercury and selenium (due to TCEQ Texas Surface Water Quality Standards [TSWQS] requirements), were filtered by NWDLS through 0.45-micrometer (polycyclic) filters.

For water samples collected for preparation of elutriates, pre-cleaned, brown-glass bottles were used for the collection of water samples that were used in organic analyses. All bottles were filled completely with no air bubbles or headspace. All of the sample containers were placed into an ice chest and chilled on ice until relinquished to NWDLS following completion of sampling.

4.5 Sediment Samples

4.5.1 Bulk Samples

LEI personnel collected sediment samples for chemistry and grain-size analyses at all sampling locations. Sediment samples were collected using a stainless-steel petit ponar grab sampler.

Prior to collection at each site, the sampling device was rinsed with deionized water and an anionic detergent (Alconox®) followed by a rinse with ambient site water. The jars were filled completely to avoid any head space and to ensure total sample volume was achieved. The sample bottles were placed into an ice chest and chilled until delivered to NWDLS following the completion of sampling.

4.5.2 Elutriates

The elutriate samples for chemical analyses were prepared from site sediment and site water, combined by NWDLS personnel at a 1:4 ratio, respectively, as designated in the ITM (EPA and USACE, 1998).

4.5.3 Grain Size Analysis

Samples of sediments from each sample station were collected in the field and tested by NWDLS, in the laboratory, for grain-size analysis (American Society for Testing and Materials [ASTM] D422). Samples were subjected to standard sieve analysis (sieve sizes 4, 10, 20, 40, 50, 70, 100, 140, and 200) to determine the percent of fine sand and larger particles. Hydrometer analyses (elapsed time reading of 2, 4, 30, 60, 120, 240, and 1,440 minutes) complemented by specific gravity determinations, were conducted to determine the percent silt, clay, and colloidal material in the sediments. Cut-off points between medium and fine sand, fine sand and silt, silt and clay, and clay and colloidal material are sieve size 40, sieve size 200, 0.005, and 0.001 millimeter (mm), respectively.

4.6 Sample Collection, Preservation, and Storage

Prior to sample collection, all containers and sampling equipment were cleaned according to protocols described in Plumb (1981). Care was taken to avoid contamination of sampling devices from the boat deck and other surfaces. In addition, powderless latex or nitrile gloves were worn during sample collection, to prevent contamination of samples. Samples were stored in the dark at temperatures between 2 and 4 ^{o}C until delivered to NWDLS for testing and analyses.

4.7 Chain of Custody

Strict chain-of-custody protocols were followed, pursuant to LEI SOP for field collections, as well as Plumb (1981). For sample collection dates and times, refer to the field sampling log provided in Appendix B.

5.0 Analyses

The following section summarizes the results of the chemical and grain-size analyses and reports all significant values and parameters determined by the results of the tests performed. The raw data and complete results from the NWDLS and NELAP-certified subcontracted laboratories are provided for reference in Appendix B, which include the laboratory analysis reports for the chemical analyses. The results of the laser grain-size analysis are also provided in Appendix C.

5.1 Physical and Chemical Analyses

Water, elutriate, and sediment samples from each station were analyzed for the parameters listed in Table 2. Sediment samples are reported as dry weight. The methods of analysis and the minimum detection levels (i.e., target detection limits [TDL]), are included in Appendix B. NWDLS is certified by NELAP for all chemical analyses conducted on water, sediment, and elutriate samples.

Table 2
Parameters Determined by Chemical Analysis
FLNG Terminal, Dock 1 Project
Brazoria County, Texas

METALS	
Aluminum	Iron
Antimony	Lead
Arsenic	Manganese
Barium	Mercury
Beryllium	Nickel
Cadmium	Selenium
Chromium (total)	Silver
Chromium (3+)	Thallium
Chromium (6+)	Tin
Cobalt	Zinc
Copper	
CONVENTIONAL/ANCILLARY PARAMETERS	
Ammonia	Total Suspended Solids
Cyanides	Total Settleable Solids
Total Organic Carbon (TOC)	Total Solids/Dry Weight
Total Petroleum Hydrocarbons (TPH)	Total Volatile Solids
Total Recovered TPH	Specific Gravity
Total Phenols	pH
Acid Volatile Sulfides	Total Moisture Content
Total Sulfides	Total Lipid
Grain Size	
LPAH COMPOUNDS	
Naphthalene	Phenanthrene
Acenaphthylene	Anthracene
Acenaphthene	Methylnaphthalene
Fluorene	2-Methylnaphthalene
HPAH COMPOUNDS	
Fluoranthene	Benzo(a)pyrene
Pyrene	Indeno[1,2,3-c,d]pyrene
Benzo(a)anthracene	Dibenzo[a,h]anthracene
Chrysene	Benzo[g,h,i]perylene
Benzo(b&k)fluoranthene	
ORGANONITROGEN COMPOUNDS	
Benzidine	Nitrobenzene
3,3'-Dichlorobenzidine	N-Nitrosodimethyl amine
2,4-Dinitrotoluene	N-Nitrosodi-n-propylamine
2,6-Dinitrotoluene	N-Nitrosodiphenylamine
1,2-Diphenylhydrazine	
PHTHALATE ESTERS	
Dimethyl Phthalate	Butyl Benzyl Phthalate
Diethyl Phthalate	Bis[2-ethylhexyl] Phthalate
Di-n-Butyl Phthalate	Di-n-octyl Phthalate
PHENOLS/SUBSTITUTED PHENOLS	
Phenol	2-Nitrophenol

2-Methylphenol	4-Nitrophenol
4-Methylphenol	2,4-Dinitrophenol
2,4-Dimethylphenol	4,6-Dinitrophenol
Pentachlorophenol	2-Chlorophenol
2,4,6-Trichlorophenol	2,4-Dichlorophenol
4-Chloro-3-methylphenol	4,6-Dinitro-o-cresol
POLYCHLORINATED BIPHENYLS (PCB)	
PCB Congeners & Aroclors	Total PCB
PESTICIDES	
Aldrin	Beta-BHC
Chlordane and Derivatives	Delta-BHC
Dieldrin	Gamma-BHC (Lindane)
4,4'-DDD	Toxaphene
4,4'-DDE	Methoxychlor
4,4'-DDT	Chlorbenside
Endosulfan and Derivatives	Dacthal
Endrin and Derivatives	Total Chlorinated Pesticides
Heptachlor and Derivatives	Malathion
Alpha-BHC	Parathion
CHLORINATED HYDROCARBONS	
1,3-Dichlorobenzene	2-Chloronapthalene
1,4-Dichlorobenzene	Hexachlorocyclopentadiene
1,2-Dichlorobenzene	Hexachloroethane
1,2,4-Trichlorobenzene	Hexachlorobutadiene
Hexachlorobenzene	
VOLATILE ORGANIC COMPOUNDS (VOC)	
Benzene	Trichloroethene
Chloroform	Tetrachloroethene
Ethylbenzene	Total Xylenes
Toluene	
HALOGENATED ETHERS	
Bis(2-chloroethyl)ether	Bis(2-chloroisopropyl)ether
4-Chlorophenyl phenyl ether	Bis(2-Chloroethoxy)methane
4-Bromophenyl phenyl ether	
MISCELLANEOUS	
Isophorone	Methyl Ethyl Keytone
Benzyl Alcohol	Resin Acids and Guaiacols
Benzoic Acid	

5.2 Laboratory Quality Control

Documentation of all laboratory quality control (QC) activities performed specifically in conjunction with this project is furnished along with sample results in Appendix C. The laboratory QC program included:

NELAP-certified Laboratory – NWDLS has current accreditation status consistent with standards adopted by the National Environmental Laboratory Accreditation Conference (NELAC).

Method Blanks – Method blanks were performed at a frequency of one per batch of samples, per matrix type, per sample extraction or preparation method.

Laboratory Control Samples – Laboratory control samples were analyzed at a minimum of 1 per batch of 20 or fewer samples per matrix type, per sample extraction or preparation method, except for analytes for which spiking solutions were not available.

Matrix Spikes – Matrix spikes were performed at a frequency of 1 in 20 samples per matrix type, per sample extraction or preparation method, except for analytes for which spiking solutions were not available. The spike concentration was no greater than 25 to 50 percent of the maximum concentration along the linear segment of the instrument calibration curve for any analyte.

Surrogates – Surrogate compounds were added to all samples, standards, and blanks for all organic chromatography methods, except when the matrix precluded their use or when a surrogate was not available.

Field Equipment Blanks – Analysis of field equipment blanks were performed at a frequency of one per batch of samples collected.

Calibration of Instrumentation – Instrumentation was calibrated and periodic instrument checks were performed according to manufacturer and EPA recommendations and appropriate SOP.

Performance Evaluation – Participation in performance evaluation and method studies available from EPA and ASTM are conducted by NWDLS at least on a semi-annual basis.

Evaluation of Solutions and Reagents – Each new shipment or lot of solvent, reagent, or adsorbent is evaluated for purity in accordance with appropriate SOP.

Preparation and Verification of Standards – Standards are prepared and verified by NWDLS in accordance with appropriate SOP.

QC Limits and Control Charts – Calculation of QC limits and preparation of control charts are performed by NWDLS in accordance with appropriate SOP.

Out-of-Control Events – Any out-of-control events or outlier data were noted and corrective action was taken in accordance with appropriate SOP.

5.3 Chemical Analyses

The laboratory analysis report provided by NWDLS for the chemical analyses of the water, elutriate, and sediment samples is included in Appendix B. The laboratory data is also provided in electronic data deliverable (EDD) format in Appendix D. Concentrations of COC that were detected in the water, elutriate, and sediment samples are described in the following sections.

Chemical analytical data are reported with a number of conventions and qualifications. Values quantified at concentrations greater than the laboratory reporting limit (LRL) are recorded as per laboratory reports. Analytes that were detected above the laboratory detection limit (LDL) but below the LRL represent estimated concentrations with high uncertainty and are qualified as "J." Analytes that were not detected above the LDL are reported as below detection limit (BDL) and are assigned a value of one half the LDL where pertinent. The method detection limit (MDL) is a statistically derived expression of theoretical detection capability and is based on standard deviation of replicate spiked samples taken through all steps of analytical procedure, based on standard procedure from 40 Code of Federal Regulations (CFR) Part 136. The LDL is the MDL modified to account for matrix interferences, dilution, or other factors which increase the detection limit, so that the laboratory has confidence that an analyte actually has or has not been detected at that limit. Analytes detected because of laboratory introduction of an analyte, independent of field conditions, are qualified as "B."

5.3.1 Water Quality

Standard water quality parameters were measured for all sampling stations. Table 3 summarizes the water quality parameters recorded for each station at the time in which water samples were collected.

The total water depth for the sampling locations ranged from 26.0 to 44.0 ft. Water quality measurements were collected at 10 ft below the water surface. The water temperature observed for all sites resulted in little variation, ranging from 29.38 to 30.25˚C.

Specific conductance for all sampling locations ranged from 56.42 to 56.59 mS/cm. Salinity for all sampling locations ranged from 33.4 to 33.8 psu. DO ranged from 66.9 to 75.3 %sat and from 4.21 to 4.73 mg/L. Measurements observed for pH varied little among sites, ranging from 8.01 to 8.06 SU. Turbidity ranged from 6.5 to 7.4 NTU.

Table 3
Water Quality Data
FLNG Terminal, Dock 1 Project
Brazoria County, Texas

Station ID	Date	Time	Total Depth	Depth Profile	Profile Sample Depth	Water Temp.	Sp. Cond.	Salinity	Dissolved Oxygen		pH	Turbidity
			(ft)		(ft)	(°C)	(mS/cm)	(psu)	(% sat)	(mg/L)	(SU)	(NTU)
QI-16-01	8/4/2016	9:41	26.0	Middle	10.0	30.18	56.42	33.40	67.5	4.23	8.01	7.4
QI-16-02	8/4/2016	9:56	35.0	Middle	10.0	30.25	56.54	33.80	70.3	4.40	8.04	6.5
QI-16-03	8/4/2016	10:58	37.0	Middle	10.0	29.38	56.59	33.80	66.9	4.21	8.02	8.4
QI-16-04	8/4/2016	11:14	34.0	Middle	10.0	29.94	56.42	34.40	72.9	4.58	8.04	6.8
QI-16-05	8/4/2016	11:29	34.0	Middle	10.0	30.18	56.56	33.80	75.3	4.73	8.06	6.8
QI-16-06	8/4/2016	11:44	44.0	Middle	10.0	29.90	56.56	34.50	71.7	4.58	8.05	6.8

5.3.2 Water and Elutriate Chemistry

The results of chemical analysis for COC detected in water and elutriate samples are presented in Tables 4 and 5, respectively, and include both the TCEQ TSWQS and the EPA national recommended ambient water quality criteria (AWQC) for the protection of aquatic life. Since the sediment and water samples used to prepare elutriate are from grab samples from a marine environment, the acute marine TSWQS and acute WQC (criteria maximum concentration [CMC]) are appropriate for comparison. (NOTE: Since the project area is within Texas state waters, only the TSWQS must be met; thus, the EPA CMCs are provided only as a reference.) The ammonia CMC is specific to each individual pH, temperature, and salinity and the values given in Tables 4 and 5 are for the average of the pH, temperature, and salinity values of these parameters in Table 3. An examination of Table 4, indicates that none of the COC concentrations detected in any of the water samples were found to be in exceedance of any acute state TSWQS or federal CMC.

Elutriates were prepared by NWDLS personnel from site sediment and corresponding aquatic site water, combined at a 1:4 ratio, respectively. For trace metals analysis, with the exception of mercury and selenium, the elutriate samples were filtered or centrifuged to remove suspended material. Therefore, the elutriate samples provide information on those constituents that move into the water column during dredging and open-water placement. An examination of Table 5 indicates that none of the COC concentrations detected in any of the elutriate samples were found to be in exceedance of any acute state TSWQS or federal CMC.

Table 4
Concentrations of Detected Compounds in Water Samples
FLNG Terminal, Dock 1 Project
Brazoria County, Texas

Parameter	Units	TDL	SDL	WQS*	CMC*	COC Detection Results												EQUIP (Metal Blank)	
						QI-16-01		QI-16-02		QI-16-03		QI-16-04		QI-16-05		QI-16-06			
Arsenic	µg/L	1	0.5	149	69	3.77		4.41		4.49		4.21		4.65		4.09		BDL	
Copper	µg/L	1	0.25	13.5	4.8	1.06	J	1.4	J	1.07	J	1.17	J	1.06	J	1.29	J	0.265	J
Nickel	µg/L	1	0.25	118	74	1.02	J	1.01	J	0.776	J	0.917	J	1.04	J	1.09	J	0.074	J
Selenium	µg/L	2	1.665	564	290	14.5		13.8		14.7		17.3		15.4		15.9		BDL	
Zinc	µg/L	1	0.5	92.7	90	5.01	J	7.41	J	4.06	J	5.88	J	6.22	J	9.31	J	1.45	J
Ammonia as N	mg/L	0.03	0.05	N/A	23.7	BDL		BDL		BDL		BDL		BDL		BDL		N/A	
Total Organic Carbon	%	0.1	0.00005	N/A	N/A	0.0002759		0.0002851		0.0001906		0.0002197		0.0002349		0.0001972		N/A	
TPH, C6-C35	mg/L	0.1	3.22	N/A	N/A	BDL		BDL		BDL		BDL		BDL		BDL		N/A	
Bis(2-ethylhexyl)phthalate	µg/L	2	0.25	N/A	N/A	BDL		BDL		BDL		BDL		BDL		BDL		N/A	

*Texas Water Quality Standards and EPA Saltwater Criterion Maximum Concentration (CMC) for estimating the highest briefly (acute limit) without resulting in an unacceptable effect.

J = The reported value is between the limit of detection (MDL) and the practical quantitation limit (RL).

B = Analyte was found in the associated method blank.

Dup = Duplicate Sample; BDL = Below Detection Limit

TDL = Target Detection Level; SDL = Sample Detection Level

Table 5
Concentrations of Detected Compounds in Elutriate Samples
FLNG Terminal, Dock 1 Project
Brazoria County, Texas

Parameter	Units	TDL	SDL	WQS*	CMC*	COC Detection Results											
						QI-16-01		QI-16-02		QI-16-03		QI-16-04		QI-16-05		QI-16-06		Duplicate	
Arsenic	µg/L	1	0.5	149	69	BDL		7.58	J	13	J	13	J	12.1	J	12.4	J	12.5	J
Beryllium	µg/L	0.2	0.05	N/A	N/A	BDL		BDL		BDL		BDL		BDL		BDL		BDL	
Cadmium	µg/L	1	0.25	40	40	BDL		BDL		BDL		BDL		BDL		BDL		BDL	
Chromium	µg/L	1	0.375	N/A	N/A	BDL		BDL		BDL		BDL		BDL		BDL		BDL	
Copper	µg/L	1	0.25	13.5	4.8	1.02	J	0.691	J	0.528	J	0.481	J	0.902	J	0.41	J	0.537	J
Lead	µg/L	1	0.125	133	210	BDL		BDL		0.154	J	BDL		0.18	J	BDL		0.234	J
Nickel	µg/L	1	0.25	118	74	2.17	J	1.59	J	1.94	J	1.27	J	1.98	J	1.35	J	2.88	J
Selenium	µg/L	2	0.25	564	290	16.6	J	18.9	J	16.9	J	12.2	J	11.9	J	14.5	J	13.3	J
Silver	µg/L	1	1.665	2	1.9	BDL		BDL		BDL		BDL		BDL		BDL		BDL	
Zinc	µg/L	1	0.5	92.7	90	7.3	J	4.39	J	5.09	J	3.54	J	8.95	J	4.61	J	4.7	J
Ammonia as N	mg/L	0.03	0.05	N/A	23.7	1.46		1.63		1.26		1.89		1.41		2.11		1.92	
Total Organic Carbon	%	0.1	0.00005	N/A	N/A	0.0003182		0.0003118		0.0003839		0.0004035		0.0003901		0.0004079		0.0003312	

*Texas Water Quality Standards and EPA Saltwater Criterion Maximum Concentration (CMC) for estimating the highest briefly (acute limit) without resulting in an unacceptable effect.
J = The reported value is between the limit of detection (MDL) and the practical quantitation limit (RL).
B = Analyte was found in the associated method blank.
Dup = Duplicate Sample; BDL = Below Detection Limits
TDL = Target Detection Level; SDL = Sample Detection Level

5.3.3 Sediment Chemistry

Sediment concentrations of detected analytes are presented in Table 6. There are no enforceable sediment quality criteria or standards with which to compare concentrations in the sediment. However, there are several different guidelines that are used to look for a cause for concern in sediment samples, one of which is effects range low (ERL). ERL was developed by a technique that demonstrates no cause and effect from the chemicals in the data set, and when ERL derived from sets of data from different areas are compared, the results are inconsistent (USACE, 1998). Since the ERL is not based on cause-and-effect data, it is used only to determine a possible "cause of concern" and represents a benchmark concentration at which adverse effects *may* occur. When an exceedance in an ERL occurs, the effects range medium (ERM) benchmark value is then evaluated, as this is the concentration at which adverse effects are *likely* to occur, given the reservations noted above. The ERL for each analyte presented in Table 6 is derived from those given in the National Oceanic and Atmospheric Administration (NOAA) 2008 Screening Quick Reference Tables (SQuiRT) (Buchman, 2008).

An examination of Table 6 indicates that there were no exceedances of the ERL.

Since these sediments are destined for any upland confined placement area (UCPA), it is customary (Hauch, 2012) to also compare to the Human Health Protective Concentration Levels (PCL), provided by the TCEQ as part of the Texas Risk Reduction Program (TRRP, 30 TAC §350). The PCLs in the TCEQ TRRP Table 4, last revised March 4, 2016, are the $^{TOT}SOIL_{COMB}$ PCLs. These values represent the results from the combined equations for ingestion of surface soil + dermal contact with surface soil + inhalation of surface soil volatiles and particulates + consumption of garden vegetables grown in contaminated surface soil. An examination of Table 6 indicates that no exceedances of any PCL values occurred.

Table 6
Concentrations of Detected Compounds in Sediment Samples
FLNG Terminal, Dock 1 Project
Brazoria County, Texas

Parameter	Units	NOAA ERL*	NOAA ERM**	TDL	Max SDL	TCEQ PCL***	COC Detection Results						
							QI-16-01	QI-16-02	QI-16-03	QI-16-04	QI-16-05	QI-16-06	Duplicate
Antimony	mg/kg	N/A	N/A	2.5	0.011	15	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Arsenic	mg/kg	8.2	70	0.3	0.07	24	2.57	2.62	2.63	2.52	2.25	2.25	2.39
Beryllium	mg/kg	N/A	N/A	1	0.011	38	0.351	0.358	0.355	0.349	0.319	0.326	0.352
Cadmium	mg/kg	1.2	9.6	0.1	0.011	52	0.052 J	0.051 J	0.058 J	0.056 J	0.041 J	0.046 J	0.05 J
Chromium	mg/kg	81	370	1	0.084	33000	5.82	5.93	5.87	5.85	5.39	5.55	5.64
Trivalent Chromium	mg/kg	N/A	N/A	1	1.425	33000	5.82	5.93	5.86	5.81	5.39	5.55	5.64
Copper	mg/kg	34	270	1	0.057	1300	5.31	5.39	5.91	5.71	4.9	5.06	5.24
Lead	mg/kg	46.7	218	0.3	0.014	500	5.05	5.18	5.25	5.13	4.68	4.67	5.06
Mercury	mg/kg	0.15	0.71	0.2	0.029	3.60	BDL	BDL	BDL	0.074	BDL	BDL	BDL
Nickel	mg/kg	20.9	51.6	0.5	0.028	840	6.82	6.94	6.82	6.61	6.26	6.31	6.37
Selenium	mg/kg	N/A	N/A	0.5	0.28	310	1.05	1.04	1.07	1	0.946	0.96	0.908
Silver	mg/kg	1	3.7	0.2	0.006	97	0.019	0.018	0.025	0.025	0.018	0.002	0.022
Thallium	mg/kg	N/A	N/A	0.2	0.026	6.3	0.042 J	0.042 J	0.043 J	0.043 J	0.038 J	0.004	0.004
Zinc	mg/kg	150	410	2	0.114	9900	18.4	18.4	21.5	21.2	17.5	19.4	20.1
Ammonia as N	mg/kg	N/A	N/A	0.1	57	1500	56	71 J	60 J	BDL	59 J	65 J	78 J
Total Organic Carbon	%	N/A	N/A	0.1	0.071	N/A	0.7995	0.8648	0.8859	0.6962	0.6236	0.9625	0.5662
TPH, C6-C35	mg/kg	N/A	N/A	5	28.5	2300	BDL	BDL	BDL	BDL	BDL	BDL	BDL
% Solids	%	N/A	N/A	0.1	0.01	N/A	40.04	41.03	39.05	37.95	34.59	35.28	37.33

*NOAA ERL = Effects Range Low; one of NOAA's acute guidelines for the minimum concentration of contaminants in saltwater at which adverse effects may occur. Values highlighted in yellow were observed in exceedance of the ERL.

**NOAA ERM = Effects Range Median; one of NOAA's acute guidelines for the concentration of contaminants in saltwater sediment at which adverse effects are likely to occur.

***TCEQ PCL = Protective Concentration Levels for Human Health are site-specific and path-specific calculated values to represent the results from the combined equations for ingestion of surface soil + dermal contacts with surface soil + inhalation of surface soil volatiles and particulates + consumtion of garden vegetables grown in contaminated surface soil.

Dup = Duplicate Sample

BDL = Below Detection Limit

J = The reported value is between the limit of detection (MDL) and the practical quantitation limit (RL).

5.3.4 Sediment Grain Size

None of the samples contained gravel or large particles (Table 7). The aquatic sediment samples, which are representative of the material proposed for hydraulic dredge removal, ranged in composition among stations between 1.2 and 2.8 percent sand, 57.2 and 61.0 percent silt, and 38.1 and 41.3 percent clay.

Table 7
Summary of Laser Grain-Size Composition
FLNG Terminal, Dock 1 Project
Brazoria County, Texas

Sediment Samples												
Sample ID	Gravel	Sand					Silt					Clay
	Grn %	Crs %	Med %	Fine %	Vf %	Total	Crs %	Med %	Fine %	Vf %	Total	Clay %
QI-16-01	0.0	0.0	0.0	0.1	1.9	2.1	4.7	11.5	20.3	23.3	59.8	38.1
QI-16-02	0.0	0.0	0.0	0.1	1.3	1.4	4.0	10.2	19.2	23.8	57.2	41.3
QI-16-03	0.0	0.0	0.0	0.1	2.0	2.1	5.2	11.7	20.1	22.6	59.7	38.2
QI-16-04	0.0	0.0	0.0	0.2	2.6	2.8	5.7	11.4	19.9	22.9	59.9	37.3
QI-16-05	0.0	0.0	0.0	0.1	1.3	1.4	3.9	11.1	21.3	24.7	61.0	37.6
QI-16-06	0.0	0.0	0.0	0.1	1.1	1.2	3.5	10.7	20.7	23.6	58.5	40.3
Duplicate	0.0	0.0	0.0	0.1	1.7	1.8	4.4	11.4	21.0	23.3	60.1	38.1

6.0 Summary

All sampling stations as depicted in Figure 1 and noted in the SAP provided in Appendix A, were collected by LEI personnel according to the requirements within the USACE-approved SAP. Samples were collected from a total of six sampling locations. Additionally, one duplicate sample was collected.

Water quality parameters taken at the time of collection, which include the sampling location GPS coordinates, are presented in Table 3. Included in Tables 2 and 6 are a list of parameters for each analysis required and the concentrations of detected parameters in sediment, respectively. Also included in the tables are appropriate standards, criteria, or screening values to which the detected parameters can be compared.

Water, elutriate, and sediment results show that no acute WQS were exceeded in the concentrations of the compounds detected in any of the water or elutriate samples. There were no exceedances of ERL, ERM or TCEQ PCL benchmark values.

7.0 Conclusion

Based on the results of this assessment, there is nothing in the chemical analyses that would indicate a concern with the dredging or placement of these sediments in an UCPA under the guidance provided by the ITM and/or SAP.

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8.0 References

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Appendix A

Sampling and Analysis Plan (SAP)

LLOYD
ENGINEERING, INC.

July 18, 2016

US Army Corps of Engineers
Ms. Lisa Finn
2000 Fort Point Road
Galveston, Texas 77550

Subject: Sampling and Analysis Plan for Sediment and Water Collection, Testing, and Analysis for Maintenance Dredging
Freeport LNG
Dock 1
Freeport, Texas

Dear Ms. Finn,

Attached please find a draft sampling and analysis plan for sediment and water sample collection, testing, and analysis in conjunction with immediate maintenance dredging required at Dock 1 of the Quintana Terminal located in Freeport, Texas. Record rain fall in Brazoria County has led to abnormally high shoaling rates at the dock. Dredging is required immediately in anticipation of a ship arriving in September 2016 at Dock 1. Based on the most recent survey data, the current depths would cause the ship ground.

Please reply with your approval so that we may initiate field work. Should you have any questions or concerns, please contact Erin Piper or me. Erin can be contacted at Epiper@freeportlng.com and I can be contacted at marisa@lloydeng.com.

Sincerely,

Lloyd Engineering, Inc.
TXBPE # 2846

Marisa Weber
Director of Environmental Services

6565 West Loop S., Ste. 708 Bellaire, TX 77401 PHONE (832)426-4656 FAX (832)804-8056
www.lloydeng.com

SAMPLING AND ANALYSIS PLAN
SAMPLING AND CHEMICAL ANALYSIS
DOCK 1 AT QUINTANA TERMINAL
FREEPORT ENTRANCE CHANNEL, BRAZORIA COUNTY,
FREEPORT, TEXAS

Objectives

Sediment and water samples will be collected from the dredge footprint area of Dock 1 Quintana Terminal located along the western shoreline of the Freeport Entrance Channel in Freeport, Brazoria County, Texas, for the purpose of conducting testing to characterize the maintenance dredge material to be excavated. The evaluation will be comprised of chemical analyses of sediment, water, and elutriate samples, and grain-size analyses of sediment samples. The dredging project will require the hydraulic dredging of approximately 320,000 cubic yards of material to a maximum project depth of -46.5 feet NADV88 plus 2 feet advanced maintenance at the dock breasting line; however, only 150,000 cubic yards of material will be placed at federal Dredge Material Placement Area (DMPA) 85. The remaining material will be placed at an FLNG owned and operated DMPA or other approved placement area.

Six water, sediment and elutriate samples plus one duplicate will be collected from the proposed dredging footprint (Table 1). By following this sampling and analysis plan (SAP), all regulatory requirements for the USACE to place material at DMPA 85 will be met. Samples will be collected and tested to determine whether adverse impacts would result from the dredging and dredged material placement operations performed during the dredging project. Field sampling protocol and laboratory analyses will be conducted according to the USACE document, "Sampling and Analysis Plan-Private Dredging Application, USACE Galveston District, Galveston TX" (2015)[1].

Table 1
Sample Collection Sites and Analyses to be Performed Dock 1 Quintana Terminal Maintenance Dredging

Sample ID	Sample Matrix	Latitude	Longitude	Analyses
QI-16-01	Sediment, Elutriate	28°56.24.24” N	95°18’16.83″ W	W, S, E, GS*
QI-16-02	Sediment, Elutriate	28°56’24.64” N	95°18’20.56” W	W, S, E, GS*
QI-16-03	Sediment, Elutriate	28°56’22.12 N	95°18’20.54” W	W, S, E, GS*
QI-16-04	Sediment, Elutriate	28°56’22.16 N	95°18’25.43” W	W, S, E, GS*
QI-16-05	Sediment, Elutriate	28°56’19.41 N	95°18’26.08” W	W, S, E, GS*
QI-16- 06	Sediment, Elutriate	28°56’27.12 N	95°18’28.62” W	W, S, E, GS*
QI-16-07	Sediment, Elutriate	DUPLICATE	DUPLICATE	W, S, E, GS*

* W = Chemical analysis of a water sample
S = Chemical analysis of a sediment sample
E = Chemical analysis of an elutriate sample
GS = Physical analysis of sediment grain-size

[1] U.S. Army Corps of Engineers. 2015. Sampling and Analysis Plan-Private Dredging Application, USACE Galveston District, Galveston TX.

Prior to sample collection, all containers and sampling equipment will be cleaned according to protocols described in Plumb (1981)[2], or other appropriate guidance manuals. Care will be taken to avoid contamination to sampling devices from the boat deck or other surfaces. Powderless latex gloves will be worn during sample collection. Navigation to and documentation of all sample sites will be accomplished via a handheld global positioning system (GPS) unit.

Water Sampling

Three water samples will be collected using a suitable non-metallic bilge pump with a food-grade hose or a peristaltic pump. The depth of each water sample will be between mid-depth to one-third of the way to the bottom of the water column. Prior to filling sample containers, the pump will be allowed to run, to purge the existing hose and ensure water collected is representative of the sample location. Water samples will then be collected in polyethylene or glass bottles, pre-cleaned, and prepared with preservatives by the chemistry laboratory. Water samples to be analyzed for metals will be collected using a variable-speed non-contaminating peristaltic pump and Teflon tubing. Water samples to be analyzed for metals other than mercury and selenium are to be filtered through a clean 0.45-micrometer (µm) filter prior to dispensing into containers with acid preservatives, or they will be filtered in the lab. Pre-cleaned brown-glass bottles will be used for organic analyses. All bottles will be filled completely with no air bubbles or headspace.

During water collection, in situ standard water quality parameters will be recorded at each sample site using a multi-parameter sonde instrument. Water quality parameters include dissolved oxygen, recorded in milligrams per liter (mg/L); pH, recorded in standard units (SU); salinity, recorded in practical salinity units (psu); conductivity, recorded in millisiemens per centimeter (mS/cm); water temperature, recorded in degrees Celsius (°C); and water depth, recorded in feet (ft). In addition to water quality parameters, ambient water and weather conditions, as well as the tidal stage at the time of sample collection, will be recorded on field data sheets.

Sediment Sampling

Six surface sediment samples will be collected from the mudline to the depth of dredge using a petit ponar attached to a rope. Prior to collection at each site and between samples the sampling device will be cleaned with Alconox soap, rinsed with deionized water, and rinsed with ambient water; water depth to the sediment surface will also be recorded. Each sample will be placed into a pre-cleaned glass jar. The jar will be filled completely to avoid any head space and to ensure total sample volume. The lid will be tightly secured and the sample bottle placed into an ice chest.

[2] Plumb, R. H., Jr. 1981. Procedure for Handling and Chemical Analysis of Sediment and Water Samples. EPA/CE-81-1. Prepared by State University College at Buffalo, Great Lakes Laboratory, Buffalo, N.Y. U.S. Environmental Protection Agency and U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.

Figure 1: Proposed Sample Locations for Dock 1

Sample Preservation and Storage

Collected samples will be stored at 2 to 4°C but never frozen after collection. Analyses are to be performed within the recommended holding times, as described in the referenced guidance documents.

Chain of Custody

A chain of custody form will be completed according to appropriate guidance manuals and will accompany the samples until laboratory analysis.

Chemical Analyses

Each sample will be analyzed in a laboratory for the analyses shown in Table 2. All chemical analyses will be performed by a laboratory accredited by an accrediting authority recognized by the National Environmental Laboratory Accreditation Program (NELAP) for the analytes/analyte groups and matrices to be analyzed. Parameters to be analyzed are listed in Table 2, along with required detection limits. Sediment samples will be reported as dry weight.

Detected concentrations of contaminants of concern (COC) reported by the laboratory will be evaluated by comparing detected compound concentrations with standard benchmark values provided in the federal and state regulatory agencies' reference guidance documents. Should a detected compound exceed the recommended benchmark value in one or more samples, it shall be documented and discussed in the report.

Table 2

Target Detection Levels (TDL) for Required Analyses of Sediment and Water/Elutriate for Maintenance and New Work Dredging by the USACE[a]

Analyte	Sediment[1]	Water/Elutriate[1]
Metals [b]	**mg/kg**	**µg/L**
Antimony	2.5	3
Arsenic	0.3 [c]	1

Analyte	Sediment[1]	Water/Elutriate[1]
Beryllium [f]	1 [c]	0.2
Cadmium	0.1	1
Chromium (total)	1[c]	1
Chromium (3+) [f]	1	1
Chromium (6+) [f]	1	1
Copper	1 [c]	1
Lead	0.3 [c]	1
Mercury	0.2	0.2
Nickel	0.5 [c]	1
Selenium	0.5 [c]	2
Silver	0.2	1 [d]
Thallium	0.2	1
Zinc	2 [c]	1
Conventional/Ancillary Parameters	**mg/kg**	**mg/L**
Ammonia	0.1	0.03
Cyanides	2	0.1 [e]
Total Organic Carbon	0.1%	0.1%
Total Petroleum Hydrocarbons	5	0.1
Grain Size	1%	-
Total Solids/Dry Weight	0.1%	-
Total Volatile Solids [g]	0.1%	-
LPAH Compounds	**µg/kg**	**µg/L**
Naphthalene	20	0.8 [c]
Acenaphthylene	20	1.0 [c]
Acenaphthene	20	0.75 [c]
Fluorene	20	0.6 [c]
Phenanthrene	20	0.5 [c]
Anthracene	20	0.6 [c]
2-Methylnaphthalene [g]	20	0.9 [b]
HPAH Compounds	**µg/kg**	**µg/L**
Fluoranthene	20	0.9 [c]
Pyrene	20	1.5 [c]
Benzo(a)anthracene	20	0.4 [c]
Chrysene	20	0.3 [c]
Benzo(b&k)fluoranthene	20	0.6 [c]
Benzo(a)pyrene	20	0.3 [c]
Indeno[1,2,3-c,d]pyrene	20	1.2 [c]
Dibenzo[a,h]anthracene	20	1.3 [c]
Benzo[g,h,i]perylene	20	1.2 [c]

Analyte	Sediment[1]	Water/Elutriate[1]
Organonitrogen Compounds	**µg/kg**	**µg/L**
Benzidine [f]	5	1
3,3-Dichlorobenzidine [f]	300 [c]	3 [c]
2,4-Dinitrotoluene [f]	200 [c]	2 [c]
2,6-Dinitrotoluene [f]	200 [c]	2 [c]
1,2-Diphenylhydrazine [f]	10	1
Nitrobenzene [f]	160 [c]	0.9 [c]
N-Nitrosodimethyl amine [f]	-	3.1 [c]
N-Nitrosodi-n-propylamine [f]	150 [c]	0.9 [c]
N-Nitrosodiphenylamine [f]	20	2.1 [c]
Phthalate Esters	**µg/kg**	**µg/L**
Dimethyl Phthalate	50	1 [c]
Diethyl Phthalate	50	1 [c]
Di-n-butyl Phthalate	50	1[c]
Butyl Benzyl Phthalate	50	4 [c]
Bis[2-ethylhexyl] Phthalate	50	2 [c]
Di-n-octyl Phthalate	50	3 [c]
Phenols/Substituted Phenols	**µg/kg**	**µg/L**
Phenol	100	10
2,4-Dimethylphenol	20	10
Pentachlorophenol	100	50
2,4,6-Trichlorophenol [f]	140 [c]	0.9 [c]
4-Chloro-3-methylphenol [f]	140 [c]	0.7 [c]
2-Nitrophenol [f]	200 [c]	2 [c]
4-Nitrophenol [f]	500 [c]	5 [c]
2,4-Dinitrophenol [f]	500 [c]	5 [c]
2-Chlorophenol [f]	110 [c]	0.9 [c]
2,4-Dichlorophenol [f]	120 [c]	0.8 [c]
4,6-Dinitro-o-cresol [f]	600	10
2-Methylphenol [g]	50	10
4-Methylphenol [g]	100	10
Polychlorinated Biphenyls	**µg/kg**	**µg/L**
Total PCB	1	0.01
Pesticides	**µg/kg**	**µg/L**
Aldrin	3 [c]	0.03 [c]
Chlordane and Derivatives	3 [c]	0.03 [c]
Dieldrin	5 [c]	0.02
4,4'-DDD	5 [c]	0.1
4,4'-DDE	5 [c]	0.1
4,4'-DDT	5 [c]	0.1

Analyte	Sediment[1]	Water/Elutriate[1]
Endosulfan and Derivatives [f]	5 [c]	0.1
Endrin and Derivatives [f]	5 [c]	0.1
Heptachlor and Derivatives	3 [c]	0.1
Alpha-BHC [f]	3 [c]	0.03
Beta-BHC [f]	3 [c]	0.03
Delta-BHC [f]	3 [c]	0.03
Gamma-BHC (Lindane)	3 [c]	0.1
Toxaphene [f]	50	0.5
Chlorinated Hydrocarbons	**µg/kg**	**µg/L**
1,3-Dichlorobenzene [f]	20	0.9 [c]
1,4-Dichlorobenzene [f]	20	1 [c]
1,2-Dichlorobenzene [f]	20	0.8 [c]
1,2,4-Trichlorobenzene [f]	10	0.9 [c]
Hexachlorobenzene [f]	10	0.4 [c]
2-Chloronapthalene [f]	160 [c]	0.8 [c]
Hexachlorocyclopentadiene [f]	300 [c]	3.0 [c]
Hexachloroethane	100	0.9 [c]
Hexachlorobutadiene	20	0.9 [c]
Halogenated Ethers	**µg/kg**	**µg/L**
Bis(2-chloroethyl)ether	130 [c]	0.9 [c]
4-chlorophenyl phenyl ether	170 [c]	0.6 [c]
4-Bromophenyl phenyl ether	160 [c]	0.4 [c]
Bis(2-chloroisopropyl)ether	140 [c]	0.7 [c]
Bis(2-Chloroethoxy)methane	130 [c]	1 [c]
Volatile Organics		
Trichloroethene [g]	10	2 [b]
Tetrachloroethene [g]	10	2 [b]
Ethylbenzene [g]	10	5
Total Xylene (sum of o-, m-, p-) [g]	10	5

Analyte	Sediment[1]	Water/Elutriate[1]
Miscellaneous	**µg/kg**	**µg/L**
Isophorone	10	1
Benzyl alcohol [g]	50	1.5 [b]
Benzoic acid [g]	100	2.0 [b]
Dibenzofuran [g]	50	0.7 [b]
Hexachloroethane [g]	100	0.9 [b]
Hexachlorobutadiene [g]	20	0.9 [b]
N-Nitrosodiphenylamine [g]	20	0.9 [b]

[1] kg = kilogram; L = liter; mg = milligram; µg = microgram; NA = Not applicable–testing done on sediments only.

[a] The primary source of these TDLs was EPA 823-B-95-001, *QA/QC Guidance for Sampling and Analysis of Sediments, Water and Tissues for Dredged Material Evaluations*.

[b] Metals shall be expressed as Dissolved values in water samples, except for mercury and selenium, which shall be reported as Total Recoverable Concentrations.

[c] These values are based on recommendations from the EPA Region 6 Laboratory in Houston; these values were based on data or other technical basis.

[d] The values in parentheses are based on EPA "clean techniques" (EPA 1600 series methods), which are applicable in instances where other TDLs are inadequate to assess EPA water quality criteria.

[e] This value recommended by Houston Lab using colorimetric method.

[f] Analytes originated from the USACE list for analysis.

[g] Analytes originated from the Port of Houston Authority list for analysis.

Laboratory Quality Control

The Laboratory Quality Control (QC) program will include, but will not be limited to:

a. **NELAC Accreditation** – The laboratory will have current accreditation status consistent with standards adopted by the National Environmental Laboratory Accreditation Conference (NELAC).

b. **Method Blanks** – Will be performed at a frequency of one per batch of samples, per matrix type, per sample extraction or preparation method.

c. **Laboratory Control Samples** – Will be analyzed at a minimum of 1 per batch of 20 or fewer samples per matrix type, per sample extraction or preparation method, except for analytes for which spiking solutions are not available.

d. **Matrix Spikes** – Will be performed at a frequency of 1 in 20 samples per matrix type, per sample extraction or preparation method, except for analytes for which spiking solutions are not available. The spike concentration will be no greater than 25 to 50 percent of the maximum concentration along the linear segment of the instrument calibration curve for any analyte.

e. **Matrix Spike Duplicates** – Will be analyzed at a minimum of 1 in 20 samples per matrix type, per sample extraction or preparation method.

f. **Surrogates** – Surrogate compounds must be added to all samples, standards, and blanks for all organic chromatography methods except when the matrix precludes its use or when a surrogate is not available.

g. **Field Equipment Blanks** – Analysis will be performed at a frequency of one per batch of samples collected.

h. Calibration of instrumentation and performance of periodic instrument checks according to manufacturer and EPA recommendations, and appropriate Standard Operating Procedures (SOP).

i. Participation in performance evaluation and method studies available from EPA, American Society for Testing and Materials (ASTM), or other agency. Performance evaluation under such a program is to be conducted at least on a semi-annual basis.

j. Each new shipment or lot of solvent, reagent, or adsorbent will be evaluated for purity in accordance with appropriate SOPs.

k. Standards will be prepared and verified in accordance with appropriate SOPs.

l. Calculation of QC limits and preparation of control charts will be performed in accordance with appropriate SOPs.

m. Out-of-control events or outlier data will be noted and corrective action will be taken in accordance with appropriate SOPs.

Documentation of all QC activities performed specifically in conjunction with this project will be furnished along with sample results. Copies of all raw data, lab notes, chromatograms, standard curves, etc. will be available upon request.

Report

LEI will provide a brief letter report describing sampling activities, along with the completed water quality data sheets, the reduced chemical data, and QC data described above. The report will conform to the format described in the guidance document (USACE 2015)[3].

Schedule

The execution of this task will take approximately 30 days, depending on agency comments and review (Table 3).

Table 3
Estimated Project Timeline

Task	No. Days After Agency Approval
Field Work (Sample Collection)	5
Laboratory – Chemical Analyses Completion	20
Submission of Data Report	5

[3] U.S. Army Corps of Engineers. 2015. Sampling and Analysis Plan-Private Dredging Application, USACE Galveston District, Galveston TX.

Appendix B

Chemical Data

RP16090102

LABORATORY ANALYSIS REPORT

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Project ID :

Quintana Terminal Dock 1

Report To : Lloyd Engineering, Inc.
6565 West Loop, Suite 708

Bellaire, TX 77401

Attn: Marisa Weber

Dear Marisa Weber,

The following test results meet all NELAP requirements for analytes for which certification is available. Any deviations from our quality system will be noted in the case narrative. All analyses performed by North Water District Laboratory Services, Inc. unless noted.

For questions regarding this report, contact Monica Martin at 936-321-6060.

Monica O. Martin
Laboratory Director

CASE NARRATIVE

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name:	Lloyd Engineering, Inc.
Project ID:	Quintana Terminal Dock 1
Date Received:	08/04/2016
Collected By:	Marisa Weber

A total of 22 samples were collected on 08/04/2016. They were received at NWDLS on 08/04/2016 properly thermally preserved and intact. These samples received a job number of 1608151. The lab sample (job sample) IDs, client sample IDs, and dates of collection can be found at the top of each result page. Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For additional information, please refer to the included quality control data pages, chain of custodies, and provided EDD.

Semivolatile Organic Compounds by SW846 8270D
-Samples and Batch QC had surrogate recoveries outside the laboratory specified control limits due to suspect matrix interference.
-Qb16081826, Qb16081827, Qb16081603: Batch QC had recoveries and relative percent differences outside the laboratory specified control limits for accuracy and precision.

Organochlorine Pesticides by SW846 8081B
-Samples and Batch QC had surrogate recoveries outside the laboratory specified control limits due to suspect matrix interference.
-Qb16081604: Batch QC had recoveries and relative percent differences outside the laboratory specified control limits for accuracy and precision.

Polychorinated Biphenyls by SW846 8082A
-Samples and Batch QC had surrogate recoveries outside the laboratory specified control limits due to suspect matrix interference.

Total Petroleum Hydrocarbons by TX1005
-Batch QC had surrogate recoveries outside the laboratory specified control limits due to suspect matrix interference.
-Qb16081701: Batch QC had recoveries outside the laboratory specified control limits for accuracy.
-Qb16081707, Qb16081709: Batch QC had recoveries and relative percent differences outside the laboratory specified control limits for accuracy and precision.
-Qb16081708: Batch QC had relative percent differences outside the laboratory specified control limits for precision.

Metals, Dissolved by EPA 200.8
-Qb16081703: DUP and MS had recoveries and relative percent differences outside the laboratory specified control limits for accuracy and precision.

Metals, Total by EPA 200.8
-Qb16081702: DUP had relative percent difference outside the laboratory specified control limits for precision.
-Qb16083002: MS had recoveries outside the laboratory specified control limits for accuracy.

Mmartin

Lab Director

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-EQUIP
Job Sample ID: 1608151.01
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 13:00

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 0.200	U	ug/L	1	1.00	0.200		08/19/2016 23:50	CL
	Arsenic	< 0.100	U	ug/L	1	0.500	0.100		08/19/2016 23:50	CL
	Beryllium	< 0.010	U	ug/L	1	0.200	0.010		08/24/2016 14:21	CL
	Cadmium	< 0.050	U	ug/L	1	1.00	0.050		08/19/2016 23:50	CL
	Chromium	< 0.075	U	ug/L	1	3.00	0.075		08/19/2016 23:50	CL
	Copper	0.265	J	ug/L	1	1.00	0.050		08/19/2016 23:50	CL
	Lead	< 0.025	U	ug/L	1	0.500	0.025		08/19/2016 23:50	CL
	Nickel	0.074	J	ug/L	1	1.00	0.050		08/24/2016 14:21	CL
	Silver	< 0.025	U	ug/L	1	0.500	0.025		08/19/2016 23:50	CL
	Thallium	< 0.025	U	ug/L	1	0.500	0.025		08/19/2016 23:50	CL
	Zinc	1.49	J	ug/L	1	2.00	0.100		08/24/2016 14:21	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	< 0.333	U	ug/L	1	2.00	0.333		08/19/2016 13:52	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 21:29	MBW
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/04/2016 17:08	ARC

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-01-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.02	Time Collected:	12:43
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 00:32	CL
	Arsenic	3.77		ug/L	5	2.50	0.500		08/20/2016 00:32	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 14:39	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 00:32	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 00:32	CL
	Copper	1.06	J	ug/L	5	5.00	0.250		08/20/2016 00:32	CL
	Lead	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:32	CL
	Nickel	1.02	J	ug/L	10	10.0	0.500		08/24/2016 14:39	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:32	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:32	CL
	Zinc	5.01	J	ug/L	10	20.0	1.00		08/24/2016 14:39	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	14.5		ug/L	5	10.0	1.66		08/19/2016 14:10	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 21:32	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000276		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-W
Job Sample ID: 1608151.02
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/04/2016 17:08	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	< 0.050	U	mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	138		%	1			60-140	08/12/2016 03:18	
	Decachlorobiphenyl(surr)	132		%	1			60-140	08/12/2016 03:18	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 03:18	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 03:18	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 03:18	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-W
Job Sample ID: 1608151.02
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 03:18	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:18	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	146	S	%	1			60-140	08/11/2016 02:50	
	Decachlorobiphenyl(surr)	130		%	1			60-140	08/11/2016 02:50	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602		SW846 3511		08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 02:50	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	96.0		%	1			50-150	08/08/2016 14:05	EM
	4-Bromofluorobenzene(surr)	81.6		%	1			50-150	08/08/2016 14:05	EM
	Dibromofluoromethane(surr)	96.9		%	1			50-150	08/08/2016 14:05	EM
	Toluene-d8(surr)	96.1		%	1			50-150	08/08/2016 14:05	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-W
Job Sample ID: 1608151.02
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081704		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 14:05	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 14:05	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 14:05	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 14:05	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	133		%	1			60-140	08/18/2016 23:19	JLL
	2-Fluorobiphenyl(surr)	92.1		%	1			60-140	08/18/2016 23:19	JLL
	2-Fluorophenol(surr)	157	S	%	1			60-140	08/18/2016 23:19	JLL
	Nitrobenzene-d5(surr)	170	S	%	1			60-140	08/18/2016 23:19	JLL
	Phenol-d5(surr)	122		%	1			60-140	08/18/2016 23:19	JLL
	Terphenyl-d14(surr)	107		%	1			60-140	08/18/2016 23:19	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 00:49	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 00:49	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 00:49	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-W
Job Sample ID: 1608151.02
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/16/2016 00:49	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 00:49	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 00:49	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 00:49	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 00:49	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/16/2016 00:49	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 00:49	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 00:49	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-01-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.02	Time Collected:	12:43
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-W
Job Sample ID: 1608151.02
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 00:49	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 00:49	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 00:49	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	89.0		%	1			70-130	08/12/2016 18:35	EM
	1-Chlorooctane(surr)	93.1		%	1			70-130	08/12/2016 18:35	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081701		**Prep Info:** PB16081701		TCEQ 1005		08/05/2016 11:27	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 18:35	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-02-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.03	Time Collected:	12:13
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 00:38	CL
	Arsenic	4.41		ug/L	5	2.50	0.500		08/20/2016 00:38	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 14:45	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 00:38	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 00:38	CL
	Copper	1.40	J	ug/L	5	5.00	0.250		08/20/2016 00:38	CL
	Lead	0.268	J	ug/L	5	2.50	0.125		08/20/2016 00:38	CL
	Nickel	1.01	J	ug/L	10	10.0	0.500		08/24/2016 14:45	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:38	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:38	CL
	Zinc	7.41	J	ug/L	10	20.0	1.00		08/24/2016 14:45	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	13.8		ug/L	5	10.0	1.66		08/19/2016 14:16	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 21:42	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000285		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-W
Job Sample ID: 1608151.03
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/04/2016 17:08	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	< 0.050	U	mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	137		%	1			60-140	08/12/2016 03:39	
	Decachlorobiphenyl(surr)	133		%	1			60-140	08/12/2016 03:39	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 03:39	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 03:39	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 03:39	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-W
Job Sample ID: 1608151.03
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 03:39	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:39	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	145	S	%	1			60-140	08/11/2016 03:11	
	Decachlorobiphenyl(surr)	133		%	1			60-140	08/11/2016 03:11	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602		SW846 3511		08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 03:11	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	97.9		%	1			50-150	08/08/2016 14:34	EM
	4-Bromofluorobenzene(surr)	83.9		%	1			50-150	08/08/2016 14:34	EM
	Dibromofluoromethane(surr)	98.4		%	1			50-150	08/08/2016 14:34	EM
	Toluene-d8(surr)	96.8		%	1			50-150	08/08/2016 14:34	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-W
Job Sample ID: 1608151.03
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081704		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 14:34	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 14:34	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 14:34	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 14:34	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	132		%	1			60-140	08/16/2016 01:22	JLL
	2-Fluorobiphenyl(surr)	88.4		%	1			60-140	08/16/2016 01:22	JLL
	2-Fluorophenol(surr)	177	S	%	1			60-140	08/16/2016 01:22	JLL
	Nitrobenzene-d5(surr)	175	S	%	1			60-140	08/16/2016 01:22	JLL
	Phenol-d5(surr)	127		%	1			60-140	08/16/2016 01:22	JLL
	Terphenyl-d14(surr)	101		%	1			60-140	08/16/2016 01:22	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:22	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:22	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:22	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-W
Job Sample ID: 1608151.03
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/16/2016 01:22	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:22	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:22	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:22	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:22	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/16/2016 01:22	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:22	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:22	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-W
Job Sample ID: 1608151.03
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-W
Job Sample ID: 1608151.03
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:22	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:22	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:22	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	86.2		%	1			70-130	08/12/2016 19:34	EM
	1-Chlorooctane(surr)	89.5		%	1			70-130	08/12/2016 19:34	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081701		**Prep Info:** PB16081701		TCEQ 1005		08/05/2016 11:27	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 19:34	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-03-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.04	Time Collected:	11:13
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 00:44	CL
	Arsenic	4.49		ug/L	5	2.50	0.500		08/20/2016 00:44	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 14:51	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 00:44	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 00:44	CL
	Copper	1.07	J	ug/L	5	5.00	0.250		08/20/2016 00:44	CL
	Lead	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:44	CL
	Nickel	0.776	J	ug/L	10	10.0	0.500		08/24/2016 14:51	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:44	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:44	CL
	Zinc	4.06	J	ug/L	10	20.0	1.00		08/24/2016 14:51	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	14.7		ug/L	5	10.0	1.66		08/19/2016 14:22	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 21:46	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000191		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-W
Job Sample ID: 1608151.04
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/04/2016 17:08	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	< 0.050	U	mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	142	S	%	1			60-140	08/12/2016 03:59	
	Decachlorobiphenyl(surr)	133		%	1			60-140	08/12/2016 03:59	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 03:59	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 03:59	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 03:59	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-W
Job Sample ID: 1608151.04
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604 SW846 3511				08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 03:59	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 03:59	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	153	S	%	1			60-140	08/11/2016 04:13	
	Decachlorobiphenyl(surr)	128		%	1			60-140	08/11/2016 04:13	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602 SW846 3511				08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 04:13	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	99.0		%	1			50-150	08/08/2016 15:04	EM
	4-Bromofluorobenzene(surr)	78.7		%	1			50-150	08/08/2016 15:04	EM
	Dibromofluoromethane(surr)	96.9		%	1			50-150	08/08/2016 15:04	EM
	Toluene-d8(surr)	94.5		%	1			50-150	08/08/2016 15:04	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-W
Job Sample ID: 1608151.04
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081704		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 15:04	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 15:04	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 15:04	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 15:04	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	97.4		%	1			60-140	08/16/2016 01:54	JLL
	2-Fluorobiphenyl(surr)	86.8		%	1			60-140	08/16/2016 01:54	JLL
	2-Fluorophenol(surr)	150	S	%	1			60-140	08/16/2016 01:54	JLL
	Nitrobenzene-d5(surr)	177	S	%	1			60-140	08/16/2016 01:54	JLL
	Phenol-d5(surr)	126		%	1			60-140	08/16/2016 01:54	JLL
	Terphenyl-d14(surr)	101		%	1			60-140	08/16/2016 01:54	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:54	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:54	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:54	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-W
Job Sample ID: 1608151.04
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/16/2016 01:54	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:54	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:54	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:54	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:54	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/16/2016 01:54	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:54	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:54	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-W
Job Sample ID: 1608151.04
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-W
Job Sample ID: 1608151.04
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:54	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 01:54	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 01:54	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	90.0		%	1			70-130	08/12/2016 20:03	EM
	1-Chlorooctane(surr)	96.4		%	1			70-130	08/12/2016 20:03	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081701		**Prep Info:** PB16081701		TCEQ 1005		08/05/2016 11:27	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 20:03	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-04-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.05	Time Collected:	10:58
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 00:50	CL
	Arsenic	4.21		ug/L	5	2.50	0.500		08/20/2016 00:50	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 14:57	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 00:50	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 00:50	CL
	Copper	1.17	J	ug/L	5	5.00	0.250		08/20/2016 00:50	CL
	Lead	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:50	CL
	Nickel	0.917	J	ug/L	10	10.0	0.500		08/24/2016 14:57	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:50	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:50	CL
	Zinc	5.88	J	ug/L	10	20.0	1.00		08/24/2016 14:57	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	17.3		ug/L	5	10.0	1.66		08/19/2016 14:52	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081902		**Prep Info:** PB16081902		EPA 245.1		08/17/2016 13:08	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/19/2016 08:25	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.00022		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-W
Job Sample ID: 1608151.05
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/04/2016 17:08	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	< 0.050	U	mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	149	S	%	1			60-140	08/12/2016 05:01	
	Decachlorobiphenyl(surr)	133		%	1			60-140	08/12/2016 05:01	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 05:01	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 05:01	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 05:01	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-04-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.05	Time Collected:	10:58
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604 SW846 3511				08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 05:01	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:01	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	152	S	%	1			60-140	08/11/2016 04:33	
	Decachlorobiphenyl(surr)	128		%	1			60-140	08/11/2016 04:33	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602 SW846 3511				08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 04:33	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	97.6		%	1			50-150	08/08/2016 15:33	EM
	4-Bromofluorobenzene(surr)	79.6		%	1			50-150	08/08/2016 15:33	EM
	Dibromofluoromethane(surr)	95.5		%	1			50-150	08/08/2016 15:33	EM
	Toluene-d8(surr)	96.2		%	1			50-150	08/08/2016 15:33	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-W
Job Sample ID: 1608151.05
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081704		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 15:33	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 15:33	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 15:33	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 15:33	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	160	S	%	1			60-140	08/16/2016 18:14	JLL
	2-Fluorobiphenyl(surr)	84.4		%	1			60-140	08/16/2016 18:14	JLL
	2-Fluorophenol(surr)	188	S	%	1			60-140	08/16/2016 18:14	JLL
	Nitrobenzene-d5(surr)	89.6		%	1			60-140	08/16/2016 18:14	JLL
	Phenol-d5(surr)	91.3		%	1			60-140	08/16/2016 18:14	JLL
	Terphenyl-d14(surr)	95.7		%	1			60-140	08/16/2016 18:14	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:14	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:14	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:14	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-W
Job Sample ID: 1608151.05
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/16/2016 18:14	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:14	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:14	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:14	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:14	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/16/2016 18:14	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:14	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:14	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-W
Job Sample ID: 1608151.05
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-W
Job Sample ID: 1608151.05
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:14	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:14	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:14	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	94.2		%	1			70-130	08/12/2016 20:32	EM
	1-Chlorooctane(surr)	104		%	1			70-130	08/12/2016 20:32	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081701		**Prep Info:** PB16081701		TCEQ 1005		08/05/2016 11:27	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 20:32	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-05-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.06	Time Collected:	10:00
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 00:56	CL
	Arsenic	4.65		ug/L	5	2.50	0.500		08/20/2016 00:56	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 15:03	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 00:56	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 00:56	CL
	Copper	1.06	J	ug/L	5	5.00	0.250		08/20/2016 00:56	CL
	Lead	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:56	CL
	Nickel	1.04	J	ug/L	10	10.0	0.500		08/24/2016 15:03	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:56	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 00:56	CL
	Zinc	6.22	J	ug/L	10	20.0	1.00		08/24/2016 15:03	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	15.4		ug/L	5	10.0	1.66		08/19/2016 14:58	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 21:49	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000235		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-W
Job Sample ID: 1608151.06
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:00

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/04/2016 17:08	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	< 0.050	U	mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	154	S	%	1			60-140	08/12/2016 05:22	
	Decachlorobiphenyl(surr)	128		%	1			60-140	08/12/2016 05:22	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 05:22	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 05:22	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 05:22	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-W
Job Sample ID: 1608151.06
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:00

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 05:22	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:22	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	155	S	%	1			60-140	08/11/2016 04:54	
	Decachlorobiphenyl(surr)	133		%	1			60-140	08/11/2016 04:54	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602		SW846 3511		08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 04:54	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	98.8		%	1			50-150	08/08/2016 16:03	EM
	4-Bromofluorobenzene(surr)	81.5		%	1			50-150	08/08/2016 16:03	EM
	Dibromofluoromethane(surr)	96.1		%	1			50-150	08/08/2016 16:03	EM
	Toluene-d8(surr)	95.9		%	1			50-150	08/08/2016 16:03	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-05-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.06	Time Collected:	10:00
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081704		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 16:03	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 16:03	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 16:03	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 16:03	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	153	S	%	1			60-140	08/16/2016 18:46	JLL
	2-Fluorobiphenyl(surr)	82.5		%	1			60-140	08/16/2016 18:46	JLL
	2-Fluorophenol(surr)	101		%	1			60-140	08/16/2016 18:46	JLL
	Nitrobenzene-d5(surr)	103		%	1			60-140	08/16/2016 18:46	JLL
	Phenol-d5(surr)	94.6		%	1			60-140	08/16/2016 18:46	JLL
	Terphenyl-d14(surr)	90.5		%	1			60-140	08/16/2016 18:46	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:46	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:46	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:46	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-W
Job Sample ID: 1608151.06
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:00

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/16/2016 18:46	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:46	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:46	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:46	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:46	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/16/2016 18:46	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:46	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:46	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-05-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.06	Time Collected:	10:00
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-W
Job Sample ID: 1608151.06
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:00

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:46	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 18:46	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 18:46	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	100		%	1			70-130	08/12/2016 18:05	EM
	1-Chlorooctane(surr)	105		%	1			70-130	08/12/2016 18:05	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081701		**Prep Info:** PB16081701		TCEQ 1005		08/05/2016 11:27	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 18:05	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-06-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.07	Time Collected:	09:41
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 01:02	CL
	Arsenic	4.09		ug/L	5	2.50	0.500		08/20/2016 01:02	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 15:09	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 01:02	CL
	Chromium	0.385	J	ug/L	5	15.0	0.375		08/20/2016 01:02	CL
	Copper	1.29	J	ug/L	5	5.00	0.250		08/20/2016 01:02	CL
	Lead	0.168	J	ug/L	5	2.50	0.125		08/20/2016 01:02	CL
	Nickel	1.09	J	ug/L	10	10.0	0.500		08/24/2016 15:09	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:02	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:02	CL
	Zinc	9.31	J	ug/L	10	20.0	1.00		08/24/2016 15:09	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	15.9		ug/L	5	10.0	1.66		08/19/2016 15:04	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081902		**Prep Info:** PB16081902		EPA 245.1		08/17/2016 13:08	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/19/2016 08:25	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000197		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					

SAMPLE RESULTS

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-06-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.07	Time Collected:	09:41
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/04/2016 17:08	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	< 0.050	U	mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	147	S	%	1			60-140	08/12/2016 05:43	
	Decachlorobiphenyl(surr)	128		%	1			60-140	08/12/2016 05:43	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 05:43	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 05:43	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 05:43	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-W
Job Sample ID: 1608151.07
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604 SW846 3511				08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 05:43	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 05:43	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	158	S	%	1			60-140	08/11/2016 05:15	
	Decachlorobiphenyl(surr)	132		%	1			60-140	08/11/2016 05:15	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602 SW846 3511				08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 05:15	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	99.0		%	1			50-150	08/08/2016 16:32	EM
	4-Bromofluorobenzene(surr)	82.5		%	1			50-150	08/08/2016 16:32	EM
	Dibromofluoromethane(surr)	100		%	1			50-150	08/08/2016 16:32	EM
	Toluene-d8(surr)	95.8		%	1			50-150	08/08/2016 16:32	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-W
Job Sample ID: 1608151.07
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081704		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 16:32	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 16:32	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 16:32	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 16:32	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	107		%	1			60-140	08/16/2016 19:18	JLL
	2-Fluorobiphenyl(surr)	84.4		%	1			60-140	08/16/2016 19:18	JLL
	2-Fluorophenol(surr)	165	S	%	1			60-140	08/16/2016 19:18	JLL
	Nitrobenzene-d5(surr)	102		%	1			60-140	08/16/2016 19:18	JLL
	Phenol-d5(surr)	99.4		%	1			60-140	08/16/2016 19:18	JLL
	Terphenyl-d14(surr)	101		%	1			60-140	08/16/2016 19:18	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:18	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:18	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:18	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-W
Job Sample ID: 1608151.07
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/16/2016 19:18	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:18	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:18	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:18	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:18	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/16/2016 19:18	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:18	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:18	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-W
Job Sample ID: 1608151.07
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-W
Job Sample ID: 1608151.07
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:18	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:18	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:18	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	90.4		%	1			70-130	08/12/2016 21:01	EM
	1-Chlorooctane(surr)	91.6		%	1			70-130	08/12/2016 21:01	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081701		**Prep Info:** PB16081701		TCEQ 1005		08/05/2016 11:27	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 21:01	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-07-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.08	Time Collected:	10:40
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 01:08	CL
	Arsenic	4.34		ug/L	5	2.50	0.500		08/20/2016 01:08	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 15:15	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 01:08	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 01:08	CL
	Copper	1.01	J	ug/L	5	5.00	0.250		08/20/2016 01:08	CL
	Lead	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:08	CL
	Nickel	0.885	J	ug/L	10	10.0	0.500		08/24/2016 15:15	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:08	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:08	CL
	Zinc	5.29	J	ug/L	10	20.0	1.00		08/24/2016 15:15	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	14.6		ug/L	5	10.0	1.66		08/19/2016 15:10	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081902		**Prep Info:** PB16081902		EPA 245.1		08/17/2016 13:08	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/19/2016 08:25	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000233		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-07-W	Date Collected:	08/04/2016
Job Sample ID:	1608151.08	Time Collected:	10:40
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081813		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/04/2016 17:08	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811			SM 4500-CN C	08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	< 0.050	U	mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	151	S	%	1			60-140	08/12/2016 06:03	
	Decachlorobiphenyl(surr)	129		%	1			60-140	08/12/2016 06:03	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604			SW846 3511	08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 06:03	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 06:03	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 06:03	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-W
Job Sample ID: 1608151.08
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 06:03	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 06:03	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	154	S	%	1			60-140	08/11/2016 05:35	
	Decachlorobiphenyl(surr)	137		%	1			60-140	08/11/2016 05:35	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602		SW846 3511		08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 05:35	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	100		%	1			50-150	08/08/2016 17:02	EM
	4-Bromofluorobenzene(surr)	83.0		%	1			50-150	08/08/2016 17:02	EM
	Dibromofluoromethane(surr)	95.2		%	1			50-150	08/08/2016 17:02	EM
	Toluene-d8(surr)	95.8		%	1			50-150	08/08/2016 17:02	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-W
Job Sample ID: 1608151.08
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081704		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 17:02	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 17:02	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 17:02	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/08/2016 17:02	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	187	S	%	1			60-140	08/16/2016 19:50	JLL
	2-Fluorobiphenyl(surr)	78.6		%	1			60-140	08/16/2016 19:50	JLL
	2-Fluorophenol(surr)	153	S	%	1			60-140	08/16/2016 19:50	JLL
	Nitrobenzene-d5(surr)	130		%	1			60-140	08/16/2016 19:50	JLL
	Phenol-d5(surr)	114		%	1			60-140	08/16/2016 19:50	JLL
	Terphenyl-d14(surr)	89.1		%	1			60-140	08/16/2016 19:50	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:50	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:50	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:50	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-W
Job Sample ID: 1608151.08
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/16/2016 19:50	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:50	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:50	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:50	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:50	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/16/2016 19:50	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:50	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:50	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-W
Job Sample ID: 1608151.08
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-W
Job Sample ID: 1608151.08
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081826		**Prep Info:** PB16081812		SW846 3511		08/05/2016 11:03	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:50	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/16/2016 19:50	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/16/2016 19:50	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	96.2		%	1			70-130	08/18/2016 13:56	EM
	1-Chlorooctane(surr)	99.2		%	1			70-130	08/18/2016 13:55	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081701		**Prep Info:** PB16081701		TCEQ 1005		08/05/2016 11:27	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/18/2016 13:55	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-01-E	Date Collected:	08/04/2016
Job Sample ID:	1608151.09	Time Collected:	12:43
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 01:14	CL
	Arsenic	8.72		ug/L	5	2.50	0.500		08/20/2016 01:14	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 15:45	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 01:14	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 01:14	CL
	Copper	1.02	J	ug/L	5	5.00	0.250		08/20/2016 01:14	CL
	Lead	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:14	CL
	Nickel	2.17	J	ug/L	10	10.0	0.500		08/24/2016 15:45	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:14	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:14	CL
	Zinc	7.13	J	ug/L	10	20.0	1.00		08/24/2016 15:45	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	16.6		ug/L	5	10.0	1.66		08/19/2016 15:16	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 21:53	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000318		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-E
Job Sample ID: 1608151.09
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/09/2016 13:15	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	1.46		mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	178	S	%	1			60-140	08/12/2016 07:25	
	Decachlorobiphenyl(surr)	124		%	1			60-140	08/12/2016 07:25	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 07:25	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 07:25	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 07:25	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-E
Job Sample ID: 1608151.09
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604 SW846 3511				08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 07:25	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:25	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	159	S	%	1			60-140	08/11/2016 06:17	
	Decachlorobiphenyl(surr)	129		%	1			60-140	08/11/2016 06:17	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602 SW846 3511				08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 06:17	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	98.9		%	1			50-150	08/10/2016 14:49	EM
	4-Bromofluorobenzene(surr)	81.7		%	1			50-150	08/10/2016 14:49	EM
	Dibromofluoromethane(surr)	97.2		%	1			50-150	08/10/2016 14:49	EM
	Toluene-d8(surr)	97.1		%	1			50-150	08/10/2016 14:49	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-E
Job Sample ID: 1608151.09
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081705		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 14:49	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 14:49	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 14:49	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 14:49	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	235	S	%	1			60-140	08/17/2016 00:41	JLL
	2-Fluorobiphenyl(surr)	86.5		%	1			60-140	08/17/2016 00:41	JLL
	2-Fluorophenol(surr)	152	S	%	1			60-140	08/17/2016 00:41	JLL
	Nitrobenzene-d5(surr)	160	S	%	1			60-140	08/17/2016 00:41	JLL
	Phenol-d5(surr)	121		%	1			60-140	08/17/2016 00:41	JLL
	Terphenyl-d14(surr)	94.9		%	1			60-140	08/17/2016 00:41	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 00:41	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 00:41	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 00:41	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-E
Job Sample ID: 1608151.09
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/17/2016 00:41	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 00:41	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 00:41	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 00:41	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 00:41	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/17/2016 00:41	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 00:41	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 00:41	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-E
Job Sample ID: 1608151.09
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-E
Job Sample ID: 1608151.09
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	n-Nitrosodiphenylamine	11.5		ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 00:41	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 00:41	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 00:41	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	89.0		%	1			70-130	08/12/2016 06:35	EM
	1-Chlorooctane(surr)	89.8		%	1			70-130	08/12/2016 06:35	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081708		**Prep Info:** PB16081705		TCEQ 1005		08/11/2016 11:00	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 06:35	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-02-E	Date Collected:	08/04/2016
Job Sample ID:	1608151.10	Time Collected:	12:13
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 01:20	CL
	Arsenic	7.58		ug/L	5	2.50	0.500		08/20/2016 01:20	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 15:51	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 01:20	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 01:20	CL
	Copper	0.681	J	ug/L	5	5.00	0.250		08/20/2016 01:20	CL
	Lead	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:20	CL
	Nickel	1.59	J	ug/L	10	10.0	0.500		08/24/2016 15:51	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:20	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:20	CL
	Zinc	4.39	J	ug/L	10	20.0	1.00		08/24/2016 15:51	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	18.9		ug/L	5	10.0	1.66		08/19/2016 15:22	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 21:56	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000312		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-E
Job Sample ID: 1608151.10
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/09/2016 13:15	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	1.63		mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	164	S	%	1			60-140	08/12/2016 07:46	
	Decachlorobiphenyl(surr)	113		%	1			60-140	08/12/2016 07:46	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 07:46	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 07:46	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 07:46	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-E
Job Sample ID: 1608151.10
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604 SW846 3511				08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 07:46	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 07:46	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	163	S	%	1			60-140	08/11/2016 06:37	
	Decachlorobiphenyl(surr)	143	S	%	1			60-140	08/11/2016 06:37	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602 SW846 3511				08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 06:37	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	99.3		%	1			50-150	08/10/2016 15:18	EM
	4-Bromofluorobenzene(surr)	78.8		%	1			50-150	08/10/2016 15:18	EM
	Dibromofluoromethane(surr)	99.0		%	1			50-150	08/10/2016 15:18	EM
	Toluene-d8(surr)	97.5		%	1			50-150	08/10/2016 15:18	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-E
Job Sample ID: 1608151.10
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081705		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 15:18	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 15:18	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 15:18	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 15:18	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	239	S	%	1			60-140	08/17/2016 01:14	JLL
	2-Fluorobiphenyl(surr)	76.3		%	1			60-140	08/17/2016 01:14	JLL
	2-Fluorophenol(surr)	155	S	%	1			60-140	08/17/2016 01:14	JLL
	Nitrobenzene-d5(surr)	155	S	%	1			60-140	08/17/2016 01:14	JLL
	Phenol-d5(surr)	147	S	%	1			60-140	08/17/2016 01:14	JLL
	Terphenyl-d14(surr)	81.7		%	1			60-140	08/17/2016 01:14	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:14	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:14	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:14	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-E
Job Sample ID: 1608151.10
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/17/2016 01:14	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:14	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:14	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:14	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:14	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/17/2016 01:14	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:14	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:14	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-E
Job Sample ID: 1608151.10
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-E
Job Sample ID: 1608151.10
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:14	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:14	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:14	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	95.3		%	1			70-130	08/12/2016 07:04	EM
	1-Chlorooctane(surr)	101		%	1			70-130	08/12/2016 07:04	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081708		**Prep Info:** PB16081705		TCEQ 1005		08/11/2016 11:00	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 07:04	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-03-E	Date Collected:	08/04/2016
Job Sample ID:	1608151.11	Time Collected:	11:13
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 01:26	CL
	Arsenic	13.0		ug/L	5	2.50	0.500		08/20/2016 01:26	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 19:23	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 01:26	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 01:26	CL
	Copper	0.528	J	ug/L	5	5.00	0.250		08/20/2016 01:26	CL
	Lead	0.154	J	ug/L	5	2.50	0.125		08/20/2016 01:26	CL
	Nickel	1.94	J	ug/L	10	10.0	0.500		08/24/2016 19:23	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:26	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 01:26	CL
	Zinc	5.09	J	ug/L	10	20.0	1.00		08/24/2016 19:23	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	16.9		ug/L	5	10.0	1.66		08/19/2016 15:56	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 21:59	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000384		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-03-E	Date Collected:	08/04/2016
Job Sample ID:	1608151.11	Time Collected:	11:13
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/09/2016 13:15	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811			SM 4500-CN C	08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	1.26		mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	164	S	%	1			60-140	08/12/2016 08:07	
	Decachlorobiphenyl(surr)	112		%	1			60-140	08/12/2016 08:07	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604			SW846 3511	08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 08:07	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 08:07	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 08:07	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-E
Job Sample ID: 1608151.11
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 08:07	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 08:07	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	159	S	%	1			60-140	08/11/2016 06:58	
	Decachlorobiphenyl(surr)	127		%	1			60-140	08/11/2016 06:58	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602		SW846 3511		08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 06:58	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	98.2		%	1			50-150	08/10/2016 15:48	EM
	4-Bromofluorobenzene(surr)	78.8		%	1			50-150	08/10/2016 15:48	EM
	Dibromofluoromethane(surr)	98.0		%	1			50-150	08/10/2016 15:48	EM
	Toluene-d8(surr)	95.9		%	1			50-150	08/10/2016 15:48	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-E
Job Sample ID: 1608151.11
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081705		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 15:48	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 15:48	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 15:48	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 15:48	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	230	S	%	1			60-140	08/17/2016 01:46	JLL
	2-Fluorobiphenyl(surr)	79.0		%	1			60-140	08/17/2016 01:46	JLL
	2-Fluorophenol(surr)	150	S	%	1			60-140	08/17/2016 01:46	JLL
	Nitrobenzene-d5(surr)	199	S	%	1			60-140	08/17/2016 01:46	JLL
	Phenol-d5(surr)	156	S	%	1			60-140	08/17/2016 01:46	JLL
	Terphenyl-d14(surr)	82.8		%	1			60-140	08/17/2016 01:46	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:46	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:46	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:46	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-E
Job Sample ID: 1608151.11
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/17/2016 01:46	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:46	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:46	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:46	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:46	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/17/2016 01:46	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:46	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:46	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-E
Job Sample ID: 1608151.11
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-E
Job Sample ID: 1608151.11
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:46	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 01:46	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 01:46	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	97.4		%	1			70-130	08/12/2016 07:32	EM
	1-Chlorooctane(surr)	105		%	1			70-130	08/12/2016 07:32	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081708		**Prep Info:** PB16081705		TCEQ 1005		08/11/2016 11:00	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 07:32	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-04-E	Date Collected:	08/04/2016
Job Sample ID:	1608151.12	Time Collected:	10:58
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 02:13	CL
	Arsenic	13.0		ug/L	5	2.50	0.500		08/20/2016 02:13	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 19:41	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 02:13	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 02:13	CL
	Copper	0.481	J	ug/L	5	5.00	0.250		08/20/2016 02:13	CL
	Lead	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 02:13	CL
	Nickel	1.27	J	ug/L	10	10.0	0.500		08/24/2016 19:41	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 02:13	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 02:13	CL
	Zinc	3.54	J	ug/L	10	20.0	1.00		08/24/2016 19:41	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	12.2		ug/L	5	10.0	1.66		08/19/2016 16:40	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 22:03	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000404		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-E
Job Sample ID: 1608151.12
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/09/2016 13:15	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	1.89		mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	170	S	%	1			60-140	08/12/2016 09:08	
	Decachlorobiphenyl(surr)	109		%	1			60-140	08/12/2016 09:08	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 09:08	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 09:08	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 09:08	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-E
Job Sample ID: 1608151.12
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 09:08	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:08	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	170	S	%	1			60-140	08/11/2016 07:19	
	Decachlorobiphenyl(surr)	133		%	1			60-140	08/11/2016 07:19	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602		SW846 3511		08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 07:19	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	98.6		%	1			50-150	08/10/2016 16:18	EM
	4-Bromofluorobenzene(surr)	79.5		%	1			50-150	08/10/2016 16:18	EM
	Dibromofluoromethane(surr)	96.2		%	1			50-150	08/10/2016 16:18	EM
	Toluene-d8(surr)	95.1		%	1			50-150	08/10/2016 16:18	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-E
Job Sample ID: 1608151.12
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081705		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 16:18	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 16:18	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 16:18	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 16:18	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	158	S	%	1			60-140	08/17/2016 19:11	JLL
	2-Fluorobiphenyl(surr)	79.0		%	1			60-140	08/17/2016 19:11	JLL
	2-Fluorophenol(surr)	127		%	1			60-140	08/17/2016 19:11	JLL
	Nitrobenzene-d5(surr)	108		%	1			60-140	08/17/2016 19:11	JLL
	Phenol-d5(surr)	85.9		%	1			60-140	08/17/2016 19:11	JLL
	Terphenyl-d14(surr)	82.2		%	1			60-140	08/17/2016 19:11	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:11	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:11	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:11	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-E
Job Sample ID: 1608151.12
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/17/2016 19:11	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:11	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:11	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:11	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:11	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/17/2016 19:11	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:11	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:11	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-E
Job Sample ID: 1608151.12
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-E
Job Sample ID: 1608151.12
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:11	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:11	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:11	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	96.4		%	1			70-130	08/12/2016 08:00	EM
	1-Chlorooctane(surr)	110		%	1			70-130	08/12/2016 08:00	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081708		**Prep Info:** PB16081705		TCEQ 1005		08/11/2016 11:00	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 08:00	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-05-E	Date Collected:	08/04/2016
Job Sample ID:	1608151.13	Time Collected:	10:00
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 02:19	CL
	Arsenic	12.1		ug/L	5	2.50	0.500		08/20/2016 02:19	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 19:47	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 02:19	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 02:19	CL
	Copper	0.902	J	ug/L	5	5.00	0.250		08/20/2016 02:19	CL
	Lead	0.180	J	ug/L	5	2.50	0.125		08/20/2016 02:19	CL
	Nickel	1.98	J	ug/L	10	10.0	0.500		08/24/2016 19:47	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 02:19	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 02:19	CL
	Zinc	8.95	J	ug/L	10	20.0	1.00		08/24/2016 19:47	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	11.9		ug/L	5	10.0	1.66		08/19/2016 16:46	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 22:06	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000399		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-E
Job Sample ID: 1608151.13
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:00

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/09/2016 13:15	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	1.41		mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	163	S	%	1			60-140	08/12/2016 09:29	
	Decachlorobiphenyl(surr)	99.2		%	1			60-140	08/12/2016 09:29	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 09:29	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 09:29	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 09:29	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-E
Job Sample ID: 1608151.13
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:00

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 09:29	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:29	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	157	S	%	1			60-140	08/11/2016 08:21	
	Decachlorobiphenyl(surr)	118		%	1			60-140	08/11/2016 08:21	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602		SW846 3511		08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 08:21	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	100		%	1			50-150	08/10/2016 16:48	EM
	4-Bromofluorobenzene(surr)	78.7		%	1			50-150	08/10/2016 16:48	EM
	Dibromofluoromethane(surr)	97.9		%	1			50-150	08/10/2016 16:48	EM
	Toluene-d8(surr)	99.1		%	1			50-150	08/10/2016 16:48	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-E
Job Sample ID: 1608151.13
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:00

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081705		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 16:48	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 16:48	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 16:48	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 16:48	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	151	S	%	1			60-140	08/17/2016 19:43	JLL
	2-Fluorobiphenyl(surr)	79.4		%	1			60-140	08/17/2016 19:43	JLL
	2-Fluorophenol(surr)	123		%	1			60-140	08/17/2016 19:43	JLL
	Nitrobenzene-d5(surr)	116		%	1			60-140	08/17/2016 19:43	JLL
	Phenol-d5(surr)	96.7		%	1			60-140	08/17/2016 19:43	JLL
	Terphenyl-d14(surr)	86.4		%	1			60-140	08/17/2016 19:43	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:43	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:43	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:43	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-E
Job Sample ID: 1608151.13
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:00

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/17/2016 19:43	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:43	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:43	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:43	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:43	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/17/2016 19:43	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:43	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:43	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-E
Job Sample ID: 1608151.13
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:00

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-E
Job Sample ID: 1608151.13
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:00

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:43	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 19:43	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 19:43	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	89.6		%	1			70-130	08/12/2016 08:29	EM
	1-Chlorooctane(surr)	106		%	1			70-130	08/12/2016 08:29	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081708		**Prep Info:** PB16081705		TCEQ 1005		08/11/2016 11:00	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 08:29	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-06-E	Date Collected:	08/04/2016
Job Sample ID:	1608151.14	Time Collected:	09:41
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 02:25	CL
	Arsenic	12.4		ug/L	5	2.50	0.500		08/20/2016 02:25	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 19:53	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 02:25	CL
	Chromium	< 0.375	U	ug/L	5	15.0	0.375		08/20/2016 02:25	CL
	Copper	0.490	J	ug/L	5	5.00	0.250		08/20/2016 02:25	CL
	Lead	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 02:25	CL
	Nickel	1.36	J	ug/L	10	10.0	0.500		08/24/2016 19:53	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 02:25	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 02:25	CL
	Zinc	4.61	J	ug/L	10	20.0	1.00		08/24/2016 19:53	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	14.5		ug/L	5	10.0	1.66		08/19/2016 16:52	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 22:16	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000408		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-E
Job Sample ID: 1608151.14
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/09/2016 13:15	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	2.11		mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	163	S	%	1			60-140	08/12/2016 09:49	
	Decachlorobiphenyl(surr)	103		%	1			60-140	08/12/2016 09:49	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 09:49	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 09:49	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 09:49	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-06-E	Date Collected:	08/04/2016
Job Sample ID:	1608151.14	Time Collected:	09:41
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604 SW846 3511				08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 09:49	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 09:49	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	180	S	%	1			60-140	08/11/2016 08:41	
	Decachlorobiphenyl(surr)	137		%	1			60-140	08/11/2016 08:41	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602 SW846 3511				08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 08:41	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	100		%	1			50-150	08/10/2016 17:18	EM
	4-Bromofluorobenzene(surr)	82.8		%	1			50-150	08/10/2016 17:18	EM
	Dibromofluoromethane(surr)	98.0		%	1			50-150	08/10/2016 17:18	EM
	Toluene-d8(surr)	98.6		%	1			50-150	08/10/2016 17:18	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-E
Job Sample ID: 1608151.14
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081705		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 17:18	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 17:18	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 17:18	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 17:18	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	150	S	%	1			60-140	08/17/2016 20:15	JLL
	2-Fluorobiphenyl(surr)	79.5		%	1			60-140	08/17/2016 20:15	JLL
	2-Fluorophenol(surr)	110		%	1			60-140	08/17/2016 20:15	JLL
	Nitrobenzene-d5(surr)	109		%	1			60-140	08/17/2016 20:15	JLL
	Phenol-d5(surr)	105		%	1			60-140	08/17/2016 20:15	JLL
	Terphenyl-d14(surr)	82.0		%	1			60-140	08/17/2016 20:15	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:15	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:15	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:15	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-E
Job Sample ID: 1608151.14
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/17/2016 20:15	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:15	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:15	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:15	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:15	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/17/2016 20:15	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:15	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:15	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-E
Job Sample ID: 1608151.14
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-E
Job Sample ID: 1608151.14
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:15	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:15	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:15	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	94.4		%	1			70-130	08/12/2016 08:57	EM
	1-Chlorooctane(surr)	102		%	1			70-130	08/12/2016 08:57	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081708		**Prep Info:** PB16081705		TCEQ 1005		08/11/2016 11:00	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 08:57	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-07-E	Date Collected:	08/04/2016
Job Sample ID:	1608151.15	Time Collected:	10:40
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Dissolved Trivalent		**Batch ID:** Qb16082601		**Prep Info:**					
	Trivalent Chromium	< 1.50	U	ug/L	1	3.00	1.50		08/26/2016 06:23	MM
EPA 200.8	Metals, Dissolved		**Batch ID:** Qb16081703		**Prep Info:** PB16081703		EPA 200.2		08/17/2016 11:50	CL
	Antimony	< 1.00	U	ug/L	5	5.00	1.00		08/20/2016 02:31	CL
	Arsenic	7.08		ug/L	5	2.50	0.500		08/20/2016 02:31	CL
	Beryllium	< 0.100	U	ug/L	10	2.00	0.100		08/24/2016 19:59	CL
	Cadmium	< 0.250	U	ug/L	5	5.00	0.250		08/20/2016 02:31	CL
	Chromium	0.491	J	ug/L	5	15.0	0.375		08/20/2016 02:31	CL
	Copper	0.809	J	ug/L	5	5.00	0.250		08/20/2016 02:31	CL
	Lead	0.155	J	ug/L	5	2.50	0.125		08/20/2016 02:31	CL
	Nickel	1.94	J	ug/L	10	10.0	0.500		08/24/2016 19:59	CL
	Silver	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 02:31	CL
	Thallium	< 0.125	U	ug/L	5	2.50	0.125		08/20/2016 02:31	CL
	Zinc	4.70	J	ug/L	10	20.0	1.00		08/24/2016 19:59	CL
EPA 200.8	Metals, Total by ICP-MS		**Batch ID:** Qb16081702		**Prep Info:** PB16081702		EPA 200.2		08/17/2016 11:50	CL
	Selenium	13.3		ug/L	5	10.0	1.66		08/19/2016 16:58	CL
EPA 245.1	Mercury, Total		**Batch ID:** Qb16081901		**Prep Info:** PB16081901		EPA 245.1		08/10/2016 12:20	MBW
	Mercury	< 0.150	U	ug/L	1	0.200	0.150		08/11/2016 22:26	MBW
EPA 415.1	Total Organic Carbon		**Batch ID:** Qb16081821		**Prep Info:**					
	Total Organic Carbon	0.000331		%	1	0.0001	0.00005		08/16/2016 16:30	ARC
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-E
Job Sample ID: 1608151.15
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SM 3500-Cr B	Chromium, Dissolved Hexavalent		**Batch ID:** Qb16081814		**Prep Info:**					
	Chromium, Hexavalent	< 1.50	U	ug/L	1	3.00	1.50		08/09/2016 13:15	ARC
SM 4500-CN C, E	Cyanide, Total		**Batch ID:** Qb16081819		**Prep Info:** PB16081811		SM 4500-CN C		08/09/2016 13:35	ARC
	Cyanide, Total	< 0.005	U	mg/L	1	0.010	0.005		08/09/2016 16:10	ARC
SM 4500-NH3 D	Ammonia as Nitrogen		**Batch ID:** Qb16081824		**Prep Info:**					
	Ammonia as N	1.92		mg/L	1	0.100	0.050		08/15/2016 11:30	ARC
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	169	S	%	1			60-140	08/12/2016 10:10	
	Decachlorobiphenyl(surr)	123		%	1			60-140	08/12/2016 10:10	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	4,4-DDD	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 10:10	
	4,4-DDE	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 10:10	
	4,4-DDT	< 0.003	U	ug/L	1	0.012	0.003		08/12/2016 10:10	
	a-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	a-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	Aldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	b-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	d-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	Dieldrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	Endosulfan I	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-E
Job Sample ID: 1608151.15
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081604		**Prep Info:** PB16081604		SW846 3511		08/09/2016 16:34	
	Endosulfan II	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	Endosulfan sulfate	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	Endrin	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	Endrin aldehyde	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	Endrin ketone	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	g-BHC	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	Heptachlor	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	Heptachlor epoxide	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
	Toxaphene	< 0.150	U	ug/L	1	0.300	0.150		08/12/2016 10:10	
	y-Chlordane	< 0.003	U	ug/L	1	0.006	0.003		08/12/2016 10:10	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	166	S	%	1			60-140	08/11/2016 09:02	
	Decachlorobiphenyl(surr)	144	S	%	1			60-140	08/11/2016 09:02	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081602		**Prep Info:** PB16081602		SW846 3511		08/08/2016 14:10	
	Total PCBs	< 0.006	U	ug/L	1	0.012	0.006		08/11/2016 09:02	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	100		%	1			50-150	08/10/2016 17:48	EM
	4-Bromofluorobenzene(surr)	78.6		%	1			50-150	08/10/2016 17:48	EM
	Dibromofluoromethane(surr)	96.3		%	1			50-150	08/10/2016 17:48	EM
	Toluene-d8(surr)	97.1		%	1			50-150	08/10/2016 17:48	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-E
Job Sample ID: 1608151.15
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081705		**Prep Info:**					
	Ethylbenzene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 17:48	JM
	Tetrachloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 17:48	JM
	Trichloroethylene	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 17:48	JM
	xylenes (total)	< 1.00	U	ug/L	1	5.00	1.00		08/10/2016 17:48	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	163	S	%	1			60-140	08/17/2016 20:47	JLL
	2-Fluorobiphenyl(surr)	81.8		%	1			60-140	08/17/2016 20:47	JLL
	2-Fluorophenol(surr)	109		%	1			60-140	08/17/2016 20:47	JLL
	Nitrobenzene-d5(surr)	114		%	1			60-140	08/17/2016 20:47	JLL
	Phenol-d5(surr)	107		%	1			60-140	08/17/2016 20:47	JLL
	Terphenyl-d14(surr)	87.8		%	1			60-140	08/17/2016 20:47	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	1,2,4-Trichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	1,2-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	1,3-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	1,4-Dichlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	2,4,6-Trichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:47	JLL
	2,4-Dichlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:47	JLL
	2,4-Dimethylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:47	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-E
Job Sample ID: 1608151.15
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	2,4-Dinitrophenol	< 9.00	U	ug/L	1	18.0	9.00		08/17/2016 20:47	JLL
	2,4-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	2,6-Dinitrotoluene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	2-Chloronaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	2-Chlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:47	JLL
	2-Methylnaphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	2-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:47	JLL
	2-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:47	JLL
	3,3-Dichlorobenzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	4,6-Dinitro-2-methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:47	JLL
	4-Bromophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	4-Chloro-3-methylphenol	< 0.56	U	ug/L	1	4.50	0.56		08/17/2016 20:47	JLL
	4-Chlorophenyl phenyl ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	4-Methylphenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:47	JLL
	4-Nitrophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:47	JLL
	Acenaphthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Acenaphthylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Benzidine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Benzo(a)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Benzo(a)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Water
Client Sample ID:	QI-16-07-E	Date Collected:	08/04/2016
Job Sample ID:	1608151.15	Time Collected:	10:40
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Benzo(b)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Benzo(g,h,i)perylene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Benzo(k)fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Benzoic acid	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Benzyl alcohol	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Bis(2-chloroethoxy) methane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Bis(2-chloroethyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Bis(2-chloroisopropyl) ether	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Bis(2-ethylhexyl)phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Butyl benzyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Chrysene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Dibenzo(a,h)anthracene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Dibenzofuran	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Diethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Dimethyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Di-n-butyl phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Di-n-octyl Phthalate	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Fluoranthene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Fluorene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Hexachlorobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Hexachlorobutadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-E
Job Sample ID: 1608151.15
Other Information:

Sample Matrix: Water
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081827		**Prep Info:** PB16081813		SW846 3511		08/10/2016 10:02	JLL
	Hexachlorocyclopentadiene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Hexachloroethane	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Indeno(1,2,3-cd)pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Isophorone	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Naphthalene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Nitrobenzene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	n-Nitrosodimethylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	n-nitroso-di-n-propylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	n-Nitrosodiphenylamine	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Pentachlorophenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:47	JLL
	Phenanthrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
	Phenol	< 0.56	U	ug/L	1	1.12	0.56		08/17/2016 20:47	JLL
	Pyrene	< 0.281	U	ug/L	1	0.562	0.281		08/17/2016 20:47	JLL
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	78.8		%	1			70-130	08/12/2016 09:25	EM
	1-Chlorooctane(surr)	82.9		%	1			70-130	08/12/2016 09:25	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081708		**Prep Info:** PB16081705		TCEQ 1005		08/11/2016 11:00	EM
	TPH, C6-C35	< 3.22	U	mg/L	1	10.0	3.22		08/12/2016 09:25	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-S
Job Sample ID: 1608151.16
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Trivalent		**Batch ID:** Qb16090103		**Prep Info:**					
	Trivalent Chromium	14.5		mg/kg dw	1	2.50	1.25		09/01/2016 11:10	MM
EPA 160.4	Volatile Solids, Total		**Batch ID:** Qb16081829		**Prep Info:**					
	Volatile Solids	7.97		%	1	1.00	0.010		08/10/2016 18:22	ARC
EPA 200.8	Metals, Total		**Batch ID:** Qb16083002		**Prep Info:** PB16083002		EPA 200.2		08/30/2016 09:48	CL
	Antimony	< 0.250	U	mg/kg	1	0.250	0.020		08/30/2016 22:28	CL
	Arsenic	6.42		mg/kg	1	0.125	0.0062		08/30/2016 22:28	CL
	Beryllium	0.877		mg/kg	1	0.050	0.010		08/30/2016 22:28	CL
	Cadmium	< 0.250	J	mg/kg	1	0.250	0.012		08/30/2016 22:28	CL
	Chromium	14.5		mg/kg	1	0.749	0.037		08/30/2016 22:28	CL
	Copper	13.3		mg/kg	1	0.250	0.042		08/30/2016 22:28	CL
	Lead	12.6		mg/kg	1	0.125	0.0062		08/30/2016 22:28	CL
	Nickel	17.0		mg/kg	1	0.250	0.012		08/30/2016 22:28	CL
	Selenium	2.70	B	mg/kg	1	0.500	0.100		08/30/2016 22:28	CL
	Silver	< 0.125	J	mg/kg	1	0.125	0.0062		08/30/2016 22:28	CL
	Thallium	< 0.125	J	mg/kg	1	0.125	0.005		08/30/2016 22:28	CL
	Zinc	46.0		mg/kg	1	0.500	0.020		08/30/2016 22:28	CL
EPA 350.2	Ammonia		**Batch ID:** Qb16081833		**Prep Info:**					
	Ammonia as N	140	J	mg/kg dw	1	250	50.0		08/17/2016 16:00	ARC
SM 2540 G	Solids, Total		**Batch ID:** Qb16081828		**Prep Info:**					
	% Solids	40.0		%	1	1.00	0.010		08/10/2016 18:22	ARC

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-S
Job Sample ID: 1608151.16
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 7196A	Chromium, Hexavalent		**Batch ID:** Qb16081835		**Prep Info:**					
	Chromium, Hexavalent	< 1.25	U	mg/kg	1	2.50	1.25		08/17/2016 16:20	ARC
SW846 7471B	Mercury, Total		**Batch ID:** Qb16081903		**Prep Info:** PB16081903			SW846 7471B	08/18/2016 15:06	MBW
	Mercury	< 0.025	U	mg/kg dw	1	0.050	0.025		08/19/2016 08:28	MBW
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	65.3		%	1			60-140	08/17/2016 22:27	
	Decachlorobiphenyl(surr)	98.8		%	1			60-140	08/17/2016 22:27	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803			SW846 3570	08/12/2016 08:54	
	4,4-DDD	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	4,4-DDE	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	4,4-DDT	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	a-BHC	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	a-Chlordane	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	Aldrin	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	b-BHC	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	Chlordane	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	d-BHC	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	Dieldrin	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	Endosulfan I	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	Endosulfan II	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	Endosulfan sulfate	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-01-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.16	Time Collected:	12:43
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803		SW846 3570		08/12/2016 08:54	
	Endrin	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	Endrin aldehyde	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	Endrin ketone	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	g-BHC	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	Heptachlor	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	Heptachlor epoxide	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	Toxaphene	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
	y-Chlordane	< 0.375	U	ug/kg dw	1	0.749	0.375		08/17/2016 22:27	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	148	S	%	1			60-140	08/16/2016 18:28	
	Decachlorobiphenyl(surr)	200	S	%	1			60-140	08/11/2016 11:08	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081601		**Prep Info:** PB16081601		SW846 3570		08/08/2016 11:14	
	Total PCBs	< 2.50	U	ug/kg dw	1	5.00	2.50		08/11/2016 11:08	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	95.8		%	1			50-150	08/09/2016 14:54	EM
	4-Bromofluorobenzene(surr)	80.2		%	1			50-150	08/09/2016 14:54	EM
	Dibromofluoromethane(surr)	95.2		%	1			50-150	08/09/2016 14:54	EM
	Toluene-d8(surr)	95.6		%	1			50-150	08/09/2016 14:54	EM
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Ethylbenzene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 14:54	JM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-S
Job Sample ID: 1608151.16
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Tetrachloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 14:54	JM
	Trichloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 14:54	JM
	xylenes (total)	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 14:54	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	93.1		%	1			60-140	08/16/2016 01:43	JLL
	2-Fluorobiphenyl(surr)	70.9		%	1			60-140	08/16/2016 01:43	JLL
	2-Fluorophenol(surr)	128		%	1			60-140	08/16/2016 01:43	JLL
	Nitrobenzene-d5(surr)	63.2		%	1			60-140	08/16/2016 01:43	JLL
	Phenol-d5(surr)	119		%	1			60-140	08/16/2016 01:43	JLL
	Terphenyl-d14(surr)	18.3	S	%	1			60-140	08/16/2016 01:43	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	1,2,4-Trichlorobenzene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	1,2-Dichlorobenzene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	1,3-Dichlorobenzene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	1,4-Dichlorobenzene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	2,4,6-Trichlorophenol	< 6.24	U	ug/kg dw	1	12.5	6.24		08/16/2016 01:43	JLL
	2,4-Dichlorophenol	< 6.24	U	ug/kg dw	1	12.5	6.24		08/16/2016 01:43	JLL
	2,4-Dimethylphenol	< 6.24	U	ug/kg dw	1	12.5	6.24		08/16/2016 01:43	JLL
	2,4-Dinitrophenol	< 100	U	ug/kg dw	1	200	100		08/16/2016 01:43	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-01-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.16	Time Collected:	12:43
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	2,4-Dinitrotoluene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	2,6-Dinitrotoluene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	2-Chloronaphthalene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	2-Chlorophenol	< 6.24	U	ug/kg dw	1	12.5	6.24		08/16/2016 01:43	JLL
	2-Methylnaphthalene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	2-Methylphenol	< 6.24	U	ug/kg dw	1	12.5	6.24		08/16/2016 01:43	JLL
	2-Nitrophenol	< 6.24	U	ug/kg dw	1	12.5	6.24		08/16/2016 01:43	JLL
	3,3-Dichlorobenzidine	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	4,6-Dinitro-2-methylphenol	< 25.0	U	ug/kg dw	1	50.0	25.0		08/16/2016 01:43	JLL
	4-Bromophenyl phenyl ether	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	4-Chloro-3-methylphenol	< 6.24	U	ug/kg dw	1	12.5	6.24		08/16/2016 01:43	JLL
	4-Chlorophenyl phenyl ether	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	4-Methylphenol	< 6.24	U	ug/kg dw	1	12.5	6.24		08/16/2016 01:43	JLL
	4-Nitrophenol	< 6.24	U	ug/kg dw	1	12.5	6.24		08/16/2016 01:43	JLL
	Acenaphthene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Acenaphthylene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Anthracene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Benzidine	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Benzo(a)anthracene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Benzo(a)pyrene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Benzo(b)fluoranthene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-01-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.16	Time Collected:	12:43
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Benzo(g,h,i)perylene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Benzo(k)fluoranthene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Benzoic acid	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Benzyl alcohol	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Bis(2-chloroethoxy) methane	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Bis(2-chloroethyl) ether	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Bis(2-chloroisopropyl) ether	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Bis(2-ethylhexyl)phthalate	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Butyl benzyl phthalate	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Chrysene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Dibenzo(a,h)anthracene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Dibenzofuran	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Diethyl phthalate	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Dimethyl phthalate	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Di-n-butyl phthalate	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Di-n-octyl Phthalate	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Fluoranthene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Fluorene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Hexachlorobenzene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Hexachlorobutadiene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Hexachlorocyclopentadiene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-01-S
Job Sample ID: 1608151.16
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Hexachloroethane	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Indeno(1,2,3-cd)pyrene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Isophorone	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Naphthalene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Nitrobenzene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	n-Nitrosodimethylamine	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	n-nitroso-di-n-propylamine	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	n-Nitrosodiphenylamine	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Pentachlorophenol	< 6.24	U	ug/kg dw	1	12.5	6.24		08/16/2016 01:43	JLL
	Phenanthrene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
	Phenol	< 6.24	U	ug/kg dw	1	12.5	6.24		08/16/2016 01:43	JLL
	Pyrene	< 3.12	U	ug/kg dw	1	6.24	3.12		08/16/2016 01:43	JLL
SW846 9014	Cyanide, Total		**Batch ID:** Qb16081837		**Prep Info:** PB16081815		SW846 9010C		08/12/2016 11:20	ARC
	Cyanide, Total	< 0.62	U	mg/kg dw	1	1.25	0.62		08/12/2016 13:29	ARC
SW846 9060A	Total Organic Carbon		**Batch ID:** Qb16081831		**Prep Info:**					
	Total Organic Carbon	2.00		%	1	0.120	0.062		08/16/2016 14:09	ARC
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	93.2		%	1			70-130	08/18/2016 06:36	EM
	1-Chlorooctane(surr)	97.8		%	1			70-130	08/18/2016 06:36	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081709		**Prep Info:** PB16081706		TCEQ 1005		08/17/2016 13:00	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-01-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.16	Time Collected:	12:43
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081709		**Prep Info:** PB16081706			TCEQ 1005	08/17/2016 13:00	EM
	TPH, C6-C35	< 25.0	U	mg/kg dw	1	125	25.0		08/18/2016 06:36	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-S
Job Sample ID: 1608151.17
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Trivalent		**Batch ID:** Qb16090103		**Prep Info:**					
	Trivalent Chromium	14.4		mg/kg dw	1	2.44	1.22		09/01/2016 11:10	MM
EPA 160.4	Volatile Solids, Total		**Batch ID:** Qb16081829		**Prep Info:**					
	Volatile Solids	9.25		%	1	1.00	0.010		08/10/2016 18:22	ARC
EPA 200.8	Metals, Total		**Batch ID:** Qb16083002		**Prep Info:** PB16083002		EPA 200.2		08/30/2016 09:48	CL
	Antimony	< 0.244	U	mg/kg	1	0.244	0.020		08/30/2016 23:10	CL
	Arsenic	6.39		mg/kg	1	0.122	0.0061		08/30/2016 23:10	CL
	Beryllium	0.873		mg/kg	1	0.049	0.010		08/30/2016 23:10	CL
	Cadmium	< 0.244	J	mg/kg	1	0.244	0.012		08/30/2016 23:10	CL
	Chromium	14.4		mg/kg	1	0.731	0.037		08/30/2016 23:10	CL
	Copper	13.1		mg/kg	1	0.244	0.041		08/30/2016 23:10	CL
	Lead	12.6		mg/kg	1	0.122	0.0061		08/30/2016 23:10	CL
	Nickel	16.9		mg/kg	1	0.244	0.012		08/30/2016 23:10	CL
	Selenium	2.61	B	mg/kg	1	0.487	0.100		08/30/2016 23:10	CL
	Silver	< 0.122	J	mg/kg	1	0.122	0.0061		08/30/2016 23:10	CL
	Thallium	< 0.122	J	mg/kg	1	0.122	0.005		08/30/2016 23:10	CL
	Zinc	44.8		mg/kg	1	0.487	0.020		08/30/2016 23:10	CL
EPA 350.2	Ammonia		**Batch ID:** Qb16081833		**Prep Info:**					
	Ammonia as N	173	J	mg/kg dw	1	244	48.7		08/17/2016 16:00	ARC
SM 2540 G	Solids, Total		**Batch ID:** Qb16081828		**Prep Info:**					
	% Solids	41.0		%	1	1.00	0.010		08/10/2016 18:22	ARC

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-S
Job Sample ID: 1608151.17
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 7196A	Chromium, Hexavalent		**Batch ID:** Qb16081835		**Prep Info:**					
	Chromium, Hexavalent	< 1.22	U	mg/kg	1	2.44	1.22		08/17/2016 16:20	ARC
SW846 7471B	Mercury, Total		**Batch ID:** Qb16081903		**Prep Info:** PB16081903		SW846 7471B		08/18/2016 15:06	MBW
	Mercury	< 0.024	U	mg/kg dw	1	0.049	0.024		08/19/2016 08:28	MBW
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	71.3		%	1			60-140	08/17/2016 22:06	
	Decachlorobiphenyl(surr)	98.0		%	1			60-140	08/17/2016 22:06	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803		SW846 3570		08/12/2016 08:54	
	4,4-DDD	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	4,4-DDE	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	4,4-DDT	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	a-BHC	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	a-Chlordane	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	Aldrin	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	b-BHC	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	Chlordane	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	d-BHC	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	Dieldrin	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	Endosulfan I	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	Endosulfan II	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	Endosulfan sulfate	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-S
Job Sample ID: 1608151.17
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803	SW846 3570			08/12/2016 08:54	
	Endrin	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	Endrin aldehyde	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	Endrin ketone	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	g-BHC	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	Heptachlor	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	Heptachlor epoxide	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	Toxaphene	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
	y-Chlordane	< 0.366	U	ug/kg dw	1	0.731	0.366		08/17/2016 22:06	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	160	S	%	1			60-140	08/11/2016 12:10	
	Decachlorobiphenyl(surr)	200	S	%	1			60-140	08/11/2016 12:10	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081601		**Prep Info:** PB16081601	SW846 3570			08/08/2016 11:14	
	Total PCBs	< 2.44	U	ug/kg dw	1	4.87	2.44		08/11/2016 12:10	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	96.2		%	1			50-150	08/09/2016 15:24	EM
	4-Bromofluorobenzene(surr)	77.5		%	1			50-150	08/09/2016 15:24	EM
	Dibromofluoromethane(surr)	95.0		%	1			50-150	08/09/2016 15:24	EM
	Toluene-d8(surr)	93.6		%	1			50-150	08/09/2016 15:24	EM
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Ethylbenzene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 15:24	JM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-S
Job Sample ID: 1608151.17
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Tetrachloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 15:24	JM
	Trichloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 15:24	JM
	xylenes (total)	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 15:24	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	100		%	1			60-140	08/16/2016 02:18	JLL
	2-Fluorobiphenyl(surr)	83.0		%	1			60-140	08/16/2016 02:18	JLL
	2-Fluorophenol(surr)	134		%	1			60-140	08/16/2016 02:18	JLL
	Nitrobenzene-d5(surr)	74.5		%	1			60-140	08/16/2016 02:18	JLL
	Phenol-d5(surr)	131		%	1			60-140	08/16/2016 02:18	JLL
	Terphenyl-d14(surr)	21.7	S	%	1			60-140	08/16/2016 02:18	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603			SW846 3570	08/09/2016 10:03	
	1,2,4-Trichlorobenzene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	1,2-Dichlorobenzene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	1,3-Dichlorobenzene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	1,4-Dichlorobenzene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	2,4,6-Trichlorophenol	< 6.09	U	ug/kg dw	1	12.2	6.09		08/16/2016 02:18	JLL
	2,4-Dichlorophenol	< 6.09	U	ug/kg dw	1	12.2	6.09		08/16/2016 02:18	JLL
	2,4-Dimethylphenol	< 6.09	U	ug/kg dw	1	12.2	6.09		08/16/2016 02:18	JLL
	2,4-Dinitrophenol	< 97.5	U	ug/kg dw	1	195	97.5		08/16/2016 02:18	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-S
Job Sample ID: 1608151.17
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	2,4-Dinitrotoluene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	2,6-Dinitrotoluene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	2-Chloronaphthalene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	2-Chlorophenol	< 6.09	U	ug/kg dw	1	12.2	6.09		08/16/2016 02:18	JLL
	2-Methylnaphthalene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	2-Methylphenol	< 6.09	U	ug/kg dw	1	12.2	6.09		08/16/2016 02:18	JLL
	2-Nitrophenol	< 6.09	U	ug/kg dw	1	12.2	6.09		08/16/2016 02:18	JLL
	3,3-Dichlorobenzidine	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	4,6-Dinitro-2-methylphenol	< 24.4	U	ug/kg dw	1	48.7	24.4		08/16/2016 02:18	JLL
	4-Bromophenyl phenyl ether	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	4-Chloro-3-methylphenol	< 6.09	U	ug/kg dw	1	12.2	6.09		08/16/2016 02:18	JLL
	4-Chlorophenyl phenyl ether	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	4-Methylphenol	< 6.09	U	ug/kg dw	1	12.2	6.09		08/16/2016 02:18	JLL
	4-Nitrophenol	< 6.09	U	ug/kg dw	1	12.2	6.09		08/16/2016 02:18	JLL
	Acenaphthene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Acenaphthylene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Anthracene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Benzidine	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Benzo(a)anthracene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Benzo(a)pyrene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Benzo(b)fluoranthene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-S
Job Sample ID: 1608151.17
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Benzo(g,h,i)perylene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Benzo(k)fluoranthene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Benzoic acid	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Benzyl alcohol	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Bis(2-chloroethoxy) methane	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Bis(2-chloroethyl) ether	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Bis(2-chloroisopropyl) ether	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Bis(2-ethylhexyl)phthalate	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Butyl benzyl phthalate	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Chrysene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Dibenzo(a,h)anthracene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Dibenzofuran	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Diethyl phthalate	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Dimethyl phthalate	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Di-n-butyl phthalate	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Di-n-octyl Phthalate	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Fluoranthene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Fluorene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Hexachlorobenzene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Hexachlorobutadiene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Hexachlorocyclopentadiene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-02-S
Job Sample ID: 1608151.17
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Hexachloroethane	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Indeno(1,2,3-cd)pyrene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Isophorone	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Naphthalene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Nitrobenzene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	n-Nitrosodimethylamine	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	n-nitroso-di-n-propylamine	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	n-Nitrosodiphenylamine	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Pentachlorophenol	< 6.09	U	ug/kg dw	1	12.2	6.09		08/16/2016 02:18	JLL
	Phenanthrene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
	Phenol	< 6.09	U	ug/kg dw	1	12.2	6.09		08/16/2016 02:18	JLL
	Pyrene	< 3.05	U	ug/kg dw	1	6.09	3.05		08/16/2016 02:18	JLL
SW846 9014	Cyanide, Total		**Batch ID:** Qb16081837		**Prep Info:** PB16081815		SW846 9010C		08/12/2016 11:20	ARC
	Cyanide, Total	< 0.61	U	mg/kg dw	1	1.22	0.61		08/12/2016 13:29	ARC
SW846 9060A	Total Organic Carbon		**Batch ID:** Qb16081831		**Prep Info:**					
	Total Organic Carbon	2.11		%	1	0.120	0.061		08/16/2016 14:09	ARC
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	80.6		%	1			70-130	08/11/2016 03:12	EM
	1-Chlorooctane(surr)	80.6		%	1			70-130	08/11/2016 03:12	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081707		**Prep Info:** PB16081704		TCEQ 1005		08/16/2016 19:00	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name:	Lloyd Engineering, Inc.	Attn:	Marisa Weber
Project ID:	Quintana Terminal Dock 1		

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-02-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.17	Time Collected:	12:13
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081707		**Prep Info:** PB16081704			TCEQ 1005	08/16/2016 19:00	EM
	TPH, C6-C35	< 24.4	U	mg/kg dw	1	122	24.4		08/11/2016 03:12	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-S
Job Sample ID: 1608151.18
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Trivalent		**Batch ID:** Qb16090103		**Prep Info:**					
	Trivalent Chromium	15.0		mg/kg dw	1	2.56	1.28		09/01/2016 11:10	MM
EPA 160.4	Volatile Solids, Total		**Batch ID:** Qb16081829		**Prep Info:**					
	Volatile Solids	9.29		%	1	1.00	0.010		08/10/2016 18:22	ARC
EPA 200.8	Metals, Total		**Batch ID:** Qb16083002		**Prep Info:** PB16083002		EPA 200.2		08/30/2016 09:48	CL
	Antimony	< 0.256	U	mg/kg	1	0.256	0.030		08/30/2016 23:16	CL
	Arsenic	6.73		mg/kg	1	0.128	0.0064		08/30/2016 23:16	CL
	Beryllium	0.909		mg/kg	1	0.051	0.010		08/30/2016 23:16	CL
	Cadmium	< 0.256	J	mg/kg	1	0.256	0.013		08/30/2016 23:16	CL
	Chromium	15.0		mg/kg	1	0.768	0.038		08/30/2016 23:16	CL
	Copper	15.1		mg/kg	1	0.256	0.044		08/30/2016 23:16	CL
	Lead	13.5		mg/kg	1	0.128	0.0064		08/30/2016 23:16	CL
	Nickel	17.5		mg/kg	1	0.256	0.013		08/30/2016 23:16	CL
	Selenium	2.56	B	mg/kg	1	0.512	0.100		08/30/2016 23:16	CL
	Silver	< 0.128	J	mg/kg	1	0.128	0.0064		08/30/2016 23:16	CL
	Thallium	< 0.128	J	mg/kg	1	0.128	0.005		08/30/2016 23:16	CL
	Zinc	55.1		mg/kg	1	0.512	0.030		08/30/2016 23:16	CL
EPA 350.2	Ammonia		**Batch ID:** Qb16081833		**Prep Info:**					
	Ammonia as N	154	J	mg/kg dw	1	256	51.2		08/17/2016 16:00	ARC
SM 2540 G	Solids, Total		**Batch ID:** Qb16081828		**Prep Info:**					
	% Solids	39.0		%	1	1.00	0.010		08/10/2016 18:22	ARC

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-S
Job Sample ID: 1608151.18
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 7196A	Chromium, Hexavalent		**Batch ID:** Qb16081835		**Prep Info:**					
	Chromium, Hexavalent	< 1.28	U	mg/kg	1	2.56	1.28		08/17/2016 16:20	ARC
SW846 7471B	Mercury, Total		**Batch ID:** Qb16081903		**Prep Info:** PB16081903			SW846 7471B	08/18/2016 15:06	MBW
	Mercury	< 0.026	U	mg/kg dw	1	0.051	0.026		08/19/2016 08:28	MBW
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	58.7	S	%	1			60-140	08/17/2016 23:31	
	Decachlorobiphenyl(surr)	94.5		%	1			60-140	08/17/2016 23:31	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803			SW846 3570	08/12/2016 08:54	
	4,4-DDD	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	4,4-DDE	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	4,4-DDT	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	a-BHC	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	a-Chlordane	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	Aldrin	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	b-BHC	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	Chlordane	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	d-BHC	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	Dieldrin	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	Endosulfan I	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	Endosulfan II	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	Endosulfan sulfate	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-03-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.18	Time Collected:	11:13
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803		SW846 3570		08/12/2016 08:54	
	Endrin	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	Endrin aldehyde	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	Endrin ketone	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	g-BHC	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	Heptachlor	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	Heptachlor epoxide	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	Toxaphene	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
	y-Chlordane	< 0.384	U	ug/kg dw	1	0.768	0.384		08/17/2016 23:31	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	155	S	%	1			60-140	08/11/2016 12:31	
	Decachlorobiphenyl(surr)	200	S	%	1			60-140	08/11/2016 12:31	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081601		**Prep Info:** PB16081601		SW846 3570		08/08/2016 11:14	
	Total PCBs	< 2.56	U	ug/kg dw	1	5.12	2.56		08/11/2016 12:31	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	95.8		%	1			50-150	08/09/2016 15:53	EM
	4-Bromofluorobenzene(surr)	79.4		%	1			50-150	08/09/2016 15:53	EM
	Dibromofluoromethane(surr)	95.3		%	1			50-150	08/09/2016 15:53	EM
	Toluene-d8(surr)	95.7		%	1			50-150	08/09/2016 15:53	EM
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Ethylbenzene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 15:53	JM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-S
Job Sample ID: 1608151.18
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Tetrachloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 15:53	JM
	Trichloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 15:53	JM
	xylenes (total)	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 15:53	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	125		%	1			60-140	08/16/2016 01:09	JLL
	2-Fluorobiphenyl(surr)	80.8		%	1			60-140	08/16/2016 01:09	JLL
	2-Fluorophenol(surr)	148	S	%	1			60-140	08/16/2016 01:09	JLL
	Nitrobenzene-d5(surr)	72.0		%	1			60-140	08/16/2016 01:09	JLL
	Phenol-d5(surr)	147	S	%	1			60-140	08/16/2016 01:09	JLL
	Terphenyl-d14(surr)	24.7	S	%	1			60-140	08/16/2016 01:09	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603			SW846 3570	08/09/2016 10:03	
	1,2,4-Trichlorobenzene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	1,2-Dichlorobenzene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	1,3-Dichlorobenzene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	1,4-Dichlorobenzene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	2,4,6-Trichlorophenol	< 6.40	U	ug/kg dw	1	12.8	6.40		08/16/2016 01:09	JLL
	2,4-Dichlorophenol	< 6.40	U	ug/kg dw	1	12.8	6.40		08/16/2016 01:09	JLL
	2,4-Dimethylphenol	< 6.40	U	ug/kg dw	1	12.8	6.40		08/16/2016 01:09	JLL
	2,4-Dinitrophenol	< 102	U	ug/kg dw	1	205	102		08/16/2016 01:09	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-03-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.18	Time Collected:	11:13
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	2,4-Dinitrotoluene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	2,6-Dinitrotoluene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	2-Chloronaphthalene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	2-Chlorophenol	< 6.40	U	ug/kg dw	1	12.8	6.40		08/16/2016 01:09	JLL
	2-Methylnaphthalene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	2-Methylphenol	< 6.40	U	ug/kg dw	1	12.8	6.40		08/16/2016 01:09	JLL
	2-Nitrophenol	< 6.40	U	ug/kg dw	1	12.8	6.40		08/16/2016 01:09	JLL
	3,3-Dichlorobenzidine	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	4,6-Dinitro-2-methylphenol	< 25.6	U	ug/kg dw	1	51.2	25.6		08/16/2016 01:09	JLL
	4-Bromophenyl phenyl ether	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	4-Chloro-3-methylphenol	< 6.40	U	ug/kg dw	1	12.8	6.40		08/16/2016 01:09	JLL
	4-Chlorophenyl phenyl ether	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	4-Methylphenol	< 6.40	U	ug/kg dw	1	12.8	6.40		08/16/2016 01:09	JLL
	4-Nitrophenol	< 6.40	U	ug/kg dw	1	12.8	6.40		08/16/2016 01:09	JLL
	Acenaphthene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Acenaphthylene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Anthracene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Benzidine	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Benzo(a)anthracene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Benzo(a)pyrene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Benzo(b)fluoranthene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-S
Job Sample ID: 1608151.18
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Benzo(g,h,i)perylene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Benzo(k)fluoranthene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Benzoic acid	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Benzyl alcohol	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Bis(2-chloroethoxy) methane	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Bis(2-chloroethyl) ether	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Bis(2-chloroisopropyl) ether	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Bis(2-ethylhexyl)phthalate	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Butyl benzyl phthalate	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Chrysene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Dibenzo(a,h)anthracene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Dibenzofuran	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Diethyl phthalate	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Dimethyl phthalate	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Di-n-butyl phthalate	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Di-n-octyl Phthalate	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Fluoranthene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Fluorene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Hexachlorobenzene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Hexachlorobutadiene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Hexachlorocyclopentadiene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-03-S
Job Sample ID: 1608151.18
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 11:13

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Hexachloroethane	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Indeno(1,2,3-cd)pyrene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Isophorone	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Naphthalene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Nitrobenzene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	n-Nitrosodimethylamine	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	n-nitroso-di-n-propylamine	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	n-Nitrosodiphenylamine	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Pentachlorophenol	< 6.40	U	ug/kg dw	1	12.8	6.40		08/16/2016 01:09	JLL
	Phenanthrene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
	Phenol	< 6.40	U	ug/kg dw	1	12.8	6.40		08/16/2016 01:09	JLL
	Pyrene	< 3.20	U	ug/kg dw	1	6.40	3.20		08/16/2016 01:09	JLL
SW846 9014	Cyanide, Total		**Batch ID:** Qb16081837		**Prep Info:** PB16081815		SW846 9010C		08/12/2016 11:20	ARC
	Cyanide, Total	< 0.64	U	mg/kg dw	1	1.28	0.64		08/12/2016 13:29	ARC
SW846 9060A	Total Organic Carbon		**Batch ID:** Qb16081831		**Prep Info:**					
	Total Organic Carbon	2.27		%	1	0.130	0.064		08/16/2016 14:09	ARC
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	80.6		%	1			70-130	08/11/2016 03:41	EM
	1-Chlorooctane(surr)	80.6		%	1			70-130	08/11/2016 03:41	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081707		**Prep Info:** PB16081704		TCEQ 1005		08/16/2016 19:00	EM

SAMPLE RESULTS

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name:	Lloyd Engineering, Inc.	Attn:	Marisa Weber
Project ID:	Quintana Terminal Dock 1		

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-03-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.18	Time Collected:	11:13
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081707		**Prep Info:** PB16081704			TCEQ 1005	08/16/2016 19:00	EM
	TPH, C6-C35	< 25.6	U	mg/kg dw	1	128	25.6		08/11/2016 03:41	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-S
Job Sample ID: 1608151.19
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Trivalent		**Batch ID:** Qb16090103		**Prep Info:**					
	Trivalent Chromium	15.5		mg/kg dw	1	2.63	1.32		09/01/2016 11:10	MM
EPA 160.4	Volatile Solids, Total		**Batch ID:** Qb16081829		**Prep Info:**					
	Volatile Solids	8.55		%	1	1.00	0.010		08/10/2016 18:22	ARC
EPA 200.8	Metals, Total		**Batch ID:** Qb16083002		**Prep Info:** PB16083002		EPA 200.2		08/30/2016 09:48	CL
	Antimony	< 0.263	U	mg/kg	1	0.263	0.030		08/30/2016 23:22	CL
	Arsenic	6.64		mg/kg	1	0.132	0.0066		08/30/2016 23:22	CL
	Beryllium	0.919		mg/kg	1	0.053	0.011		08/30/2016 23:22	CL
	Cadmium	< 0.263	J	mg/kg	1	0.263	0.013		08/30/2016 23:22	CL
	Chromium	15.5		mg/kg	1	0.79	0.040		08/30/2016 23:22	CL
	Copper	15.0		mg/kg	1	0.263	0.045		08/30/2016 23:22	CL
	Lead	13.5		mg/kg	1	0.132	0.0066		08/30/2016 23:22	CL
	Nickel	17.4		mg/kg	1	0.263	0.013		08/30/2016 23:22	CL
	Selenium	2.49	B	mg/kg	1	0.527	0.110		08/30/2016 23:22	CL
	Silver	< 0.132	J	mg/kg	1	0.132	0.0066		08/30/2016 23:22	CL
	Thallium	< 0.132	J	mg/kg	1	0.132	0.005		08/30/2016 23:22	CL
	Zinc	55.6		mg/kg	1	0.527	0.030		08/30/2016 23:22	CL
EPA 350.2	Ammonia		**Batch ID:** Qb16081833		**Prep Info:**					
	Ammonia as N	121	J	mg/kg dw	1	263	52.7		08/17/2016 16:00	ARC
SM 2540 G	Solids, Total		**Batch ID:** Qb16081828		**Prep Info:**					
	% Solids	38.0		%	1	1.00	0.010		08/10/2016 18:22	ARC

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-S
Job Sample ID: 1608151.19
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 7196A	Chromium, Hexavalent		**Batch ID:** Qb16081835		**Prep Info:**					
	Chromium, Hexavalent	< 1.32	U	mg/kg	1	2.63	1.32		08/17/2016 16:20	ARC
SW846 7471B	Mercury, Total		**Batch ID:** Qb16081903		**Prep Info:** PB16081903			SW846 7471B	08/18/2016 15:06	MBW
	Mercury	< 0.026	U	mg/kg dw	1	0.053	0.026		08/19/2016 08:28	MBW
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	53.2	S	%	1			60-140	08/17/2016 23:52	
	Decachlorobiphenyl(surr)	89.8		%	1			60-140	08/17/2016 23:52	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803			SW846 3570	08/12/2016 08:54	
	4,4-DDD	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	4,4-DDE	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	4,4-DDT	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	a-BHC	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	a-Chlordane	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	Aldrin	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	b-BHC	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	Chlordane	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	d-BHC	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	Dieldrin	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	Endosulfan I	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	Endosulfan II	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	Endosulfan sulfate	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-S
Job Sample ID: 1608151.19
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803		SW846 3570		08/12/2016 08:54	
	Endrin	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	Endrin aldehyde	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	Endrin ketone	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	g-BHC	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	Heptachlor	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	Heptachlor epoxide	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	Toxaphene	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
	y-Chlordane	< 0.395	U	ug/kg dw	1	0.79	0.395		08/17/2016 23:52	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	161	S	%	1			60-140	08/11/2016 12:52	
	Decachlorobiphenyl(surr)	197	S	%	1			60-140	08/11/2016 12:52	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081601		**Prep Info:** PB16081601		SW846 3570		08/08/2016 11:14	
	Total PCBs	< 2.63	U	ug/kg dw	1	5.27	2.63		08/11/2016 12:52	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	97.0		%	1			50-150	08/09/2016 16:23	EM
	4-Bromofluorobenzene(surr)	79.1		%	1			50-150	08/09/2016 16:23	EM
	Dibromofluoromethane(surr)	97.2		%	1			50-150	08/09/2016 16:23	EM
	Toluene-d8(surr)	95.8		%	1			50-150	08/09/2016 16:23	EM
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Ethylbenzene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 16:23	JM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-S
Job Sample ID: 1608151.19
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Tetrachloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 16:23	JM
	Trichloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 16:23	JM
	xylenes (total)	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 16:23	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	109		%	1			60-140	08/16/2016 02:53	JLL
	2-Fluorobiphenyl(surr)	104		%	1			60-140	08/16/2016 02:53	JLL
	2-Fluorophenol(surr)	169	S	%	1			60-140	08/16/2016 02:53	JLL
	Nitrobenzene-d5(surr)	92.0		%	1			60-140	08/16/2016 02:53	JLL
	Phenol-d5(surr)	144	S	%	1			60-140	08/16/2016 02:53	JLL
	Terphenyl-d14(surr)	21.4	S	%	1			60-140	08/16/2016 02:53	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603			SW846 3570	08/09/2016 10:03	
	1,2,4-Trichlorobenzene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	1,2-Dichlorobenzene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	1,3-Dichlorobenzene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	1,4-Dichlorobenzene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	2,4,6-Trichlorophenol	< 6.59	U	ug/kg dw	1	13.2	6.59		08/16/2016 02:53	JLL
	2,4-Dichlorophenol	< 6.59	U	ug/kg dw	1	13.2	6.59		08/16/2016 02:53	JLL
	2,4-Dimethylphenol	< 6.59	U	ug/kg dw	1	13.2	6.59		08/16/2016 02:53	JLL
	2,4-Dinitrophenol	< 105	U	ug/kg dw	1	211	105		08/16/2016 02:53	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-04-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.19	Time Collected:	10:58
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	2,4-Dinitrotoluene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	2,6-Dinitrotoluene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	2-Chloronaphthalene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	2-Chlorophenol	< 6.59	U	ug/kg dw	1	13.2	6.59		08/16/2016 02:53	JLL
	2-Methylnaphthalene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	2-Methylphenol	< 6.59	U	ug/kg dw	1	13.2	6.59		08/16/2016 02:53	JLL
	2-Nitrophenol	< 6.59	U	ug/kg dw	1	13.2	6.59		08/16/2016 02:53	JLL
	3,3-Dichlorobenzidine	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	4,6-Dinitro-2-methylphenol	< 26.3	U	ug/kg dw	1	52.7	26.3		08/16/2016 02:53	JLL
	4-Bromophenyl phenyl ether	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	4-Chloro-3-methylphenol	< 6.59	U	ug/kg dw	1	13.2	6.59		08/16/2016 02:53	JLL
	4-Chlorophenyl phenyl ether	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	4-Methylphenol	< 6.59	U	ug/kg dw	1	13.2	6.59		08/16/2016 02:53	JLL
	4-Nitrophenol	< 6.59	U	ug/kg dw	1	13.2	6.59		08/16/2016 02:53	JLL
	Acenaphthene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Acenaphthylene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Anthracene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Benzidine	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Benzo(a)anthracene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Benzo(a)pyrene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Benzo(b)fluoranthene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-S
Job Sample ID: 1608151.19
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Benzo(g,h,i)perylene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Benzo(k)fluoranthene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Benzoic acid	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Benzyl alcohol	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Bis(2-chloroethoxy) methane	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Bis(2-chloroethyl) ether	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Bis(2-chloroisopropyl) ether	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Bis(2-ethylhexyl)phthalate	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Butyl benzyl phthalate	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Chrysene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Dibenzo(a,h)anthracene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Dibenzofuran	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Diethyl phthalate	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Dimethyl phthalate	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Di-n-butyl phthalate	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Di-n-octyl Phthalate	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Fluoranthene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Fluorene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Hexachlorobenzene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Hexachlorobutadiene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Hexachlorocyclopentadiene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-04-S
Job Sample ID: 1608151.19
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:58

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Hexachloroethane	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Indeno(1,2,3-cd)pyrene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Isophorone	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Naphthalene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Nitrobenzene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	n-Nitrosodimethylamine	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	n-nitroso-di-n-propylamine	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	n-Nitrosodiphenylamine	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Pentachlorophenol	< 6.59	U	ug/kg dw	1	13.2	6.59		08/16/2016 02:53	JLL
	Phenanthrene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
	Phenol	< 6.59	U	ug/kg dw	1	13.2	6.59		08/16/2016 02:53	JLL
	Pyrene	< 3.29	U	ug/kg dw	1	6.59	3.29		08/16/2016 02:53	JLL
SW846 9014	Cyanide, Total		**Batch ID:** Qb16081837		**Prep Info:** PB16081815		SW846 9010C		08/12/2016 11:20	ARC
	Cyanide, Total	< 0.66	U	mg/kg dw	1	1.32	0.66		08/12/2016 13:29	ARC
SW846 9060A	Total Organic Carbon		**Batch ID:** Qb16081831		**Prep Info:**					
	Total Organic Carbon	1.83		%	1	0.130	0.066		08/16/2016 14:09	ARC
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	79.6		%	1			70-130	08/18/2016 07:07	EM
	1-Chlorooctane(surr)	91.0		%	1			70-130	08/18/2016 07:07	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081709		**Prep Info:** PB16081706		TCEQ 1005		08/17/2016 13:00	EM

SAMPLE RESULTS

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name:	Lloyd Engineering, Inc.	Attn:	Marisa Weber
Project ID:	Quintana Terminal Dock 1		

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-04-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.19	Time Collected:	10:58
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081709		**Prep Info:** PB16081706			TCEQ 1005	08/17/2016 13:00	EM
	TPH, C6-C35	< 26.3	U	mg/kg dw	1	132	26.3		08/18/2016 07:07	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-S
Job Sample ID: 1608151.20
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Trivalent		**Batch ID:** Qb16090103		**Prep Info:**					
	Trivalent Chromium	15.6		mg/kg dw	1	2.89	1.45		09/01/2016 11:10	MM
EPA 160.4	Volatile Solids, Total		**Batch ID:** Qb16081829		**Prep Info:**					
	Volatile Solids	10.0		%	1	1.00	0.010		08/10/2016 18:22	ARC
EPA 200.8	Metals, Total		**Batch ID:** Qb16083002		**Prep Info:** PB16083002		EPA 200.2		08/30/2016 09:48	CL
	Antimony	< 0.289	U	mg/kg	1	0.289	0.030		08/30/2016 23:28	CL
	Arsenic	6.50		mg/kg	1	0.145	0.0072		08/30/2016 23:28	CL
	Beryllium	0.914		mg/kg	1	0.058	0.012		08/30/2016 23:28	CL
	Cadmium	< 0.289	J	mg/kg	1	0.289	0.014		08/30/2016 23:28	CL
	Chromium	15.6		mg/kg	1	0.867	0.043		08/30/2016 23:28	CL
	Copper	14.2		mg/kg	1	0.289	0.049		08/30/2016 23:28	CL
	Lead	13.5		mg/kg	1	0.145	0.0072		08/30/2016 23:28	CL
	Nickel	18.1		mg/kg	1	0.289	0.014		08/30/2016 23:28	CL
	Selenium	2.78	B	mg/kg	1	0.578	0.120		08/30/2016 23:28	CL
	Silver	< 0.145	J	mg/kg	1	0.145	0.0072		08/30/2016 23:28	CL
	Thallium	< 0.145	J	mg/kg	1	0.145	0.006		08/30/2016 23:28	CL
	Zinc	50.6		mg/kg	1	0.578	0.030		08/30/2016 23:28	CL
EPA 350.2	Ammonia		**Batch ID:** Qb16081833		**Prep Info:**					
	Ammonia as N	171	J	mg/kg dw	1	289	57.8		08/17/2016 16:00	ARC
SM 2540 G	Solids, Total		**Batch ID:** Qb16081828		**Prep Info:**					
	% Solids	34.6		%	1	1.00	0.010		08/10/2016 18:22	ARC

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-S
Job Sample ID: 1608151.20
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 7196A	Chromium, Hexavalent		**Batch ID:** Qb16081835		**Prep Info:**					
	Chromium, Hexavalent	< 1.45	U	mg/kg	1	2.89	1.45		08/17/2016 16:20	ARC
SW846 7471B	Mercury, Total		**Batch ID:** Qb16081903		**Prep Info:** PB16081903		SW846 7471B		08/18/2016 15:06	MBW
	Mercury	< 0.029	U	mg/kg dw	1	0.058	0.029		08/19/2016 08:28	MBW
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	67.8		%	1			60-140	08/18/2016 00:14	
	Decachlorobiphenyl(surr)	102		%	1			60-140	08/18/2016 00:14	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803		SW846 3570		08/12/2016 08:54	
	4,4-DDD	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	4,4-DDE	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	4,4-DDT	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	a-BHC	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	a-Chlordane	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	Aldrin	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	b-BHC	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	Chlordane	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	d-BHC	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	Dieldrin	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	Endosulfan I	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	Endosulfan II	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	Endosulfan sulfate	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-S
Job Sample ID: 1608151.20
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803		SW846 3570		08/12/2016 08:54	
	Endrin	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	Endrin aldehyde	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	Endrin ketone	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	g-BHC	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	Heptachlor	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	Heptachlor epoxide	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	Toxaphene	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
	y-Chlordane	< 0.434	U	ug/kg dw	1	0.867	0.434		08/18/2016 00:14	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	182	S	%	1			60-140	08/11/2016 13:13	
	Decachlorobiphenyl(surr)	212	S	%	1			60-140	08/11/2016 13:13	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081601		**Prep Info:** PB16081601		SW846 3570		08/08/2016 11:14	
	Total PCBs	< 2.89	U	ug/kg dw	1	5.78	2.89		08/11/2016 13:13	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	95.0		%	1			50-150	08/09/2016 16:53	EM
	4-Bromofluorobenzene(surr)	77.6		%	1			50-150	08/09/2016 16:53	EM
	Dibromofluoromethane(surr)	93.9		%	1			50-150	08/09/2016 16:53	EM
	Toluene-d8(surr)	99.2		%	1			50-150	08/09/2016 16:53	EM
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Ethylbenzene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 16:53	JM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-S
Job Sample ID: 1608151.20
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Tetrachloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 16:53	JM
	Trichloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 16:53	JM
	xylenes (total)	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 16:53	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	126		%	1			60-140	08/16/2016 03:27	JLL
	2-Fluorobiphenyl(surr)	105		%	1			60-140	08/16/2016 03:27	JLL
	2-Fluorophenol(surr)	191	S	%	1			60-140	08/16/2016 03:27	JLL
	Nitrobenzene-d5(surr)	85.9		%	1			60-140	08/16/2016 03:27	JLL
	Phenol-d5(surr)	174	S	%	1			60-140	08/16/2016 03:27	JLL
	Terphenyl-d14(surr)	28.7	S	%	1			60-140	08/16/2016 03:27	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	1,2,4-Trichlorobenzene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	1,2-Dichlorobenzene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	1,3-Dichlorobenzene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	1,4-Dichlorobenzene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	2,4,6-Trichlorophenol	< 7.23	U	ug/kg dw	1	14.5	7.23		08/16/2016 03:27	JLL
	2,4-Dichlorophenol	< 7.23	U	ug/kg dw	1	14.5	7.23		08/16/2016 03:27	JLL
	2,4-Dimethylphenol	< 7.23	U	ug/kg dw	1	14.5	7.23		08/16/2016 03:27	JLL
	2,4-Dinitrophenol	< 116	U	ug/kg dw	1	231	116		08/16/2016 03:27	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-05-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.20	Time Collected:	12:43
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	2,4-Dinitrotoluene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	2,6-Dinitrotoluene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	2-Chloronaphthalene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	2-Chlorophenol	< 7.23	U	ug/kg dw	1	14.5	7.23		08/16/2016 03:27	JLL
	2-Methylnaphthalene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	2-Methylphenol	< 7.23	U	ug/kg dw	1	14.5	7.23		08/16/2016 03:27	JLL
	2-Nitrophenol	< 7.23	U	ug/kg dw	1	14.5	7.23		08/16/2016 03:27	JLL
	3,3-Dichlorobenzidine	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	4,6-Dinitro-2-methylphenol	< 28.9	U	ug/kg dw	1	57.8	28.9		08/16/2016 03:27	JLL
	4-Bromophenyl phenyl ether	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	4-Chloro-3-methylphenol	< 7.23	U	ug/kg dw	1	14.5	7.23		08/16/2016 03:27	JLL
	4-Chlorophenyl phenyl ether	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	4-Methylphenol	< 7.23	U	ug/kg dw	1	14.5	7.23		08/16/2016 03:27	JLL
	4-Nitrophenol	< 7.23	U	ug/kg dw	1	14.5	7.23		08/16/2016 03:27	JLL
	Acenaphthene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Acenaphthylene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Anthracene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Benzidine	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Benzo(a)anthracene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Benzo(a)pyrene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Benzo(b)fluoranthene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-05-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.20	Time Collected:	12:43
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Benzo(g,h,i)perylene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Benzo(k)fluoranthene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Benzoic acid	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Benzyl alcohol	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Bis(2-chloroethoxy) methane	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Bis(2-chloroethyl) ether	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Bis(2-chloroisopropyl) ether	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Bis(2-ethylhexyl)phthalate	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Butyl benzyl phthalate	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Chrysene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Dibenzo(a,h)anthracene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Dibenzofuran	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Diethyl phthalate	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Dimethyl phthalate	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Di-n-butyl phthalate	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Di-n-octyl Phthalate	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Fluoranthene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Fluorene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Hexachlorobenzene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Hexachlorobutadiene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Hexachlorocyclopentadiene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-05-S
Job Sample ID: 1608151.20
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 12:43

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Hexachloroethane	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Indeno(1,2,3-cd)pyrene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Isophorone	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Naphthalene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Nitrobenzene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	n-Nitrosodimethylamine	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	n-nitroso-di-n-propylamine	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	n-Nitrosodiphenylamine	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Pentachlorophenol	< 7.23	U	ug/kg dw	1	14.5	7.23		08/16/2016 03:27	JLL
	Phenanthrene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
	Phenol	< 7.23	U	ug/kg dw	1	14.5	7.23		08/16/2016 03:27	JLL
	Pyrene	< 3.61	U	ug/kg dw	1	7.23	3.61		08/16/2016 03:27	JLL
SW846 9014	Cyanide, Total		**Batch ID:** Qb16081837		**Prep Info:** PB16081815		SW846 9010C		08/12/2016 11:20	ARC
	Cyanide, Total	< 0.72	U	mg/kg dw	1	1.45	0.72		08/12/2016 13:29	ARC
SW846 9060A	Total Organic Carbon		**Batch ID:** Qb16081831		**Prep Info:**					
	Total Organic Carbon	1.80		%	1	0.140	0.072		08/16/2016 14:09	ARC
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	84.7		%	1			70-130	08/18/2016 07:39	EM
	1-Chlorooctane(surr)	89.5		%	1			70-130	08/18/2016 07:39	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081709		**Prep Info:** PB16081706		TCEQ 1005		08/17/2016 13:00	EM

SAMPLE RESULTS

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name:	Lloyd Engineering, Inc.	Attn:	Marisa Weber
Project ID:	Quintana Terminal Dock 1		

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-05-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.20	Time Collected:	12:43
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081709		**Prep Info:** PB16081706			TCEQ 1005	08/17/2016 13:00	EM
	TPH, C6-C35	< 28.9	U	mg/kg dw	1	145	28.9		08/18/2016 07:39	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-S
Job Sample ID: 1608151.21
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Trivalent		**Batch ID:** Qb16090103		**Prep Info:**					
	Trivalent Chromium	15.7		mg/kg dw	1	2.83	1.42		09/01/2016 11:10	MM
EPA 160.4	Volatile Solids, Total		**Batch ID:** Qb16081829		**Prep Info:**					
	Volatile Solids	8.31		%	1	1.00	0.010		08/10/2016 18:22	ARC
EPA 200.8	Metals, Total		**Batch ID:** Qb16083002		**Prep Info:** PB16083002		EPA 200.2		08/30/2016 09:48	CL
	Antimony	< 0.283	U	mg/kg	1	0.283	0.030		08/30/2016 23:34	CL
	Arsenic	6.38		mg/kg	1	0.142	0.0071		08/30/2016 23:34	CL
	Beryllium	0.924		mg/kg	1	0.057	0.011		08/30/2016 23:34	CL
	Cadmium	< 0.283	J	mg/kg	1	0.283	0.014		08/30/2016 23:34	CL
	Chromium	15.7		mg/kg	1	0.85	0.043		08/30/2016 23:34	CL
	Copper	14.3		mg/kg	1	0.283	0.048		08/30/2016 23:34	CL
	Lead	13.8		mg/kg	1	0.142	0.0071		08/30/2016 23:34	CL
	Nickel	17.9		mg/kg	1	0.283	0.014		08/30/2016 23:34	CL
	Selenium	2.57	B	mg/kg	1	0.567	0.110		08/30/2016 23:34	CL
	Silver	< 0.142	J	mg/kg	1	0.142	0.0071		08/30/2016 23:34	CL
	Thallium	< 0.142	J	mg/kg	1	0.142	0.006		08/30/2016 23:34	CL
	Zinc	55.0		mg/kg	1	0.567	0.030		08/30/2016 23:34	CL
EPA 350.2	Ammonia		**Batch ID:** Qb16081833		**Prep Info:**					
	Ammonia as N	184	J	mg/kg dw	1	283	56.7		08/17/2016 16:00	ARC
SM 2540 G	Solids, Total		**Batch ID:** Qb16081828		**Prep Info:**					
	% Solids	35.3		%	1	1.00	0.010		08/10/2016 18:22	ARC

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-S
Job Sample ID: 1608151.21
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 7196A	Chromium, Hexavalent		**Batch ID:** Qb16081835		**Prep Info:**					
	Chromium, Hexavalent	< 1.42	U	mg/kg	1	2.83	1.42		08/17/2016 16:20	ARC
SW846 7471B	Mercury, Total		**Batch ID:** Qb16081903		**Prep Info:** PB16081903			SW846 7471B	08/18/2016 15:06	MBW
	Mercury	0.028	J	mg/kg dw	1	0.057	0.028		08/19/2016 08:28	MBW
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	72.2		%	1			60-140	08/18/2016 00:35	
	Decachlorobiphenyl(surr)	96.5		%	1			60-140	08/18/2016 00:35	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803			SW846 3570	08/12/2016 08:54	
	4,4-DDD	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	4,4-DDE	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	4,4-DDT	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	a-BHC	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	a-Chlordane	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	Aldrin	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	b-BHC	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	Chlordane	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	d-BHC	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	Dieldrin	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	Endosulfan I	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	Endosulfan II	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	Endosulfan sulfate	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-S
Job Sample ID: 1608151.21
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803		SW846 3570		08/12/2016 08:54	
	Endrin	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	Endrin aldehyde	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	Endrin ketone	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	g-BHC	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	Heptachlor	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	Heptachlor epoxide	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	Toxaphene	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
	y-Chlordane	< 0.425	U	ug/kg dw	1	0.85	0.425		08/18/2016 00:35	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	163	S	%	1			60-140	08/11/2016 13:34	
	Decachlorobiphenyl(surr)	195	S	%	1			60-140	08/11/2016 13:34	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081601		**Prep Info:** PB16081601		SW846 3570		08/08/2016 11:14	
	Total PCBs	< 2.83	U	ug/kg dw	1	5.67	2.83		08/11/2016 13:34	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	96.2		%	1			50-150	08/09/2016 17:22	EM
	4-Bromofluorobenzene(surr)	77.4		%	1			50-150	08/09/2016 17:22	EM
	Dibromofluoromethane(surr)	94.5		%	1			50-150	08/09/2016 17:22	EM
	Toluene-d8(surr)	95.6		%	1			50-150	08/09/2016 17:22	EM
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Ethylbenzene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 17:22	JM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-S
Job Sample ID: 1608151.21
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Tetrachloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 17:22	JM
	Trichloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 17:22	JM
	xylenes (total)	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 17:22	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	134		%	1			60-140	08/16/2016 04:02	JLL
	2-Fluorobiphenyl(surr)	92.2		%	1			60-140	08/16/2016 04:02	JLL
	2-Fluorophenol(surr)	200	S	%	1			60-140	08/16/2016 04:02	JLL
	Nitrobenzene-d5(surr)	94.0		%	1			60-140	08/16/2016 04:02	JLL
	Phenol-d5(surr)	189	S	%	1			60-140	08/16/2016 04:02	JLL
	Terphenyl-d14(surr)	23.7	S	%	1			60-140	08/16/2016 04:02	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603			SW846 3570	08/09/2016 10:03	
	1,2,4-Trichlorobenzene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	1,2-Dichlorobenzene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	1,3-Dichlorobenzene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	1,4-Dichlorobenzene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	2,4,6-Trichlorophenol	< 7.09	U	ug/kg dw	1	14.2	7.09		08/16/2016 04:02	JLL
	2,4-Dichlorophenol	< 7.09	U	ug/kg dw	1	14.2	7.09		08/16/2016 04:02	JLL
	2,4-Dimethylphenol	< 7.09	U	ug/kg dw	1	14.2	7.09		08/16/2016 04:02	JLL
	2,4-Dinitrophenol	< 113	U	ug/kg dw	1	227	113		08/16/2016 04:02	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-06-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.21	Time Collected:	09:41
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	2,4-Dinitrotoluene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	2,6-Dinitrotoluene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	2-Chloronaphthalene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	2-Chlorophenol	< 7.09	U	ug/kg dw	1	14.2	7.09		08/16/2016 04:02	JLL
	2-Methylnaphthalene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	2-Methylphenol	< 7.09	U	ug/kg dw	1	14.2	7.09		08/16/2016 04:02	JLL
	2-Nitrophenol	< 7.09	U	ug/kg dw	1	14.2	7.09		08/16/2016 04:02	JLL
	3,3-Dichlorobenzidine	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	4,6-Dinitro-2-methylphenol	< 28.3	U	ug/kg dw	1	56.7	28.3		08/16/2016 04:02	JLL
	4-Bromophenyl phenyl ether	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	4-Chloro-3-methylphenol	< 7.09	U	ug/kg dw	1	14.2	7.09		08/16/2016 04:02	JLL
	4-Chlorophenyl phenyl ether	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	4-Methylphenol	< 7.09	U	ug/kg dw	1	14.2	7.09		08/16/2016 04:02	JLL
	4-Nitrophenol	< 7.09	U	ug/kg dw	1	14.2	7.09		08/16/2016 04:02	JLL
	Acenaphthene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Acenaphthylene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Anthracene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Benzidine	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Benzo(a)anthracene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Benzo(a)pyrene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Benzo(b)fluoranthene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-06-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.21	Time Collected:	09:41
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Benzo(g,h,i)perylene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Benzo(k)fluoranthene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Benzoic acid	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Benzyl alcohol	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Bis(2-chloroethoxy) methane	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Bis(2-chloroethyl) ether	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Bis(2-chloroisopropyl) ether	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Bis(2-ethylhexyl)phthalate	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Butyl benzyl phthalate	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Chrysene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Dibenzo(a,h)anthracene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Dibenzofuran	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Diethyl phthalate	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Dimethyl phthalate	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Di-n-butyl phthalate	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Di-n-octyl Phthalate	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Fluoranthene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Fluorene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Hexachlorobenzene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Hexachlorobutadiene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Hexachlorocyclopentadiene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-06-S
Job Sample ID: 1608151.21
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 09:41

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Hexachloroethane	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Indeno(1,2,3-cd)pyrene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Isophorone	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Naphthalene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Nitrobenzene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	n-Nitrosodimethylamine	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	n-nitroso-di-n-propylamine	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	n-Nitrosodiphenylamine	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Pentachlorophenol	< 7.09	U	ug/kg dw	1	14.2	7.09		08/16/2016 04:02	JLL
	Phenanthrene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
	Phenol	< 7.09	U	ug/kg dw	1	14.2	7.09		08/16/2016 04:02	JLL
	Pyrene	< 3.54	U	ug/kg dw	1	7.09	3.54		08/16/2016 04:02	JLL
SW846 9014	Cyanide, Total		**Batch ID:** Qb16081837		**Prep Info:** PB16081815		SW846 9010C		08/12/2016 11:20	ARC
	Cyanide, Total	< 0.71	U	mg/kg dw	1	1.42	0.71		08/12/2016 13:29	ARC
SW846 9060A	Total Organic Carbon		**Batch ID:** Qb16081831		**Prep Info:**					
	Total Organic Carbon	2.73		%	1	0.140	0.071		08/16/2016 14:09	ARC
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	82.3		%	1			70-130	08/18/2016 08:10	EM
	1-Chlorooctane(surr)	85.0		%	1			70-130	08/18/2016 08:10	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081709		**Prep Info:** PB16081706		TCEQ 1005		08/17/2016 13:00	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-06-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.21	Time Collected:	09:41
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081709		**Prep Info:** PB16081706			TCEQ 1005	08/17/2016 13:00	EM
	TPH, C6-C35	< 28.3	U	mg/kg dw	1	142	28.3		08/18/2016 08:10	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-S
Job Sample ID: 1608151.22
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
Calculation	Chromium, Trivalent		**Batch ID:** Qb16090103		**Prep Info:**					
	Trivalent Chromium	15.1		mg/kg dw	1	2.68	1.34		09/01/2016 11:10	MM
EPA 160.4	Volatile Solids, Total		**Batch ID:** Qb16081829		**Prep Info:**					
	Volatile Solids	7.89		%	1	1.00	0.010		08/10/2016 18:22	ARC
EPA 200.8	Metals, Total		**Batch ID:** Qb16083002		**Prep Info:** PB16083002		EPA 200.2		08/30/2016 09:48	CL
	Antimony	< 0.268	U	mg/kg	1	0.268	0.030		08/30/2016 23:40	CL
	Arsenic	6.40		mg/kg	1	0.134	0.0067		08/30/2016 23:40	CL
	Beryllium	0.943		mg/kg	1	0.054	0.011		08/30/2016 23:40	CL
	Cadmium	< 0.268	J	mg/kg	1	0.268	0.013		08/30/2016 23:40	CL
	Chromium	15.1		mg/kg	1	0.804	0.040		08/30/2016 23:40	CL
	Copper	14.0		mg/kg	1	0.268	0.046		08/30/2016 23:40	CL
	Lead	13.6		mg/kg	1	0.134	0.0067		08/30/2016 23:40	CL
	Nickel	17.1		mg/kg	1	0.268	0.013		08/30/2016 23:40	CL
	Selenium	2.81	B	mg/kg	1	0.536	0.110		08/30/2016 23:40	CL
	Silver	< 0.134	J	mg/kg	1	0.134	0.0067		08/30/2016 23:40	CL
	Thallium	< 0.134	J	mg/kg	1	0.134	0.005		08/30/2016 23:40	CL
	Zinc	53.8		mg/kg	1	0.536	0.030		08/30/2016 23:40	CL
EPA 350.2	Ammonia		**Batch ID:** Qb16081833		**Prep Info:**					
	Ammonia as N	209	J	mg/kg dw	1	268	53.6		08/17/2016 16:00	ARC
SM 2540 G	Solids, Total		**Batch ID:** Qb16081828		**Prep Info:**					
	% Solids	37.3		%	1	1.00	0.010		08/10/2016 18:22	ARC

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-S
Job Sample ID: 1608151.22
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 7196A	Chromium, Hexavalent		**Batch ID:** Qb16081835		**Prep Info:**					
	Chromium, Hexavalent	< 1.34	U	mg/kg	1	2.68	1.34		08/17/2016 16:20	ARC
SW846 7471B	Mercury, Total		**Batch ID:** Qb16081903		**Prep Info:**	PB16081903	SW846 7471B		08/18/2016 15:06	MBW
	Mercury	< 0.027	U	mg/kg dw	1	0.054	0.027		08/19/2016 08:28	MBW
SW846 8081B	Organochlorine Pesticides		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	60.5		%	1			60-140	08/18/2016 00:57	
	Decachlorobiphenyl(surr)	95.7		%	1			60-140	08/18/2016 00:57	
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:**	PB16081803	SW846 3570		08/12/2016 08:54	
	4,4-DDD	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	4,4-DDE	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	4,4-DDT	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	a-BHC	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	a-Chlordane	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	Aldrin	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	b-BHC	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	Chlordane	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	d-BHC	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	Dieldrin	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	Endosulfan I	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	Endosulfan II	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	Endosulfan sulfate	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-S
Job Sample ID: 1608151.22
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8081B	Organochlorine Pesticides		**Batch ID:** Qb16081806		**Prep Info:** PB16081803		SW846 3570		08/12/2016 08:54	
	Endrin	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	Endrin aldehyde	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	Endrin ketone	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	g-BHC	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	Heptachlor	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	Heptachlor epoxide	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	Toxaphene	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
	y-Chlordane	< 0.402	U	ug/kg dw	1	0.804	0.402		08/18/2016 00:57	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:**		**Prep Info:**					
	2,4,5,6 Tetrachloro-m-xylene(surr)	188	S	%	1			60-140	08/11/2016 13:56	
	Decachlorobiphenyl(surr)	215	S	%	1			60-140	08/11/2016 13:56	
SW846 8082A	Polychlorinated Biphenyls		**Batch ID:** Qb16081601		**Prep Info:** PB16081601		SW846 3570		08/08/2016 11:14	
	Total PCBs	< 2.68	U	ug/kg dw	1	5.36	2.68		08/11/2016 13:56	
SW846 8260C	Volatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	1,2-Dichloroethane-d4(surr)	94.6		%	1			50-150	08/09/2016 17:52	EM
	4-Bromofluorobenzene(surr)	78.4		%	1			50-150	08/09/2016 17:52	EM
	Dibromofluoromethane(surr)	91.9		%	1			50-150	08/09/2016 17:52	EM
	Toluene-d8(surr)	93.9		%	1			50-150	08/09/2016 17:52	EM
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Ethylbenzene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 17:52	JM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-S
Job Sample ID: 1608151.22
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8260C	Volatile Organic Compounds		**Batch ID:** Qb16081706		**Prep Info:**					
	Tetrachloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 17:52	JM
	Trichloroethylene	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 17:52	JM
	xylenes (total)	< 2.50	U	ug/kg dw	1	5.00	2.50		08/09/2016 17:52	JM
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:**		**Prep Info:**					
	2,4,6-Tribromophenol(surr)	100		%	1			60-140	08/16/2016 04:37	JLL
	2-Fluorobiphenyl(surr)	79.1		%	1			60-140	08/16/2016 04:37	JLL
	2-Fluorophenol(surr)	145	S	%	1			60-140	08/16/2016 04:37	JLL
	Nitrobenzene-d5(surr)	72.3		%	1			60-140	08/16/2016 04:37	JLL
	Phenol-d5(surr)	143	S	%	1			60-140	08/16/2016 04:37	JLL
	Terphenyl-d14(surr)	21.9	S	%	1			60-140	08/16/2016 04:37	JLL
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	1,2,4-Trichlorobenzene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	1,2-Dichlorobenzene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	1,2-Diphenylhydrazine as Azobenzene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	1,3-Dichlorobenzene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	1,4-Dichlorobenzene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	2,4,6-Trichlorophenol	< 6.70	U	ug/kg dw	1	13.4	6.70		08/16/2016 04:37	JLL
	2,4-Dichlorophenol	< 6.70	U	ug/kg dw	1	13.4	6.70		08/16/2016 04:37	JLL
	2,4-Dimethylphenol	< 6.70	U	ug/kg dw	1	13.4	6.70		08/16/2016 04:37	JLL
	2,4-Dinitrophenol	< 107	U	ug/kg dw	1	214	107		08/16/2016 04:37	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-S
Job Sample ID: 1608151.22
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	2,4-Dinitrotoluene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	2,6-Dinitrotoluene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	2-Chloronaphthalene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	2-Chlorophenol	< 6.70	U	ug/kg dw	1	13.4	6.70		08/16/2016 04:37	JLL
	2-Methylnaphthalene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	2-Methylphenol	< 6.70	U	ug/kg dw	1	13.4	6.70		08/16/2016 04:37	JLL
	2-Nitrophenol	< 6.70	U	ug/kg dw	1	13.4	6.70		08/16/2016 04:37	JLL
	3,3-Dichlorobenzidine	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	4,6-Dinitro-2-methylphenol	< 26.8	U	ug/kg dw	1	53.6	26.8		08/16/2016 04:37	JLL
	4-Bromophenyl phenyl ether	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	4-Chloro-3-methylphenol	< 6.70	U	ug/kg dw	1	13.4	6.70		08/16/2016 04:37	JLL
	4-Chlorophenyl phenyl ether	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	4-Methylphenol	< 6.70	U	ug/kg dw	1	13.4	6.70		08/16/2016 04:37	JLL
	4-Nitrophenol	< 6.70	U	ug/kg dw	1	13.4	6.70		08/16/2016 04:37	JLL
	Acenaphthene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Acenaphthylene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Anthracene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Benzidine	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Benzo(a)anthracene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Benzo(a)pyrene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Benzo(b)fluoranthene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-S
Job Sample ID: 1608151.22
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Benzo(g,h,i)perylene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Benzo(k)fluoranthene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Benzoic acid	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Benzyl alcohol	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Bis(2-chloroethoxy) methane	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Bis(2-chloroethyl) ether	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Bis(2-chloroisopropyl) ether	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Bis(2-ethylhexyl)phthalate	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Butyl benzyl phthalate	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Chrysene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Dibenzo(a,h)anthracene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Dibenzofuran	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Diethyl phthalate	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Dimethyl phthalate	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Di-n-butyl phthalate	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Di-n-octyl Phthalate	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Fluoranthene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Fluorene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Hexachlorobenzene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Hexachlorobutadiene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Hexachlorocyclopentadiene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name: Lloyd Engineering, Inc. Attn: Marisa Weber
Project ID: Quintana Terminal Dock 1

Job ID : 1608151
Client Sample ID: QI-16-07-S
Job Sample ID: 1608151.22
Other Information:

Sample Matrix: Sediment
Date Collected: 08/04/2016
Time Collected: 10:40

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
SW846 8270D	Semivolatile Organic Compounds		**Batch ID:** Qb16081603		**Prep Info:** PB16081603		SW846 3570		08/09/2016 10:03	
	Hexachloroethane	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Indeno(1,2,3-cd)pyrene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Isophorone	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Naphthalene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Nitrobenzene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	n-Nitrosodimethylamine	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	n-nitroso-di-n-propylamine	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	n-Nitrosodiphenylamine	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Pentachlorophenol	< 6.70	U	ug/kg dw	1	13.4	6.70		08/16/2016 04:37	JLL
	Phenanthrene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
	Phenol	< 6.70	U	ug/kg dw	1	13.4	6.70		08/16/2016 04:37	JLL
	Pyrene	< 3.35	U	ug/kg dw	1	6.70	3.35		08/16/2016 04:37	JLL
SW846 9014	Cyanide, Total		**Batch ID:** Qb16081837		**Prep Info:** PB16081815		SW846 9010C		08/12/2016 11:20	ARC
	Cyanide, Total	< 0.67	U	mg/kg dw	1	1.34	0.67		08/12/2016 13:29	ARC
SW846 9060A	Total Organic Carbon		**Batch ID:** Qb16081831		**Prep Info:**					
	Total Organic Carbon	1.52		%	1	0.130	0.067		08/16/2016 14:09	ARC
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:**		**Prep Info:**					
	1-Chlorooctadecane(surr)	75.8		%	1			70-130	08/18/2016 08:41	EM
	1-Chlorooctane(surr)	89.2		%	1			70-130	08/18/2016 08:41	EM
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081709		**Prep Info:** PB16081706		TCEQ 1005		08/17/2016 13:00	EM

SAMPLE RESULTS

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name:	Lloyd Engineering, Inc.	Attn:	Marisa Weber
Project ID:	Quintana Terminal Dock 1		

Job ID :	1608151	Sample Matrix:	Sediment
Client Sample ID:	QI-16-07-S	Date Collected:	08/04/2016
Job Sample ID:	1608151.22	Time Collected:	10:40
Other Information:			

Test Method	Parameter	Result	Q	Units	DF	LRL	SDL	%Rec Ctrl Limit	Date/Time Analyzed	Analyst
TCEQ 1005	Total Petroleum Hydrocarbons		**Batch ID:** Qb16081709		**Prep Info:** PB16081706			TCEQ 1005	08/17/2016 13:00	EM
	TPH, C6-C35	< 26.8	U	mg/kg dw	1	134	26.8		08/18/2016 08:41	EM

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Polychlorinated Biphenyls **Method : SW846 8082A** **Units : ug/kg dw**

QC Batch ID : Qb16081601

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

Sample Preparation PB16081601 **Prep Method:** SW846 3570 **Prep Date:** **By:** Sotruba

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Total PCBs		< 2.00	1	2.00	1.00	
MB	2,4,5,6 Tetrachloro-m-xylene (Surr)		0.989	1			S
MB	Decachlorobiphenyl (Surr)	2051-24-3	1.12	1			S

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	Total PCBs	6	6.41	107	6	7.32	122	13.26	40	60-140	
LCS	2,4,5,6 Tetrachloro-m-xylene (Surr)	0.600	0.692	115	0.600	0.993	166			60-140	S
LCS	Decachlorobiphenyl (Surr)	0.600	1.19	198	0.600	1.30	217			60-140	S

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.16	Total PCBs	< 2.50	6	5.91	98.5	6	6.84	114	14.59	40	60-140	
MS	1608151.16	2,4,5,6 Tetrachloro-m-xylene (Surr)		0.600	0.864	144	0.600	0.907	151			60-140	S
MS	1608151.16	Decachlorobiphenyl (Surr)		0.600	1.13	188	0.600	1.19	198			60-140	S

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Polychlorinated Biphenyls **Method : SW846 8082A** **Units : ug/L**

QC Batch ID : Qb16081602

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08,09,10,11,12,13,14,15

Sample Preparation PB16081602 **Prep Method:** SW846 3511 **Prep Date:** **By:** Sotruba

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Total PCBs		< 0.012	1	0.012	0.006	
MB	2,4,5,6 Tetrachloro-m-xylene (Surr)		0.171	1			S
MB	Decachlorobiphenyl (Surr)	2051-24-3	0.194	1			S

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	Total PCBs	1.2	1.08	90.0	1.2	1.06	88.3	1.87	40	60-140	
LCS	2,4,5,6 Tetrachloro-m-xylene (Surr)	0.12	0.174	145	0.12	0.175	146			60-140	S
LCS	Decachlorobiphenyl (Surr)	0.12	0.146	122	0.12	0.183	153			60-140	S

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.02	Total PCBs	< 0.006	1.2	1.05	87.5	1.2	1.05	87.5	0.00	40	60-140	
MS	1608151.02	2,4,5,6 Tetrachloro-m-xylene (Surr)		0.12	0.174	145	0.12	0.176	147			60-140	S
MS	1608151.02	Decachlorobiphenyl (Surr)		0.12	0.166	138	0.12	0.161	134			60-140	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/kg dw**

QC Batch ID : Qb16081603

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

Sample Preparation PB16081603 **Prep Method:** SW846 3570 **Prep Date:** **By:** Sotruba

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	1,2,4-Trichlorobenzene	120-82-1	< 2.50	1	2.50	1.25	
MB	1,2-Dichlorobenzene	95-50-1	< 2.50	1	2.50	1.25	
MB	1,2-Diphenylhydrazine as Azobenzene	122-66-7	< 2.50	1	2.50	1.25	
MB	1,3-Dichlorobenzene	541-73-1	< 2.50	1	2.50	1.25	
MB	1,4-Dichlorobenzene	106-46-7	< 2.50	1	2.50	1.25	
MB	2,4,6-Trichlorophenol	88-06-2	< 5.00	1	5.00	2.50	
MB	2,4-Dichlorophenol	120-83-2	< 5.00	1	5.00	2.50	
MB	2,4-Dimethylphenol	105-67-9	< 5.00	1	5.00	2.50	
MB	2,4-Dinitrophenol	51-28-5	< 80.0	1	80.0	40.0	
MB	2,4-Dinitrotoluene	121-14-2	< 2.50	1	2.50	1.25	
MB	2,6-Dinitrotoluene	606-20-2	< 2.50	1	2.50	1.25	
MB	2-Chloronaphthalene	91-58-7	< 2.50	1	2.50	1.25	
MB	2-Chlorophenol	95-57-8	< 5.00	1	5.00	2.50	
MB	2-Methylnaphthalene	91-57-6	< 2.50	1	2.50	1.25	
MB	2-Methylphenol	95-48-7	< 5.00	1	5.00	2.50	
MB	2-Nitrophenol	88-75-5	< 5.00	1	5.00	2.50	
MB	3,3-Dichlorobenzidine	91-94-1	< 2.50	1	2.50	1.25	
MB	4,6-Dinitro-2-methylphenol	534-52-1	< 20.0	1	20.0	10.0	
MB	4-Bromophenyl phenyl ether	101-55-3	< 2.50	1	2.50	1.25	
MB	4-Chloro-3-methylphenol	59-50-7	< 5.00	1	5.00	2.50	
MB	4-Chlorophenyl phenyl ether	7005-72-3	< 2.50	1	2.50	1.25	
MB	4-Methylphenol	106-44-5	< 5.00	1	5.00	2.50	
MB	4-Nitrophenol	100-02-7	< 5.00	1	5.00	2.50	
MB	Acenaphthene	83-32-9	< 2.50	1	2.50	1.25	
MB	Acenaphthylene	208-96-8	< 2.50	1	2.50	1.25	
MB	Anthracene	120-12-7	< 2.50	1	2.50	1.25	
MB	Benzidine	92-87-5	< 2.50	1	2.50	1.25	
MB	Benzo(a)anthracene	56-55-3	< 2.50	1	2.50	1.25	
MB	Benzo(a)pyrene	50-32-8	< 2.50	1	2.50	1.25	
MB	Benzo(b)fluoranthene	205-99-2	< 2.50	1	2.50	1.25	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/kg dw**

QC Batch ID : Qb16081603

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Benzo(g,h,i)perylene	191-24-2	< 2.50	1	2.50	1.25	
MB	Benzo(k)fluoranthene	207-08-9	< 2.50	1	2.50	1.25	
MB	Benzoic acid	65-85-0	< 2.50	1	2.50	1.25	
MB	Benzyl alcohol	100-51-6	< 2.50	1	2.50	1.25	
MB	Bis(2-chloroethoxy) methane	111-91-1	< 2.50	1	2.50	1.25	
MB	Bis(2-chloroethyl) ether	111-44-4	< 2.50	1	2.50	1.25	
MB	Bis(2-chloroisopropyl) ether	108-60-1	< 2.50	1	2.50	1.25	
MB	Bis(2-ethylhexyl)phthalate	117-81-7	< 2.50	1	2.50	1.25	
MB	Butyl benzyl phthalate	85-68-7	< 2.50	1	2.50	1.25	
MB	Chrysene	218-01-9	< 2.50	1	2.50	1.25	
MB	Dibenzo(a,h)anthracene	53-70-3	< 2.50	1	2.50	1.25	
MB	Dibenzofuran	132-64-9	< 2.50	1	2.50	1.25	
MB	Diethyl phthalate	84-66-2	< 2.50	1	2.50	1.25	
MB	Dimethyl phthalate	131-11-3	< 2.50	1	2.50	1.25	
MB	Di-n-butyl phthalate	84-74-2	< 2.50	1	2.50	1.25	
MB	Di-n-octyl Phthalate	117-84-0	< 2.50	1	2.50	1.25	
MB	Fluoranthene	206-44-0	< 2.50	1	2.50	1.25	
MB	Fluorene	86-73-7	< 2.50	1	2.50	1.25	
MB	Hexachlorobenzene	118-74-1	< 2.50	1	2.50	1.25	
MB	Hexachlorobutadiene	87-68-3	< 2.50	1	2.50	1.25	
MB	Hexachlorocyclopentadiene	77-47-4	< 2.50	1	2.50	1.25	
MB	Hexachloroethane	67-72-1	< 2.50	1	2.50	1.25	
MB	Indeno(1,2,3-cd)pyrene	193-39-5	< 2.50	1	2.50	1.25	
MB	Isophorone	78-59-1	< 2.50	1	2.50	1.25	
MB	Naphthalene	91-20-3	< 2.50	1	2.50	1.25	
MB	Nitrobenzene	98-95-3	< 2.50	1	2.50	1.25	
MB	n-Nitrosodimethylamine	62-75-9	< 2.50	1	2.50	1.25	
MB	n-nitroso-di-n-propylamine	621-64-7	< 2.50	1	2.50	1.25	
MB	n-Nitrosodiphenylamine	86-30-6	< 2.50	1	2.50	1.25	
MB	Pentachlorophenol	87-86-5	< 5.00	1	5.00	2.50	
MB	Phenanthrene	85-01-8	< 2.50	1	2.50	1.25	
MB	Phenol	108-95-2	< 5.00	1	5.00	2.50	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/kg dw**

QC Batch ID : Qb16081603

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Pyrene	129-00-0	< 2.50	1	2.50	1.25	
MB	2-Fluorophenol (Surr)	367-12-4	54.2	1			
MB	Phenol-d5 (Surr)		67.0	1			
MB	Nitrobenzene-d5 (Surr)	4165-60-0	23.7	1			S
MB	2-Fluorobiphenyl (Surr)	132-60-8	40.0	1			
MB	2,4,6-Tribromophenol (Surr)	118-79-6	6.38	1			S
MB	Terphenyl-d14 (Surr)		25.8	1			

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	1,2,4-Trichlorobenzene	40	20.7	51.7	40	19.5	48.8	5.92	40	60-140	J1
LCSD	1,2-Dichlorobenzene	40	29.2	73.0	40	22.9	57.3	24.12	40	60-140	J1
LCSD	1,2-Diphenylhydrazine as Azobenzene	40	33.4	83.4	40	33.5	83.8	0.45	40	60-140	
LCSD	1,3-Dichlorobenzene	40	21.1	52.9	40	17.6	44	18.28	40	60-140	J1
LCSD	1,4-Dichlorobenzene	40	23.3	58.4	40	19.8	49.6	16.41	40	60-140	J1
LCSD	2,4,6-Trichlorophenol	80	61.4	76.8	80	60.2	75.3	1.97	40	60-140	
LCSD	2,4-Dichlorophenol	80	61.2	76.5	80	60.5	75.7	1.13	40	60-140	
LCSD	2,4-Dimethylphenol	80	59.7	74.6	80	59.7	74.6	0.00	40	60-140	
LCSD	2,4-Dinitrophenol	80	94.1	118	80	179	223	62.15	40	60-140	J1
LCSD	2,4-Dinitrotoluene	40	35.0	87.5	40	29.9	74.7	15.66	40	60-140	
LCSD	2,6-Dinitrotoluene	40	35.0	87.5	40	34.4	86.1	1.67	40	60-140	
LCSD	2-Chloronaphthalene	40	26.4	65.9	40	26.8	66.9	1.62	40	60-140	
LCSD	2-Chlorophenol	80	78.1	97.6	80	77.4	96.7	0.87	40	60-140	
LCSD	2-Methylnaphthalene	40	26.6	66.4	40	27.1	67.7	2.01	40	60-140	
LCSD	2-Methylphenol	80	60.2	75.2	80	63.1	78.9	4.74	40	60-140	
LCSD	2-Nitrophenol	80	57.5	71.9	80	59.9	74.9	4.11	40	60-140	
LCSD	3,3-Dichlorobenzidine	40	24.8	62.1	40	28.3	70.8	13.06	40	60-140	
LCSD	4,6-Dinitro-2-methylphenol	80	155	194	80	100	125	43.52	40	60-140	J1
LCSD	4-Bromophenyl phenyl ether	40	29.5	73.8	40	28.9	72.4	2.16	40	60-140	
LCSD	4-Chloro-3-methylphenol	80	55.4	69.3	80	61.8	77.2	10.90	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/kg dw**

QC Batch ID : Qb16081603

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	4-Chlorophenyl phenyl ether	40	29.7	74.3	40	29.8	74.6	0.24	40	60-140	
LCSD	4-Methylphenol	80	54.9	68.6	80	56.7	70.9	3.21	40	60-140	
LCSD	4-Nitrophenol	80	40.0	50.1	80	52.8	66	27.49	40	60-140	J1
LCSD	Acenaphthene	40	30.6	76.5	40	29.2	73.1	4.62	40	60-140	
LCSD	Acenaphthylene	40	30.3	75.8	40	29.3	73.2	3.39	40	60-140	
LCSD	Anthracene	40	32.7	81.7	40	31.7	79.2	2.98	40	60-140	
LCSD	Benzidine	40	9.70	24.3	40	9.86	24.7	1.64	40	60-140	J1
LCSD	Benzo(a)anthracene	40	31.7	79.2	40	31.4	78.6	0.92	40	60-140	
LCSD	Benzo(a)pyrene	40	31.9	79.8	40	31.4	78.4	1.61	40	60-140	
LCSD	Benzo(b)fluoranthene	40	32.5	81.3	40	31.1	77.7	4.40	40	60-140	
LCSD	Benzo(g,h,i)perylene	40	36.2	90.5	40	34.6	86.4	4.46	40	60-140	
LCSD	Benzo(k)fluoranthene	40	34.2	85.4	40	32.1	80.2	6.22	40	60-140	
LCSD	Benzoic acid	40	29.4	73.6	40	29.6	74.1	0.54	40	60-140	
LCSD	Benzyl alcohol	40	49.4	123	40	49.8	124	0.89	40	60-140	
LCSD	Bis(2-chloroethoxy) methane	40	34.7	86.8	40	32.5	81.3	6.63	40	60-140	
LCSD	Bis(2-chloroethyl) ether	40	37.3	93.2	40	37.6	94	0.83	40	60-140	
LCSD	Bis(2-chloroisopropyl) ether	40	94.2	235	40	84.3	211	11.07	40	60-140	J1
LCSD	Bis(2-ethylhexyl)phthalate	40	37.6	94.0	40	40.4	101	7.23	40	60-140	
LCSD	Butyl benzyl phthalate	40	37.9	94.8	40	40.1	100	5.59	40	60-140	
LCSD	Chrysene	40	29.8	74.4	40	28.9	72.3	2.97	40	60-140	
LCSD	Dibenzo(a,h)anthracene	40	37.3	93.2	40	35.6	89	4.64	40	60-140	
LCSD	Dibenzofuran	40	28.4	71.1	40	27.6	69.1	2.96	40	60-140	
LCSD	Diethyl phthalate	40	35.6	89.0	40	35.7	89.3	0.34	40	60-140	
LCSD	Dimethyl phthalate	40	30.6	76.6	40	28.1	70.4	8.65	40	60-140	
LCSD	Di-n-butyl phthalate	40	36.7	91.7	40	36.6	91.6	0.22	40	60-140	
LCSD	Di-n-octyl Phthalate	40	38.2	95.5	40	39.5	98.9	3.40	40	60-140	
LCSD	Fluoranthene	40	33.2	83.1	40	31.9	79.9	4.05	40	60-140	
LCSD	Fluorene	40	28.6	71.5	40	28.9	72.3	1.01	40	60-140	
LCSD	Hexachlorobenzene	40	28.3	70.8	40	26.8	66.9	5.48	40	60-140	
LCSD	Hexachlorobutadiene	40	39.0	97.4	40	31.6	79.1	20.89	40	60-140	
LCSD	Hexachlorocyclopentadiene	40	6.19	15.5	40	6.90	17.3	10.85	40	60-140	J1
LCSD	Hexachloroethane	40	52.1	130	40	47.0	118	10.27	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/kg dw**

QC Batch ID : Qb16081603

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	Indeno(1,2,3-cd)pyrene	40	35.3	88.2	40	34.2	85.5	3.11	40	60-140	
LCSD	Isophorone	40	18.3	45.7	40	18.3	45.7	0.05	40	60-140	J1
LCSD	Naphthalene	40	28.1	70.2	40	26.5	66.3	5.72	40	60-140	
LCSD	Nitrobenzene	40	31.5	78.7	40	30.6	76.6	2.77	40	60-140	
LCSD	n-Nitrosodimethylamine	40	76.0	190	40	47.9	120	45.31	40	60-140	J1
LCSD	n-nitroso-di-n-propylamine	40	95.6	239	40	89.2	223	6.87	40	60-140	J1
LCSD	n-Nitrosodiphenylamine	40	33.0	82.4	40	32.7	81.7	0.79	40	60-140	
LCSD	Pentachlorophenol	80	5.94	7.43	80	30.8	38.6	135.33	40	60-140	J1
LCSD	Phenanthrene	40	26.6	66.5	40	25.0	62.5	6.16	40	60-140	
LCSD	Phenol	80	78.2	97.8	80	80.0	100	2.25	40	60-140	
LCSD	Pyrene	40	25.8	64.6	40	25.4	63.6	1.68	40	60-140	
LCS	2-Fluorophenol (Surr)	80	106	132	80	97.8	122			60-140	
LCS	Phenol-d5 (Surr)	80	122	153	80	113	141			60-140	S
LCS	Nitrobenzene-d5 (Surr)	40	29.7	74.3	40	29.7	74.2			60-140	
LCS	2-Fluorobiphenyl (Surr)	40	45.4	114	40	39.6	99			60-140	
LCS	2,4,6-Tribromophenol (Surr)	80	97.0	121	80	103	128			60-140	
LCS	Terphenyl-d14 (Surr)	40	20.3	50.7	40	19.3	48.2			60-140	S

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.18	1,2,4-Trichlorobenzene	< 3.20	40	20.2	50.5	40	18.4	46.1	9.12	40	60-140	J1
MS	1608151.18	1,2-Dichlorobenzene	< 3.20	40	32.7	81.7	40	29.6	74.1	9.82	40	60-140	
MS	1608151.18	1,2-Diphenylhydrazine as Azobenzene	< 3.20	40	32.0	80	40	31.9	79.7	0.38	40	60-140	
MS	1608151.18	1,3-Dichlorobenzene	< 3.20	40	25.2	63.1	40	20.5	51.2	20.96	40	60-140	J1
MS	1608151.18	1,4-Dichlorobenzene	< 3.20	40	32.2	80.4	40	19.4	48.5	49.45	40	60-140	J1
MS	1608151.18	2,4,6-Trichlorophenol	< 6.40	80	78.8	98.6	80	65.5	81.9	18.45	40	60-140	
MS	1608151.18	2,4-Dichlorophenol	< 6.40	80	69.9	87.4	80	60.5	75.6	14.41	40	60-140	
MS	1608151.18	2,4-Dimethylphenol	< 6.40	80	67.0	83.7	80	59.2	74	12.37	40	60-140	
MS	1608151.18	2,4-Dinitrophenol	< 102	80	223	279	80	244	305	8.79	40	60-140	J1
MS	1608151.18	2,4-Dinitrotoluene	< 3.20	40	28.4	71	40	27.7	69.4	2.39	40	60-140	
MS	1608151.18	2,6-Dinitrotoluene	< 3.20	40	42.4	106	40	41.7	104	1.76	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/kg dw**

QC Batch ID : Qb16081603

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.18	2-Chloronaphthalene	< 3.20	40	24.4	60.9	40	22.1	55.2	9.82	40	60-140	J1
MS	1608151.18	2-Chlorophenol	< 6.40	40	95.7	239	80	79.6	99.5	18.34	40	60-140	J1
MS	1608151.18	4,6-Dinitro-2-methylphenol	< 25.6	80	163	203	80	142	178	13.56	40	60-140	J1
MS	1608151.18	2-Methylnaphthalene	< 3.20	40	25.1	62.7	40	23.0	57.6	8.40	40	60-140	J1
MS	1608151.18	2-Methylphenol	< 6.40	80	72.0	90	80	52.4	65.4	31.59	40	60-140	
MS	1608151.18	2-Nitrophenol	< 6.40	80	53.0	66.2	80	49.9	62.3	6.05	40	60-140	
MS	1608151.18	3,3-Dichlorobenzidine	< 3.20	40	17.9	44.7	40	12.4	31.1	36.09	40	60-140	J1
MS	1608151.18	4-Bromophenyl phenyl ether	< 3.20	40	22.7	56.8	40	20.4	51	10.76	40	60-140	J1
MS	1608151.18	4-Chloro-3-methylphenol	< 6.40	80	62.9	78.6	80	61.3	76.7	2.54	40	60-140	
MS	1608151.18	4-Chlorophenyl phenyl ether	< 3.20	40	24.5	61.4	40	24.2	60.4	1.56	40	60-140	
MS	1608151.18	4-Methylphenol	< 6.40	80	65.2	81.5	80	52.1	65.2	22.25	40	60-140	
MS	1608151.18	4-Nitrophenol	< 6.40	80	45.3	56.7	80	12.1	15.1	115.85	40	60-140	J1
MS	1608151.18	Acenaphthene	< 3.20	40	28.6	71.4	40	25.7	64.3	10.50	40	60-140	
MS	1608151.18	Acenaphthylene	< 3.20	40	31.5	78.8	40	28.8	72.1	8.88	40	60-140	
MS	1608151.18	Anthracene	< 3.20	40	28.5	71.2	40	25.3	63.4	11.60	40	60-140	
MS	1608151.18	Benzidine	< 3.20	40	15.8	39.6	40	17.4	43.5	9.45	40	60-140	J1
MS	1608151.18	Benzo(a)anthracene	< 3.20	40	25.2	63	40	22.4	55.9	11.98	40	60-140	J1
MS	1608151.18	Benzo(a)pyrene	< 3.20	40	22.7	56.7	40	20.6	51.6	9.47	40	60-140	J1
MS	1608151.18	Benzo(b)fluoranthene	< 3.20	40	19.5	48.7	40	17.3	43.2	11.97	40	60-140	J1
MS	1608151.18	Benzo(g,h,i)perylene	< 3.20	40	20.8	52.1	40	19.5	48.9	6.44	40	60-140	J1
MS	1608151.18	Benzo(k)fluoranthene	< 3.20	40	19.8	49.4	40	18.4	45.9	7.34	40	60-140	J1
MS	1608151.18	Benzoic acid	< 3.20	40	33.3	83.2	40	28.8	72	14.44	40	60-140	
MS	1608151.18	Benzyl alcohol	< 3.20	40	55.4	139	40	38.4	95.9	36.43	40	60-140	
MS	1608151.18	Bis(2-chloroethoxy) methane	< 3.20	40	39.2	98	40	35.4	88.6	10.16	40	60-140	
MS	1608151.18	Bis(2-chloroethyl) ether	< 3.20	40	43.8	109	40	34.0	85.1	24.98	40	60-140	
MS	1608151.18	Bis(2-chloroisopropyl) ether	< 3.20	40	134	336	40	104	261	25.16	40	60-140	J1
MS	1608151.18	Bis(2-ethylhexyl)phthalate	< 3.20	40	36.8	91.9	40	34.3	85.8	6.87	40	60-140	
MS	1608151.18	Butyl benzyl phthalate	< 3.20	40	40.0	100	40	36.4	91.1	9.31	40	60-140	
MS	1608151.18	Chrysene	< 3.20	40	22.4	56.1	40	19.0	47.6	16.30	40	60-140	J1
MS	1608151.18	Dibenzo(a,h)anthracene	< 3.20	40	22.3	55.8	40	21.0	52.5	6.09	40	60-140	J1
MS	1608151.18	Dibenzofuran	< 3.20	40	26.4	65.9	40	24.3	60.8	8.09	40	60-140	
MS	1608151.18	Diethyl phthalate	< 3.20	40	37.0	92.5	40	37.0	92.6	0.08	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/kg dw**

QC Batch ID : Qb16081603

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.18	Dimethyl phthalate	< 3.20	40	29.3	73.3	40	26.6	66.5	9.66	40	60-140	
MS	1608151.18	Di-n-butyl phthalate	< 3.20	40	35.0	87.4	40	31.9	79.7	9.18	40	60-140	
MS	1608151.18	Di-n-octyl Phthalate	< 3.20	40	32.0	80.1	40	30.6	76.4	4.76	40	60-140	
MS	1608151.18	Fluoranthene	< 3.20	40	28.3	70.7	40	25.2	63.1	11.36	40	60-140	
MS	1608151.18	Fluorene	< 3.20	40	27.6	68.9	40	27.0	67.6	2.02	40	60-140	
MS	1608151.18	Hexachlorobenzene	< 3.20	40	18.9	47.3	40	17.0	42.5	10.74	40	60-140	J1
MS	1608151.18	Hexachlorobutadiene	< 3.20	40	47.9	120	40	42.5	106	12.03	40	60-140	
MS	1608151.18	Hexachlorocyclopentadiene	< 3.20	40	4.98	12.5	40	4.32	10.8	14.19	40	60-140	J1
MS	1608151.18	Hexachloroethane	< 3.20	40	70.5	176	40	47.1	118	39.73	40	60-140	J1
MS	1608151.18	Indeno(1,2,3-cd)pyrene	< 3.20	40	22.3	55.7	40	20.4	51.1	8.76	40	60-140	J1
MS	1608151.18	Isophorone	< 3.20	40	23.4	58.4	40	19.0	47.4	20.84	40	60-140	J1
MS	1608151.18	Naphthalene	< 3.20	40	29.9	74.7	40	27.2	68	9.40	40	60-140	
MS	1608151.18	Nitrobenzene	< 3.20	40	43.8	110	40	32.7	81.7	29.15	40	60-140	
MS	1608151.18	n-Nitrosodimethylamine	< 3.20	40	0.	0	40	64.9	162	NaN	40	60-140	J1
MS	1608151.18	n-nitroso-di-n-propylamine	< 3.20	40	61.6	154	40	90.6	226	38.14	40	60-140	J1
MS	1608151.18	n-Nitrosodiphenylamine	< 3.20	40	32.2	80.4	40	28.7	71.8	11.27	40	60-140	
MS	1608151.18	Pentachlorophenol	< 6.40	80	49.5	61.9	80	42.9	53.6	14.34	40	60-140	J1
MS	1608151.18	Phenanthrene	< 3.20	40	21.2	52.9	40	18.5	46.2	13.47	40	60-140	J1
MS	1608151.18	Phenol	< 6.40	80	92.5	116	80	74.6	93.3	21.46	40	60-140	
MS	1608151.18	Pyrene	< 3.20	40	20.3	50.8	40	18.7	46.8	8.35	40	60-140	J1
MS	1608151.18	2-Fluorophenol (Surr)		80	153	191	80	113	142			60-140	S
MS	1608151.18	Phenol-d5 (Surr)		80	167	208	80	117	146			60-140	S
MS	1608151.18	Nitrobenzene-d5 (Surr)		40	39.7	99.3	40	30.9	77.4			60-140	
MS	1608151.18	2-Fluorobiphenyl (Surr)		40	36.7	91.7	40	32.2	80.6			60-140	
MS	1608151.18	2,4,6-Tribromophenol (Surr)		80	132	165	80	123	154			60-140	S
MS	1608151.18	Terphenyl-d14 (Surr)		40	9.79	24.5	40	9.36	23.4			60-140	S

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Organochlorine Pesticides **Method : SW846 8081B** **Units : ug/L**

QC Batch ID : Qb16081604

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08,09,10,11,12,13,14,15

Extraction PB16081604 **Prep Method:** SW846 3511 **Prep Date:** **By:** Sotruba

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	a-Chlordane	5103-71-9	< 0.006	1	0.006	0.003	
MB	y-Chlordane	5103-74-2	< 0.006	1	0.006	0.003	
MB	4,4-DDD	72-54-8	< 0.012	1	0.012	0.003	
MB	4,4-DDE	72-55-9	< 0.012	1	0.012	0.003	
MB	4,4-DDT	50-29-3	< 0.012	1	0.012	0.003	
MB	Aldrin	309-00-2	< 0.006	1	0.006	0.003	
MB	a-BHC	319-84-6	< 0.006	1	0.006	0.003	
MB	b-BHC	319-85-7	< 0.006	1	0.006	0.003	
MB	Chlordane	57-74-9	< 0.006	1	0.006	0.003	
MB	d-BHC	319-86-8	< 0.006	1	0.006	0.003	
MB	Dieldrin	60-57-1	< 0.006	1	0.006	0.003	
MB	Endosulfan I	959-98-8	< 0.006	1	0.006	0.003	
MB	Endosulfan II	33213-65-9	< 0.006	1	0.006	0.003	
MB	Endosulfan sulfate	1031-07-8	< 0.006	1	0.006	0.003	
MB	Endrin	72-20-8	< 0.006	1	0.006	0.003	
MB	Endrin aldehyde	7421-93-4	< 0.006	1	0.006	0.003	
MB	Endrin ketone	53494-70-5	< 0.006	1	0.006	0.003	
MB	g-BHC	58-89-9	< 0.006	1	0.006	0.003	
MB	Heptachlor	76-44-8	< 0.006	1	0.006	0.003	
MB	Heptachlor epoxide	1024-57-3	< 0.006	1	0.006	0.003	
MB	Toxaphene	8001-35-2	< 0.300	1	0.300	0.150	
MB	Decachlorobiphenyl (Surr)	2051-24-3	0.176	1			S
MB	2,4,5,6 Tetrachloro-m-xylene (Surr)		0.179	1			S

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	4,4-DDD	0.12	0.166	138	0.12	0.166	138	0.00	40	60-140	
LCSD	4,4-DDE	0.12	0.135	113	0.12	0.136	113	0.74	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Organochlorine Pesticides **Method : SW846 8081B** **Units : ug/L**

QC Batch ID : Qb16081604

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08,09,10,11,12,13,14,15

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	4,4-DDT	0.12	0.164	137	0.12	0.168	140	2.41	40	60-140	
LCSD	Aldrin	0.12	0.0938	78.2	0.12	0.0981	81.8	4.48	40	60-140	
LCSD	a-BHC	0.12	0.124	103	0.12	0.129	108	3.95	40	60-140	
LCSD	b-BHC	0.12	0.137	114	0.12	0.143	119	4.29	40	60-140	
LCSD	Chlordane	0.48	0.482	100	0.48	0.498	104	3.27	40	60-140	
LCSD	d-BHC	0.12	0.137	114	0.12	0.142	118	3.58	40	60-140	
LCSD	Dieldrin	0.12	0.154	128	0.12	0.150	125	2.70	40	60-140	
LCSD	Endosulfan I	0.12	0.0609	50.8	0.12	0.062	51.7	1.79	40	60-140	J1
LCSD	Endosulfan II	0.12	0.0741	61.8	0.12	0.0749	62.4	1.07	40	60-140	
LCSD	Endosulfan sulfate	0.12	0.136	113	0.12	0.137	114	0.73	40	60-140	
LCSD	Endrin	0.12	0.149	124	0.12	0.149	124	0.00	40	60-140	
LCSD	Endrin aldehyde	0.12	0.145	121	0.12	0.150	125	3.39	40	60-140	
LCSD	Endrin ketone	0.12	0.150	125	0.12	0.150	125	0.00	40	60-140	
LCSD	g-BHC	0.12	0.134	112	0.12	0.143	119	6.50	40	60-140	
LCSD	Heptachlor	0.12	0.116	96.7	0.12	0.121	101	4.22	40	60-140	
LCSD	Heptachlor epoxide	0.12	0.132	110	0.12	0.135	113	2.25	40	60-140	
LCSD	Toxaphene	1.2	0.0000291	116	1.2	0.0000738	119	199.98	40	60-140	J1
LCS	Decachlorobiphenyl (Surr)	0.12	0.161	134						60-140	
LCS	2,4,5,6 Tetrachloro-m-xylene (Surr)	0.12	0.165	138	0.12	0.167	139			60-140	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.02	4,4-DDD	< 0.003	0.12	0.158	131	0.12	0.152	127	3.49	40	60-140	
MS	1608151.02	4,4-DDE	< 0.003	0.12	0.121	101	0.12	0.125	104	3.25	40	60-140	
MS	1608151.02	4,4-DDT	< 0.003	0.12	0.142	118	0.12	0.150	125	5.48	40	60-140	
MS	1608151.02	Aldrin	< 0.003	0.12	0.0896	74.7	0.12	0.0983	81.9	9.26	40	60-140	
MS	1608151.02	a-BHC	< 0.003	0.12	0.130	108	0.12	0.130	108	0.00	40	60-140	
MS	1608151.02	b-BHC	< 0.003	0.12	0.140	117	0.12	0.139	116	0.72	40	60-140	
MS	1608151.02	Chlordane	< 0.003	0.48	0.451	94	0.48	0.468	97.5	3.70	40	60-140	
MS	1608151.02	d-BHC	< 0.003	0.12	0.133	111	0.12	0.134	112	0.75	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Organochlorine Pesticides **Method : SW846 8081B** **Units : ug/L**

QC Batch ID : Qb16081604

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08,09,10,11,12,13,14,15

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.02	Dieldrin	< 0.003	0.12	0.152	126	0.12	0.147	123	2.88	40	60-140	
MS	1608151.02	Endosulfan I	< 0.003	0.12	0.0536	44.7	0.12	0.0551	45.9	2.76	40	60-140	J1
MS	1608151.02	Endosulfan II	< 0.003	0.12	0.0674	56.2	0.12	0.0694	57.8	2.92	40	60-140	J1
MS	1608151.02	Endosulfan sulfate	< 0.003	0.12	0.132	110	0.12	0.136	113	2.99	40	60-140	
MS	1608151.02	Endrin	< 0.003	0.12	0.141	118	0.12	0.146	122	3.48	40	60-140	
MS	1608151.02	Endrin aldehyde	< 0.003	0.12	0.136	113	0.12	0.143	119	5.02	40	60-140	
MS	1608151.02	Endrin ketone	< 0.003	0.12	0.154	128	0.12	0.155	129	0.65	40	60-140	
MS	1608151.02	g-BHC	< 0.003	0.12	0.138	115	0.12	0.138	115	0.00	40	60-140	
MS	1608151.02	Heptachlor	< 0.003	0.12	0.105	87.5	0.12	0.113	94.2	7.34	40	60-140	
MS	1608151.02	Heptachlor epoxide	< 0.003	0.12	0.126	105	0.12	0.128	107	1.58	40	60-140	
MS	1608151.02	Toxaphene	< 0.150	0.12	0.	0	0.12	< 0.150	0		40	60-140	J1
MS	1608151.02	2,4,5,6 Tetrachloro-m-xylene (Surr)		0.12	0.159	133	0.12	0.151	126			60-140	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Total Petroleum Hydrocarbons **Method : TCEQ 1005** **Units : mg/L**

QC Batch ID : Qb16081701

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08

Sample Preparation PB16081701 **Prep Method:** TCEQ 1005 **Prep Date:** **By:** Emiller

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	TPH, C6-C35		< 10.0	1	10.0	3.22	
MB	1-Chlorooctane (Surr)	111-85-3	32.4	1			
MB	1-Chlorooctadecane (Surr)		30.1	1			

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	TPH, C6-C35	66.67	68.5	103	66.67	67.3	101	1.75	20	75-125	
LCS	1-Chlorooctane (Surr)	33.33	32.8	98.3	33.33	32.2	96.8			70-130	
LCS	1-Chlorooctadecane (Surr)	33.33	29.1	87.2	33.33	29.5	88.5			70-130	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.06	TPH, C6-C35	< 3.22	66.67	86.9	130	66.67	84.9	127	2.37	20	75-125	J1
MS	1608151.06	1-Chlorooctane (Surr)		33.33	38.2	115						70-130	
MS	1608151.06	1-Chlorooctadecane (Surr)		33.33	31.8	95.3						70-130	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Metals, Total by ICP-MS **Method : EPA 200.8** **Units : ug/L**

QC Batch ID : Qb16081702

Samples in This QC Batch : 1608151.01,02,03,04,05,06,07,08,09,10,11,12,13,14,15

Sample Preparation PB16081702 **Prep Method:** EPA 200.2 **Prep Date:** **By:** Cliles

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Selenium	7782-49-2	< 2.00	1	2.00	0.333	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.01	Selenium	< 0.333	< 0.333	NaN	30	
DUP2	1608151.11	Selenium	11.9	16.9	34.70	30	J1

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Selenium	200	207	104						85-115	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.01	Selenium	< 0.333	200	213	106		213				70-130	
MS2	1608151.11	Selenium	16.9	200	171	77.1		171				70-130	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Metals, Dissolved **Method : EPA 200.8** **Units : ug/L**

QC Batch ID : Qb16081703

Samples in This QC Batch : 1608151.01,02,03,04,05,06,07,08,09,10,11,12,13,14,15

Sample Preparation PB16081703 **Prep Method:** EPA 200.2 **Prep Date:** **By:** Cliles

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Antimony	7440-36-0	< 1.00	1	1.00	0.200	
MB	Arsenic	7440-38-2	< 0.500	1	0.500	0.100	
MB	Beryllium	7440-41-7	< 0.200	1	0.200	0.010	
MB	Cadmium	7440-43-9	< 1.00	1	1.00	0.050	
MB	Chromium	7440-47-3	< 3.00	1	3.00	0.075	
MB	Copper	7440-50-8	< 1.00	1	1.00	0.050	
MB	Lead	7439-92-1	< 0.500	1	0.500	0.025	
MB	Nickel	7440-02-0	< 1.00	1	1.00	0.050	
MB	Silver	7440-22-4	< 0.500	1	0.500	0.025	
MB	Thallium	7440-28-0	< 0.500	1	0.500	0.025	
MB	Zinc	7440-66-6	< 2.00	1	2.00	0.100	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.01	Antimony	< 0.200	< 0.200	NaN	30	
DUP	1608151.01	Arsenic	< 0.100	< 0.100	NaN	30	
DUP	1608151.01	Beryllium	< 0.010	< 0.010	NaN	30	
DUP	1608151.01	Cadmium	< 0.050	< 0.050	NaN	30	
DUP	1608151.01	Chromium	< 0.075	< 0.075	NaN	30	
DUP	1608151.01	Copper	0.135	0.265	65.00	30	J1
DUP	1608151.01	Lead	< 0.025	< 0.025	NaN	30	
DUP	1608151.01	Nickel	0.091	0.074	20.61	30	
DUP	1608151.01	Silver	< 0.025	< 0.025	NaN	30	
DUP	1608151.01	Thallium	< 0.025	< 0.025	NaN	30	
DUP	1608151.01	Zinc	0.808	1.49	59.36	30	J1
DUP2	1608151.11	Antimony	< 1.00	< 1.00	NaN	30	
DUP2	1608151.11	Arsenic	13.4	13.0	3.00	30	
DUP2	1608151.11	Beryllium	< 0.100	< 0.100	NaN	30	
DUP2	1608151.11	Cadmium	< 0.250	< 0.250	NaN	30	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Metals, Dissolved **Method : EPA 200.8** **Units : ug/L**

QC Batch ID : Qb16081703

Samples in This QC Batch : 1608151.01,02,03,04,05,06,07,08,09,10,11,12,13,14,15

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP2	1608151.11	Chromium	< 0.375	< 0.375	NaN	30	
DUP2	1608151.11	Copper	0.504	0.528	4.65	30	
DUP2	1608151.11	Lead	0.133	0.154	14.63	30	
DUP2	1608151.11	Nickel	1.49	1.94	26.24	30	
DUP2	1608151.11	Silver	< 0.125	< 0.125	NaN	30	
DUP2	1608151.11	Thallium	< 0.125	< 0.125	NaN	30	
DUP2	1608151.11	Zinc	3.96	5.09	24.97	30	

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Antimony	100	104	104						85-115	
LCS	Arsenic	50	49.7	99.4						85-115	
LCS	Beryllium	20	20.5	103						85-115	
LCS	Cadmium	100	101	101						85-115	
LCS	Chromium	300	300	100						85-115	
LCS	Copper	100	102	102						85-115	
LCS	Lead	50	50.3	101						85-115	
LCS	Nickel	100	100	100						85-115	
LCS	Silver	50	52.0	104						85-115	
LCS	Thallium	50	50.3	101						85-115	
LCS	Zinc	200	202	101						85-115	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.01	Antimony	< 0.200	100	103	103		103				70-130	
MS	1608151.01	Arsenic	< 0.100	50	49.8	99.5		49.8				70-130	
MS	1608151.01	Beryllium	< 0.010	20	20.8	104		20.8				70-130	
MS	1608151.01	Cadmium	< 0.050	100	100	100		100				70-130	
MS	1608151.01	Chromium	< 0.075	300	303	101		303				70-130	
MS	1608151.01	Copper	0.265	100	102	102		102				70-130	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Metals, Dissolved **Method : EPA 200.8** **Units : ug/L**

QC Batch ID : Qb16081703

Samples in This QC Batch : 1608151.01,02,03,04,05,06,07,08,09,10,11,12,13,14,15

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.01	Lead	< 0.025	50	49.7	99.4		49.7				70-130	
MS	1608151.01	Nickel	0.074	100	100	99.6		100				70-130	
MS	1608151.01	Silver	< 0.025	50	51.9	104		51.9				70-130	
MS	1608151.01	Thallium	< 0.025	50	49.4	98.8		49.4				70-130	
MS	1608151.01	Zinc	1.49	200	199	98.8		199				70-130	
MS2	1608151.11	Antimony	< 1.00	100	99.1	98.9		99.1				70-130	
MS2	1608151.11	Arsenic	13.0	50	62.9	99.8		62.9				70-130	
MS2	1608151.11	Beryllium	< 0.100	20	18.6	92.9		18.6				70-130	
MS2	1608151.11	Cadmium	< 0.250	100	84.4	84.3		84.4				70-130	
MS2	1608151.11	Chromium	< 0.375	300	323	108		323				70-130	
MS2	1608151.11	Copper	0.528	100	98.5	98		98.5				70-130	
MS2	1608151.11	Lead	0.154	50	47.3	94.3		47.3				70-130	
MS2	1608151.11	Nickel	1.94	100	100	97.6		100				70-130	
MS2	1608151.11	Silver	< 0.125	50	44.1	88.2		44.1				70-130	
MS2	1608151.11	Thallium	< 0.125	50	32.5	65		32.5				70-130	J1
MS2	1608151.11	Zinc	5.09	200	180	87.5		180				70-130	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Volatile Organic Compounds **Method : SW846 8260C** **Units : ug/L**

QC Batch ID : Qb16081704

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Ethylbenzene	100-41-4	< 5.00	1	5.00	1.00	
MB	Tetrachloroethylene	127-18-4	< 5.00	1	5.00	1.00	
MB	Trichloroethylene	79-01-6	< 5.00	1	5.00	1.00	
MB	xylenes (total)	1330-20-7	< 5.00	1	5.00	1.00	
MB	1,2-Dichloroethane-d4 (Surr)	17060-07-0	47.6	1			
MB	4-Bromofluorobenzene (Surr)		40.5	1			
MB	Dibromofluoromethane (Surr)	1868-53-7	48.1	1			
MB	Toluene-d8 (Surr)	2037-26-5	47.7	1			

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	Ethylbenzene	50	52.4	105	50	48.6	97.2	7.50	40	50-150	
LCSD	Tetrachloroethylene	50	47.0	94.0	50	43.7	87.4	7.30	40	50-150	
LCSD	Trichloroethylene	50	50.9	102	50	47.8	95.6	6.30	40	50-150	
LCSD	xylenes (total)	150	160	106	150	149	99.7	6.88	40	50-150	
LCS	1,2-Dichloroethane-d4 (Surr)	50	46.8	93.7	50	46.1	92.2			50-150	
LCS	4-Bromofluorobenzene (Surr)	50	50.4	101	50	48.4	96.7			50-150	
LCS	Dibromofluoromethane (Surr)	50	47.8	95.6	50	46.6	93.1			50-150	
LCS	Toluene-d8 (Surr)	50	49.4	98.9	50	47.3	94.5			50-150	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.02	Ethylbenzene	< 1.00	50	52.4	105	50	52.2	104	0.40	40	50-150	
MS	1608151.02	Tetrachloroethylene	< 1.00	50	51.3	103	50	55.7	111	8.20	40	50-150	
MS	1608151.02	Trichloroethylene	< 1.00	50	49.8	99.6	50	49.5	99	0.60	40	50-150	
MS	1608151.02	xylenes (total)	< 1.00	150	159	106	150	159	106	0.23	40	50-150	
MS	1608151.02	1,2-Dichloroethane-d4 (Surr)		50	42.9	85.7	50	42.4	84.7			50-150	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Volatile Organic Compounds **Method : SW846 8260C** **Units : ug/L**

QC Batch ID : Qb16081704

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.02	4-Bromofluorobenzene (Surr)		50	50.6	101	50	50.4	101			50-150	
MS	1608151.02	Dibromofluoromethane (Surr)		50	43.8	87.6	50	43.5	87.1			50-150	
MS	1608151.02	Toluene-d8 (Surr)		50	48.4	96.7	50	47.8	95.6			50-150	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Volatile Organic Compounds **Method : SW846 8260C** **Units : ug/L**

QC Batch ID : Qb16081705

Samples in This QC Batch : 1608151.09,10,11,12,13,14,15

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Ethylbenzene	100-41-4	< 5.00	1	5.00	1.00	
MB	Tetrachloroethylene	127-18-4	< 5.00	1	5.00	1.00	
MB	Trichloroethylene	79-01-6	< 5.00	1	5.00	1.00	
MB	xylenes (total)	1330-20-7	< 5.00	1	5.00	1.00	
MB	1,2-Dichloroethane-d4 (Surr)	17060-07-0	48.0	1			
MB	4-Bromofluorobenzene (Surr)		40.8	1			
MB	Dibromofluoromethane (Surr)	1868-53-7	47.7	1			
MB	Toluene-d8 (Surr)	2037-26-5	47.7	1			

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	Ethylbenzene	50	55.6	111	50	53.2	106	4.40	40	50-150	
LCSD	Tetrachloroethylene	50	48.8	97.6	50	46.4	92.8	5.00	40	50-150	
LCSD	Trichloroethylene	50	49.5	99.0	50	46.6	93.2	6.00	40	50-150	
LCSD	xylenes (total)	150	169	113	150	165	110	2.53	40	50-150	
LCS	1,2-Dichloroethane-d4 (Surr)	50	49.6	99.2	50	50.3	101			50-150	
LCS	4-Bromofluorobenzene (Surr)	50	53.8	108	50	51.6	103			50-150	
LCS	Dibromofluoromethane (Surr)	50	49.8	100	50	48.7	97.3			50-150	
LCS	Toluene-d8 (Surr)	50	51.6	103	50	49.2	98.4			50-150	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.09	Ethylbenzene	< 1.00	50	59.3	119	50	54.3	109	8.80	40	50-150	
MS	1608151.09	Tetrachloroethylene	< 1.00	50	54.1	108	50	49.7	99.4	8.50	40	50-150	
MS	1608151.09	Trichloroethylene	< 1.00	50	53.7	107	50	50.2	100	6.70	40	50-150	
MS	1608151.09	xylenes (total)	< 1.00	150	179	119	150	163	109	9.47	40	50-150	
MS	1608151.09	1,2-Dichloroethane-d4 (Surr)		50	45.2	90.4	50	44.8	89.6			50-150	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Volatile Organic Compounds **Method : SW846 8260C** **Units : ug/L**

QC Batch ID : Qb16081705

Samples in This QC Batch : 1608151.09,10,11,12,13,14,15

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.09	4-Bromofluorobenzene (Surr)		50	50.4	101	50	50.1	100			50-150	
MS	1608151.09	Dibromofluoromethane (Surr)		50	45.8	91.6	50	46.1	92.1			50-150	
MS	1608151.09	Toluene-d8 (Surr)		50	49.0	98	50	49.7	99.4			50-150	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Volatile Organic Compounds **Method : SW846 8260C** **Units : ug/kg dw**

QC Batch ID : Qb16081706

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Ethylbenzene	100-41-4	< 2.50	1	5.00	2.50	
MB	Tetrachloroethylene	127-18-4	< 2.50	1	5.00	2.50	
MB	Trichloroethylene	79-01-6	< 2.50	1	5.00	2.50	
MB	xylenes (total)	1330-20-7	< 2.50	1	5.00	2.50	
MB	1,2-Dichloroethane-d4 (Surr)	17060-07-0	482	1			
MB	4-Bromofluorobenzene (Surr)		414	1			
MB	Dibromofluoromethane (Surr)	1868-53-7	475	1			
MB	Toluene-d8 (Surr)	2037-26-5	485	1			

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	Ethylbenzene	5000	556	111	5000	515	103	8.00	40	70-130	
LCSD	Tetrachloroethylene	5000	497	99.4	5000	464	92.8	7.00	40	70-130	
LCSD	Trichloroethylene	5000	498	100	5000	464	92.8	7.00	40	70-130	
LCSD	xylenes (total)	15000	167	112	15000	157	105	6.41	40	70-130	
LCS	1,2-Dichloroethane-d4 (Surr)	5000	499	100	5000	483	96.6			50-150	
LCS	4-Bromofluorobenzene (Surr)	5000	522	104	5000	498	99.6			50-150	
LCS	Dibromofluoromethane (Surr)	5000	495	99.1	5000	477	95.4			50-150	
LCS	Toluene-d8 (Surr)	5000	523	105	5000	488	97.7			50-150	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.16	Ethylbenzene	< 2.50	5000	601	120	5000	564	113	6.00	40	70-130	
MS	1608151.16	Tetrachloroethylene	< 2.50	5000	557	111	5000	517	103	7.00	40	70-130	
MS	1608151.16	Trichloroethylene	< 2.50	5000	550	110	5000	511	102	7.00	40	70-130	
MS	1608151.16	xylenes (total)	< 2.50	15000	181	121	15000	171	114	5.34	40	70-130	
MS	1608151.16	1,2-Dichloroethane-d4 (Surr)		5000	424	84.8	5000	422	84.4			50-150	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Volatile Organic Compounds **Method : SW846 8260C** **Units : ug/kg dw**

QC Batch ID : Qb16081706

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.16	4-Bromofluorobenzene (Surr)		5000	504	101	5000	495	99			50-150	
MS	1608151.16	Dibromofluoromethane (Surr)		5000	443	88.5	5000	433	86.6			50-150	
MS	1608151.16	Toluene-d8 (Surr)		5000	491	98.2	5000	485	97			50-150	

Refer to the Definition page for terms.

RP16090102

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Total Petroleum Hydrocarbons **Method : TCEQ 1005** **Units : mg/kg dw**

QC Batch ID : Qb16081707

Samples in This QC Batch : 1608151.17,18

Sample Preparation PB16081704 **Prep Method:** TCEQ 1005 **Prep Date:** **By:** Emiller

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	TPH, C6-C35		< 50.0	1	50.0	10.0	
MB	1-Chlorooctane (Surr)	111-85-3	259	1			
MB	1-Chlorooctadecane (Surr)		245	1			

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	TPH, C6-C35	500	519	104	500	603	121	14.91	20	60-140	
LCS	1-Chlorooctane (Surr)	250	252	101	250	280	112			70-130	
LCS	1-Chlorooctadecane (Surr)	250	239	95.7	250	252	101			70-130	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608162.31	TPH, C6-C35	243	500	225	-35.3	500	440	395	64.68	20	60-140	J1
MS	1608162.31	1-Chlorooctane (Surr)		250	254	102	250	282	113			70-130	
MS	1608162.31	1-Chlorooctadecane (Surr)		250	275	110	250	271	108			70-130	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Total Petroleum Hydrocarbons **Method : TCEQ 1005** **Units : mg/L**

QC Batch ID : Qb16081708

Samples in This QC Batch : 1608151.09,10,11,12,13,14,15

Sample Preparation PB16081705 **Prep Method:** TCEQ 1005 **Prep Date:** **By:** Emiller

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	TPH, C6-C35		< 10.0	1	10.0	3.22	
MB	1-Chlorooctane (Surr)	111-85-3	24.3	1			
MB	1-Chlorooctadecane (Surr)		24.8	1			

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	TPH, C6-C35	66.67	65.6	98.4	66.67	53.1	79.6	21.02	20	75-125	J1
LCS	1-Chlorooctane (Surr)	33.33	32.0	96.0	33.33	28.9	86.7			70-130	
LCS	1-Chlorooctadecane (Surr)	33.33	29.3	87.9	33.33	28.6	85.9			70-130	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608162.02	TPH, C6-C35	< 3.22	66.67	70.8	106	66.67	53.9	80.8	27.21	20	75-125	J1
MS	1608162.02	1-Chlorooctane (Surr)		33.33	33.7	101	33.33	28.5	85.4			70-130	
MS	1608162.02	1-Chlorooctadecane (Surr)		33.33	29.4	88.1	33.33	28.0	83.9			70-130	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Total Petroleum Hydrocarbons **Method : TCEQ 1005** **Units : mg/kg dw**

QC Batch ID : Qb16081709

Samples in This QC Batch : 1608151.16,19,20,21,22

Sample Preparation PB16081706 **Prep Method:** TCEQ 1005 **Prep Date:** **By:** Emiller

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	TPH, C6-C35		< 50.0	1	50.0	10.0	
MB	1-Chlorooctane (Surr)	111-85-3	221	1			
MB	1-Chlorooctadecane (Surr)		217	1			

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	TPH, C6-C35	500	477	95.4	500	530	106	10.53	20	60-140	
LCS	1-Chlorooctane (Surr)	250	258	103	250	260	104			70-130	
LCS	1-Chlorooctadecane (Surr)	250	255	102	250	241	96.3			70-130	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608162.23	TPH, C6-C35	10.2	500	301	58.2	500	374	72.8	21.49	20	60-140	J1
MS	1608162.23	1-Chlorooctane (Surr)		250	170	68.1	250	208	83.1			70-130	S
MS	1608162.23	1-Chlorooctadecane (Surr)		250	135	53.9	250	168	67.1			70-130	S

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Organochlorine Pesticides **Method : SW846 8081B** **Units : ug/kg dw**

QC Batch ID : Qb16081806

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

Sample Preparation PB16081803 **Prep Method:** SW846 3570 **Prep Date:** **By:** Sotruba

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	4,4-DDD	72-54-8	< 0.300	1	0.300	0.150	
MB	4,4-DDE	72-55-9	< 0.300	1	0.300	0.150	
MB	4,4-DDT	50-29-3	< 0.300	1	0.300	0.150	
MB	a-BHC	319-84-6	< 0.300	1	0.300	0.150	
MB	a-Chlordane	5103-71-9	< 0.300	1	0.300	0.150	
MB	Aldrin	309-00-2	< 0.300	1	0.300	0.150	
MB	b-BHC	319-85-7	< 0.300	1	0.300	0.150	
MB	Chlordane	57-74-9	< 0.300	1	0.300	0.150	
MB	d-BHC	319-86-8	< 0.300	1	0.300	0.150	
MB	Dieldrin	60-57-1	< 0.300	1	0.300	0.150	
MB	Endosulfan I	959-98-8	< 0.300	1	0.300	0.150	
MB	Endosulfan II	33213-65-9	< 0.300	1	0.300	0.150	
MB	Endosulfan sulfate	1031-07-8	< 0.300	1	0.300	0.150	
MB	Endrin	72-20-8	< 0.300	1	0.300	0.150	
MB	Endrin aldehyde	7421-93-4	< 0.300	1	0.300	0.150	
MB	Endrin ketone	53494-70-5	< 0.300	1	0.300	0.150	
MB	g-BHC	58-89-9	< 0.300	1	0.300	0.150	
MB	Heptachlor	76-44-8	< 0.300	1	0.300	0.150	
MB	Heptachlor epoxide	1024-57-3	< 0.300	1	0.300	0.150	
MB	Toxaphene	8001-35-2	< 0.300	1	0.300	0.150	
MB	y-Chlordane	5103-74-2	< 0.300	1	0.300	0.150	
MB	Decachlorobiphenyl (Surr)	2051-24-3	6.09	1			
MB	2,4,5,6 Tetrachloro-m-xylene (Surr)		6.72	1			

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	4,4-DDD	6	6.14	102	6	6.25	104	1.78	40	60-140	
LCSD	4,4-DDE	6	5.83	97.2	6	5.95	99.2	2.04	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Organochlorine Pesticides **Method : SW846 8081B** **Units : ug/kg dw**

QC Batch ID : Qb16081806

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	4,4-DDT	6	6.51	109	6	6.50	108	0.15	40	60-140	
LCSD	a-BHC	6	6.80	113	6	6.68	111	1.78	40	60-140	
LCSD	Aldrin	6	6.87	115	6	6.86	114	0.15	40	60-140	
LCSD	b-BHC	6	6.26	104	6	6.21	104	0.80	40	60-140	
LCSD	Chlordane	36	23.5	65.3	36	23.7	65.8	0.80	40	60-140	
LCSD	d-BHC	6	6.83	114	6	6.54	109	4.34	40	60-140	
LCSD	Dieldrin	6	6.23	104	6	6.39	107	2.54	40	60-140	
LCSD	Endosulfan I	6	5.86	97.7	6	5.99	99.8	2.19	40	60-140	
LCSD	Endosulfan II	6	5.50	91.7	6	5.61	93.5	1.98	40	60-140	
LCSD	Endosulfan sulfate	6	5.20	86.7	6	5.30	88.3	1.90	40	60-140	
LCSD	Endrin	6	4.85	80.8	6	4.76	79.3	1.87	40	60-140	
LCSD	Endrin aldehyde	6	4.81	80.2	6	5.01	83.5	4.07	40	60-140	
LCSD	Endrin ketone	6	6.59	110	6	6.79	113	2.99	40	60-140	
LCSD	g-BHC	6	6.90	115	6	6.80	113	1.46	40	60-140	
LCSD	Heptachlor	6	6.91	115	6	6.73	112	2.64	40	60-140	
LCSD	Heptachlor epoxide	6	6.02	100	6	6.12	102	1.65	40	60-140	
LCSD	Toxaphene	60	54.5	90.8	60	64.3	107	16.58	40	60-140	
LCS	Decachlorobiphenyl (Surr)	6.00	5.42	90.3	6.00	5.82	97			60-140	
LCS	2,4,5,6 Tetrachloro-m-xylene (Surr)	6.00	5.04	84.0	6.00	4.87	81.2			60-140	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.17	4,4-DDD	< 0.366	6	6.84	114	6	6.81	114	0.44	40	60-140	
MS	1608151.17	4,4-DDE	< 0.366	6	6.48	108	6	6.12	102	5.71	40	60-140	
MS	1608151.17	4,4-DDT	< 0.366	6	6.93	116	6	6.96	116	0.43	40	60-140	
MS	1608151.17	a-BHC	< 0.366	6	6.69	112	6	6.75	113	0.89	40	60-140	
MS	1608151.17	a-Chlordane	< 0.366	6	6.64	111	6	6.32	105	4.94	40	60-140	
MS	1608151.17	Aldrin	< 0.366	6	6.89	115	6	6.76	113	1.90	40	60-140	
MS	1608151.17	b-BHC	< 0.366	6	7.87	131	6	7.85	131	0.25	40	60-140	
MS	1608151.17	Chlordane	< 0.366	36	26.0	72.2	36	24.5	68.1	5.90	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Organochlorine Pesticides **Method : SW846 8081B** **Units : ug/kg dw**

QC Batch ID : Qb16081806

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.17	d-BHC	< 0.366	6	8.18	136	6	7.93	132	3.10	40	60-140	
MS	1608151.17	Dieldrin	< 0.366	6	6.78	113	6	6.59	110	2.84	40	60-140	
MS	1608151.17	Endosulfan II	< 0.366	6	5.79	96.5	6	5.76	96	0.52	40	60-140	
MS	1608151.17	Endosulfan sulfate	< 0.366	6	5.67	94.5	6	5.61	93.5	1.06	40	60-140	
MS	1608151.17	Endrin	< 0.366	6	5.89	98.2	6	5.43	90.5	8.13	40	60-140	
MS	1608151.17	Endrin aldehyde	< 0.366	6	4.99	83.2	6	4.87	81.2	2.43	40	60-140	
MS	1608151.17	Endrin ketone	< 0.366	6	6.87	115	6	6.94	116	1.01	40	60-140	
MS	1608151.17	g-BHC	< 0.366	6	6.42	107	6	6.54	109	1.85	40	60-140	
MS	1608151.17	Heptachlor	< 0.366	6	7.21	120	6	6.66	111	7.93	40	60-140	
MS	1608151.17	Heptachlor epoxide	< 0.366	6	6.69	112	6	6.60	110	1.35	40	60-140	
MS	1608151.17	y-Chlordane	< 0.366	6	7.49	125	6	6.75	113	10.39	40	60-140	
MS	1608151.17	Decachlorobiphenyl (Surr)		6.00	5.84	97.3	6.00	6.06	101			60-140	
MS	1608151.17	2,4,5,6 Tetrachloro-m-xylene (Surr)		6.00	3.96	66	6.00	3.72	62			60-140	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Chromium, Dissolved Hexavalent **Method : SM 3500-Cr B** **Units : ug/L**

QC Batch ID : Qb16081813

Samples in This QC Batch : 1608151.01,02,03,04,05,06,07,08

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Chromium, Hexavalent		< 3.00	1	3.00	1.50	

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Chromium, Hexavalent	250	266	106						90-110	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.01	Chromium, Hexavalent	< 1.50	250	251	101	250	240	95.9	4.80	15	85-115	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Chromium, Dissolved Hexavalent **Method : SM 3500-Cr B** **Units : ug/L**

QC Batch ID : Qb16081814

Samples in This QC Batch : 1608151.09,10,11,12,13,14,15

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Chromium, Hexavalent		< 3.00	1	3.00	1.50	

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Chromium, Hexavalent	250	239	95.6						90-110	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.09	Chromium, Hexavalent	< 1.50	250	245	97.8	250	241	96.4	1.50	15	85-115	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Cyanide, Total **Method : SM 4500-CN C, E** **Units : mg/L**

QC Batch ID : Qb16081819

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08,09,10,11,12,13,14,15

Sample Preparation PB16081811 **Prep Method:** SM 4500-CN C **Prep Date:** **By:** Arazo

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Cyanide, Total		< 0.010	1	0.010	0.005	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.02	Cyanide, Total	< 0.005	< 0.005	NaN	20	

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Cyanide, Total	0.1	0.102	102						90-110	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.02	Cyanide, Total		0.1	0.0948	94.8		0.0948				80-120	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Total Organic Carbon **Method : EPA 415.1** **Units : %**

QC Batch ID : Qb16081821

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08,09,10,11,12,13,14,15

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Total Organic Carbon		< 0.0001	1	0.0001	0.00005	
MB2	Total Organic Carbon		< 0.0001	1	0.0001	0.00005	
MB3	Total Organic Carbon		< 0.0001	1	0.0001	0.00005	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.02	Total Organic Carbon	0.000276	0.005	0.00551	105	0.005	0.00537	102	2.59	15	85-115	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Ammonia as Nitrogen **Method : SM 4500-NH3 D** **Units : mg/L**

QC Batch ID : Qb16081824

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08,09,10,11,12,13,14,15

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Ammonia as N		< 0.100	1	0.100	0.050	

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Ammonia as N	5.00	4.68	93.6						90-110	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.02	Ammonia as N	0.0462	5.00	4.88	96.7	5.00	4.79	94.9	1.86	30	70-130	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081826

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08

Sample Preparation PB16081812 **Prep Method:** SW846 3511 **Prep Date:** **By:** Jlanham

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	1,2,4-Trichlorobenzene	120-82-1	< 0.562	1	0.562	0.281	
MB	1,2-Dichlorobenzene	95-50-1	< 0.562	1	0.562	0.281	
MB	1,2-Diphenylhydrazine as Azobenzene	122-66-7	< 0.562	1	0.562	0.281	
MB	1,3-Dichlorobenzene	541-73-1	< 0.562	1	0.562	0.281	
MB	1,4-Dichlorobenzene	106-46-7	< 0.562	1	0.562	0.281	
MB	2,4,6-Trichlorophenol	88-06-2	< 1.12	1	1.12	0.56	
MB	2,4-Dichlorophenol	120-83-2	< 1.12	1	1.12	0.56	
MB	2,4-Dimethylphenol	105-67-9	< 1.12	1	1.12	0.56	
MB	2,4-Dinitrophenol	51-28-5	< 18.0	1	18.0	9.00	
MB	2,4-Dinitrotoluene	121-14-2	< 0.562	1	0.562	0.281	
MB	2,6-Dinitrotoluene	606-20-2	< 0.562	1	0.562	0.281	
MB	2-Chloronaphthalene	91-58-7	< 0.562	1	0.562	0.281	
MB	2-Chlorophenol	95-57-8	< 1.12	1	1.12	0.56	
MB	2-Methylnaphthalene	91-57-6	< 0.562	1	0.562	0.281	
MB	2-Methylphenol	95-48-7	< 1.12	1	1.12	0.56	
MB	2-Nitrophenol	88-75-5	< 1.12	1	1.12	0.56	
MB	3,3-Dichlorobenzidine	91-94-1	< 0.562	1	0.562	0.281	
MB	4,6-Dinitro-2-methylphenol	534-52-1	< 1.12	1	1.12	0.56	
MB	4-Bromophenyl phenyl ether	101-55-3	< 0.562	1	0.562	0.281	
MB	4-Chloro-3-methylphenol	59-50-7	< 1.12	1	1.12	0.56	
MB	4-Chlorophenyl phenyl ether	7005-72-3	< 0.562	1	0.562	0.281	
MB	4-Methylphenol	106-44-5	< 1.12	1	1.12	0.56	
MB	4-Nitrophenol	100-02-7	< 1.12	1	1.12	0.56	
MB	Acenaphthene	83-32-9	< 0.562	1	0.562	0.281	
MB	Acenaphthylene	208-96-8	< 0.562	1	0.562	0.281	
MB	Anthracene	120-12-7	< 0.562	1	0.562	0.281	
MB	Benzidine	92-87-5	< 0.562	1	0.562	0.281	
MB	Benzo(a)anthracene	56-55-3	< 0.562	1	0.562	0.281	
MB	Benzo(a)pyrene	50-32-8	< 0.562	1	0.562	0.281	
MB	Benzo(b)fluoranthene	205-99-2	< 0.562	1	0.562	0.281	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081826

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Benzo(g,h,i)perylene	191-24-2	< 0.562	1	0.562	0.281	
MB	Benzo(k)fluoranthene	207-08-9	< 0.562	1	0.562	0.281	
MB	Benzoic acid	65-85-0	< 0.562	1	0.562	0.281	
MB	Benzyl alcohol	100-51-6	< 0.562	1	0.562	0.281	
MB	Bis(2-chloroethoxy) methane	111-91-1	< 0.562	1	0.562	0.281	
MB	Bis(2-chloroethyl) ether	111-44-4	< 0.562	1	0.562	0.281	
MB	Bis(2-chloroisopropyl) ether	108-60-1	< 0.562	1	0.562	0.281	
MB	Bis(2-ethylhexyl)phthalate	117-81-7	< 0.562	1	0.562	0.281	
MB	Butyl benzyl phthalate	85-68-7	< 0.562	1	0.562	0.281	
MB	Chrysene	218-01-9	< 0.562	1	0.562	0.281	
MB	Dibenzo(a,h)anthracene	53-70-3	< 0.562	1	0.562	0.281	
MB	Dibenzofuran	132-64-9	< 0.562	1	0.562	0.281	
MB	Diethyl phthalate	84-66-2	< 0.562	1	0.562	0.281	
MB	Dimethyl phthalate	131-11-3	< 0.562	1	0.562	0.281	
MB	Di-n-butyl phthalate	84-74-2	< 0.562	1	0.562	0.281	
MB	Di-n-octyl Phthalate	117-84-0	< 0.562	1	0.562	0.281	
MB	Fluoranthene	206-44-0	< 0.562	1	0.562	0.281	
MB	Fluorene	86-73-7	< 0.562	1	0.562	0.281	
MB	Hexachlorobenzene	118-74-1	< 0.562	1	0.562	0.281	
MB	Hexachlorobutadiene	87-68-3	< 0.562	1	0.562	0.281	
MB	Hexachlorocyclopentadiene	77-47-4	< 0.562	1	0.562	0.281	
MB	Hexachloroethane	67-72-1	< 0.562	1	0.562	0.281	
MB	Indeno(1,2,3-cd)pyrene	193-39-5	< 0.562	1	0.562	0.281	
MB	Isophorone	78-59-1	< 0.562	1	0.562	0.281	
MB	Naphthalene	91-20-3	< 0.562	1	0.562	0.281	
MB	Nitrobenzene	98-95-3	< 0.562	1	0.562	0.281	
MB	n-Nitrosodimethylamine	62-75-9	< 0.562	1	0.562	0.281	
MB	n-nitroso-di-n-propylamine	621-64-7	< 0.562	1	0.562	0.281	
MB	n-Nitrosodiphenylamine	86-30-6	< 0.562	1	0.562	0.281	
MB	Pentachlorophenol	87-86-5	< 1.12	1	1.12	0.56	
MB	Phenanthrene	85-01-8	< 0.562	1	0.562	0.281	
MB	Phenol	108-95-2	< 1.12	1	1.12	0.56	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081826

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Pyrene	129-00-0	< 0.562	1	0.562	0.281	
MB	2-Fluorophenol (Surr)	367-12-4	30.8	1			S
MB	Phenol-d5 (Surr)		15.6	1			
MB	Nitrobenzene-d5 (Surr)	4165-60-0	10.6	1			
MB	2-Fluorobiphenyl (Surr)	132-60-8	9.44	1			
MB	2,4,6-Tribromophenol (Surr)	118-79-6	27.2	1			
MB	Terphenyl-d14 (Surr)		12.1	1			

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	1,2,4-Trichlorobenzene	40.0	13.0	32.4	10	12.5	125	3.54	40	60-140	J1
LCSD	1,2-Dichlorobenzene	40.0	10.2	25.5	10	4.53	45.3	76.82	40	60-140	J1
LCSD	1,2-Diphenylhydrazine as Azobenzene	40.0	37.4	93.5	10	32.7	327	13.44	40	60-140	J1
LCSD	1,3-Dichlorobenzene	40.0	10.7	26.8	10	8.83	88.3	19.34	40	60-140	J1
LCSD	1,4-Dichlorobenzene	40.0	8.62	21.6	10	8.01	80.1	7.34	40	60-140	J1
LCSD	2,4,6-Trichlorophenol	80.0	17.9	22.4	20	8.39	42	72.44	40	60-140	J1
LCSD	2,4-Dichlorophenol	80.0	31.8	39.8	20	30.0	150	5.92	40	60-140	J1
LCSD	2,4-Dimethylphenol	80.0	24.0	30.0	20	42.0	210	54.62	40	60-140	J1
LCSD	2,4-Dinitrophenol	80.0	44.3	55.4	20	40.1	201	10.02	40	60-140	J1
LCSD	2,4-Dinitrotoluene	40.0	12.0	30.1	10	10.6	106	12.80	40	60-140	J1
LCSD	2,6-Dinitrotoluene	40.0	6.86	17.2	10	6.14	61.4	11.08	40	60-140	J1
LCSD	2-Chloronaphthalene	40.0	14.9	37.2	10	13.4	134	10.40	40	60-140	J1
LCSD	2-Chlorophenol	80.0	27.1	33.9	20	22.7	114	17.67	40	60-140	J1
LCSD	2-Methylnaphthalene	40.0	13.5	33.8	10	17.6	176	26.29	40	60-140	J1
LCSD	2-Methylphenol	80.0	34.6	43.3	20	27.7	139	22.26	40	60-140	J1
LCSD	2-Nitrophenol	80.0	22.9	28.6	20	16.3	81.5	33.50	40	60-140	J1
LCSD	3,3-Dichlorobenzidine	40.0	10.8	27.0	10	9.11	91.1	17.07	40	60-140	J1
LCSD	4,6-Dinitro-2-methylphenol	80.0	31.4	39.3	20	30.4	152	3.38	40	60-140	J1
LCSD	4-Bromophenyl phenyl ether	40.0	23.4	58.4	10	20.2	203	14.47	40	60-140	J1
LCSD	4-Chloro-3-methylphenol	80.0	42.2	52.8	20	26.3	131	46.49	40	60-140	J1

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081826

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	4-Chlorophenyl phenyl ether	40.0	13.7	34.2	10	11.9	119	13.99	40	60-140	J1
LCSD	4-Methylphenol	80.0	45.8	57.2	20	35.8	179	24.47	40	60-140	J1
LCSD	4-Nitrophenol	80.0	45.8	57.3	20	36.9	185	21.59	40	60-140	J1
LCSD	Acenaphthene	40.0	10.3	25.8	10	9.10	91	12.66	40	60-140	J1
LCSD	Acenaphthylene	40.0	11.8	29.5	10	10.5	105	11.49	40	60-140	J1
LCSD	Anthracene	40.0	14.7	36.8	10	12.8	128	13.82	40	60-140	J1
LCSD	Benzidine	10	7.10	71.0	10	10.6	106	39.55	40	60-140	
LCSD	Benzo(a)anthracene	40.0	11.6	29.1	10	10.1	101	14.08	40	60-140	J1
LCSD	Benzo(a)pyrene	40.0	11.7	29.2	10	10.4	104	11.68	40	60-140	J1
LCSD	Benzo(b)fluoranthene	40.0	10.3	25.8	10	9.17	91.7	11.61	40	60-140	J1
LCSD	Benzo(g,h,i)perylene	40.0	11.2	27.9	10	9.89	98.9	11.98	40	60-140	J1
LCSD	Benzo(k)fluoranthene	40.0	11.9	29.7	10	10.7	107	10.37	40	60-140	J1
LCSD	Benzoic acid	40.0	11.7	29.3	10	5.96	59.6	65.01	40	60-140	J1
LCSD	Benzyl alcohol	40.0	18.2	45.5	10	16.2	162	11.68	40	60-140	J1
LCSD	Bis(2-chloroethoxy) methane	40.0	9.47	23.7	10	7.79	77.9	19.47	40	60-140	J1
LCSD	Bis(2-chloroethyl) ether	40.0	9.24	23.1	10	9.17	91.7	0.76	40	60-140	J1
LCSD	Bis(2-chloroisopropyl) ether	40.0	8.83	22.1	10	7.71	77.1	13.54	40	60-140	J1
LCSD	Bis(2-ethylhexyl)phthalate	40.0	14.5	36.2	10	12.7	127	13.10	40	60-140	J1
LCSD	Butyl benzyl phthalate	40.0	20.7	51.8	10	18.4	184	11.76	40	60-140	J1
LCSD	Chrysene	40.0	13.3	33.2	10	11.4	114	15.31	40	60-140	J1
LCSD	Dibenzo(a,h)anthracene	40.0	11.4	28.5	10	10.7	107	6.25	40	60-140	J1
LCSD	Dibenzofuran	40.0	12.3	30.8	10	10.5	105	16.03	40	60-140	J1
LCSD	Diethyl phthalate	40.0	14.4	35.9	10	12.4	124	14.72	40	60-140	J1
LCSD	Dimethyl phthalate	40.0	13.4	33.5	10	11.4	114	16.13	40	60-140	J1
LCSD	Di-n-butyl phthalate	40.0	19.1	47.8	10	16.2	162	16.53	40	60-140	J1
LCSD	Di-n-octyl Phthalate	40.0	15.8	39.6	10	14.4	144	9.40	40	60-140	J1
LCSD	Fluoranthene	40.0	18.7	46.8	10	15.9	159	16.29	40	60-140	J1
LCSD	Fluorene	40.0	11.9	29.8	10	10.4	104	13.70	40	60-140	J1
LCSD	Hexachlorobenzene	40.0	12.0	29.9	10	9.67	96.7	21.26	40	60-140	J1
LCSD	Hexachlorobutadiene	40.0	11.3	28.2	10	8.82	88.2	24.39	40	60-140	J1
LCSD	Hexachlorocyclopentadiene	10	1.74	17.4	10	1.72	17.2	1.16	40	60-140	J1
LCSD	Hexachloroethane	40.0	13.2	33.1	10	9.22	92.2	35.65	40	60-140	J1

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081826

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	Indeno(1,2,3-cd)pyrene	40.0	9.87	24.7	10	8.79	87.9	11.58	40	60-140	J1
LCSD	Isophorone	40.0	8.41	21.0	10	6.52	65.2	25.32	40	60-140	J1
LCSD	Naphthalene	40.0	12.7	31.7	10	12.6	126	0.71	40	60-140	J1
LCSD	Nitrobenzene	40.0	13.4	33.6	10	14.8	148	9.78	40	60-140	J1
LCSD	n-Nitrosodimethylamine	40.0	8.13	20.3	10	7.86	78.6	3.38	40	60-140	J1
LCSD	n-nitroso-di-n-propylamine	40.0	9.26	23.2	10	8.61	86.1	7.27	40	60-140	J1
LCSD	n-Nitrosodiphenylamine	40.0	12.5	31.2	10	10.8	108	14.51	40	60-140	J1
LCSD	Pentachlorophenol	80.0	44.5	55.6	20	20.6	103	73.41	40	60-140	J1
LCSD	Phenanthrene	40.0	11.7	29.2	10	9.90	99	16.41	40	60-140	J1
LCSD	Phenol	80.0	17.6	22.0	20	15.0	75.2	15.95	40	60-140	J1
LCSD	Pyrene	40.0	13.7	34.2	10	11.6	116	16.46	40	60-140	J1
LCS	2-Fluorophenol (Surr)	20	32.9	164	20	24.1	120			60-140	S
LCS	Phenol-d5 (Surr)	20	15.5	77.6	20	16.0	80			60-140	
LCS	Nitrobenzene-d5 (Surr)	10	10.2	102	10	10.6	106			60-140	
LCS	2-Fluorobiphenyl (Surr)	10	10.4	104	10	9.08	90.8			60-140	
LCS	2,4,6-Tribromophenol (Surr)	20	24.1	121	20	25.2	126			60-140	
LCS	Terphenyl-d14 (Surr)	10	10.3	103	10	8.98	89.8			60-140	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.02	1,2,4-Trichlorobenzene	0.	10	14.2	143	10	13.3	133	6.60	40	60-140	J1
MS	1608151.02	1,2-Dichlorobenzene	0.	10	4.62	46.2	10	8.96	89.6	63.92	40	60-140	J1
MS	1608151.02	1,2-Diphenylhydrazine as Azobenzene	0.	10	35.6	356	10	36.7	367	2.90	40	60-140	J1
MS	1608151.02	1,3-Dichlorobenzene	0.	10	4.86	48.6	10	6.53	65.3	29.32	40	60-140	J1
MS	1608151.02	1,4-Dichlorobenzene	0.	10	7.98	79.8	10	9.08	90.8	12.88	40	60-140	
MS	1608151.02	2,4,6-Trichlorophenol	0.	20	6.65	33.3	20	5.18	25.9	24.85	40	60-140	J1
MS	1608151.02	2,4-Dichlorophenol	0.	20	35.6	178	20	35.0	175	1.78	40	60-140	J1
MS	1608151.02	2,4-Dimethylphenol	0.	20	42.8	214	20	47.5	238	10.38	40	60-140	J1
MS	1608151.02	2,4-Dinitrophenol	0.	20	45.9	230	20	42.8	214	7.13	40	60-140	J1
MS	1608151.02	2,4-Dinitrotoluene	0.	10	11.8	119	10	11.3	113	4.40	40	60-140	
MS	1608151.02	2,6-Dinitrotoluene	0.	10	6.40	64	10	6.39	63.9	0.16	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081826

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.02	2-Chloronaphthalene	0.	10	16.6	166	10	16.2	162	2.45	40	60-140	J1
MS	1608151.02	2-Chlorophenol	0.	10	24.8	248	20	23.2	116	6.46	40	60-140	J1
MS	1608151.02	2-Methylnaphthalene	0.	10	14.0	140	10	13.1	131	6.28	40	60-140	
MS	1608151.02	2-Methylphenol	0.	20	28.3	141	20	31.2	156	9.76	40	60-140	J1
MS	1608151.02	2-Nitrophenol	0.	20	29.6	148	20	26.5	133	11.12	40	60-140	J1
MS	1608151.02	3,3-Dichlorobenzidine	0.	10	5.94	59.4	10	0.69	6.90	158.37	40	60-140	J1
MS	1608151.02	4,6-Dinitro-2-methylphenol	0.	20	27.7	138	20	23.2	116	17.61	40	60-140	
MS	1608151.02	4-Bromophenyl phenyl ether	0.	10	20.1	201	10	19.3	193	4.21	40	60-140	J1
MS	1608151.02	4-Chloro-3-methylphenol	0.	20	40.8	204	20	59.9	300	38.05	40	60-140	J1
MS	1608151.02	4-Chlorophenyl phenyl ether	0.	10	13.2	132	10	12.5	125	5.37	40	60-140	
MS	1608151.02	4-Methylphenol	0.	20	30.5	153	20	45.3	227	39.05	40	60-140	J1
MS	1608151.02	4-Nitrophenol	0.	20	21.1	105	20	45.3	227	73.01	40	60-140	J1
MS	1608151.02	Acenaphthene	0.	10	10.4	104	10	9.91	99.1	4.54	40	60-140	
MS	1608151.02	Acenaphthylene	0.	10	11.7	117	10	11.5	115	1.81	40	60-140	
MS	1608151.02	Anthracene	0.	10	13.3	133	10	12.4	124	6.54	40	60-140	
MS	1608151.02	Benzo(a)anthracene	0.	10	11.7	117	10	11.6	116	0.51	40	60-140	
MS	1608151.02	Benzo(a)pyrene	0.	10	11.2	112	10	10.8	108	3.91	40	60-140	
MS	1608151.02	Benzo(b)fluoranthene	0.	10	40.4	404	10	90.8	908	76.83	40	60-140	J1
MS	1608151.02	Benzo(g,h,i)perylene	0.	10	10.9	109	10	10.2	102	7.39	40	60-140	
MS	1608151.02	Benzo(k)fluoranthene	0.	10	11.6	116	10	95.1	951	156.68	40	60-140	J1
MS	1608151.02	Benzoic acid	0.	10	5.70	57	10	5.68	56.8	0.35	40	60-140	J1
MS	1608151.02	Benzyl alcohol	0.	10	4.22	42.2	10	3.73	37.3	12.33	40	60-140	J1
MS	1608151.02	Bis(2-chloroethoxy) methane	0.	10	11.3	113	10	6.41	64.1	55.47	40	60-140	J1
MS	1608151.02	Bis(2-chloroethyl) ether	0.	10	12.6	126	10	13.5	135	6.73	40	60-140	
MS	1608151.02	Bis(2-chloroisopropyl) ether	0.	10	7.26	72.6	10	8.88	88.8	20.07	40	60-140	
MS	1608151.02	Bis(2-ethylhexyl)phthalate	0.	10	14.7	147	10	15.2	152	3.28	40	60-140	J1
MS	1608151.02	Butyl benzyl phthalate	0.	10	20.1	201	10	15.4	154	26.87	40	60-140	J1
MS	1608151.02	Chrysene	0.	10	12.7	127	10	11.8	118	7.17	40	60-140	
MS	1608151.02	Dibenzo(a,h)anthracene	0.	10	11.7	117	10	10.5	105	11.27	40	60-140	
MS	1608151.02	Dibenzofuran	0.	10	12.2	122	10	11.6	116	4.79	40	60-140	
MS	1608151.02	Diethyl phthalate	0.	10	13.8	138	10	13.1	131	4.90	40	60-140	
MS	1608151.02	Dimethyl phthalate	0.	10	13.2	132	10	12.6	126	5.12	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081826

Samples in This QC Batch : 1608151.02,03,04,05,06,07,08

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.02	Di-n-butyl phthalate	0.	10	14.6	146	10	13.6	137	6.45	40	60-140	J1
MS	1608151.02	Di-n-octyl Phthalate	0.	10	15.3	153	10	14.8	148	3.31	40	60-140	J1
MS	1608151.02	Fluoranthene	0.	10	18.7	187	10	14.7	147	24.00	40	60-140	J1
MS	1608151.02	Fluorene	0.	10	11.5	115	10	10.9	109	5.45	40	60-140	
MS	1608151.02	Hexachlorobenzene	0.	10	10.7	107	10	10.4	104	3.42	40	60-140	
MS	1608151.02	Hexachlorobutadiene	0.	10	10.4	104	10	11.5	115	10.03	40	60-140	
MS	1608151.02	Hexachlorocyclopentadiene	0.	10	2.22	22.2	10	3.05	30.5	31.50	40	60-140	J1
MS	1608151.02	Hexachloroethane	0.	10	8.35	83.5	10	9.07	90.7	8.27	40	60-140	
MS	1608151.02	Indeno(1,2,3-cd)pyrene	0.	10	9.69	96.9	10	9.02	90.2	7.16	40	60-140	
MS	1608151.02	Isophorone	0.	10	8.36	83.6	10	7.38	73.8	12.45	40	60-140	
MS	1608151.02	Naphthalene	0.	10	13.7	137	10	12.8	128	6.94	40	60-140	
MS	1608151.02	Nitrobenzene	0.	10	16.4	164	10	14.0	140	15.98	40	60-140	J1
MS	1608151.02	n-Nitrosodimethylamine	0.	10	3.88	38.8	10	6.46	64.6	49.90	40	60-140	J1
MS	1608151.02	n-nitroso-di-n-propylamine	0.	10	9.83	98.3	10	12.5	125	24.15	40	60-140	
MS	1608151.02	n-Nitrosodiphenylamine	0.	10	11.6	116	10	11.3	113	2.70	40	60-140	
MS	1608151.02	Pentachlorophenol	0.	20	53.7	269	20	49.1	246	8.96	40	60-140	J1
MS	1608151.02	Phenanthrene	0.	10	11.5	115	10	10.9	109	5.37	40	60-140	
MS	1608151.02	Phenol	0.	20	24.1	121	20	23.8	119	1.50	40	60-140	
MS	1608151.02	Pyrene	0.	10	13.5	135	10	11.8	118	13.78	40	60-140	
MS	1608151.02	2-Fluorophenol (Surr)		20	23.1	116	20	35.7	179			60-140	S
MS	1608151.02	Phenol-d5 (Surr)		20	22.4	112	20	21.2	106			60-140	
MS	1608151.02	Nitrobenzene-d5 (Surr)		10	14.2	142	10	12.8	128			60-140	S
MS	1608151.02	2-Fluorobiphenyl (Surr)		10	10.5	105	10	9.93	99.3			60-140	
MS	1608151.02	2,4,6-Tribromophenol (Surr)		20	23.9	119	20	27.6	138			60-140	
MS	1608151.02	Terphenyl-d14 (Surr)		10	10.4	104	10	9.49	94.9			60-140	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081827

Samples in This QC Batch : 1608151.09,10,11,12,13,14,15

Sample Preparation PB16081813 **Prep Method:** SW846 3511 **Prep Date:** **By:** Jlanham

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	1,2,4-Trichlorobenzene	120-82-1	< 0.562	1	0.562	0.281	
MB	1,2-Dichlorobenzene	95-50-1	< 0.562	1	0.562	0.281	
MB	1,2-Diphenylhydrazine as Azobenzene	122-66-7	< 0.562	1	0.562	0.281	
MB	1,3-Dichlorobenzene	541-73-1	< 0.562	1	0.562	0.281	
MB	1,4-Dichlorobenzene	106-46-7	< 0.562	1	0.562	0.281	
MB	2,4,6-Trichlorophenol	88-06-2	< 1.12	1	1.12	0.56	
MB	2,4-Dichlorophenol	120-83-2	< 1.12	1	1.12	0.56	
MB	2,4-Dimethylphenol	105-67-9	< 1.12	1	1.12	0.56	
MB	2,4-Dinitrophenol	51-28-5	< 18.0	1	18.0	9.00	
MB	2,4-Dinitrotoluene	121-14-2	< 0.562	1	0.562	0.281	
MB	2,6-Dinitrotoluene	606-20-2	< 0.562	1	0.562	0.281	
MB	2-Chloronaphthalene	91-58-7	< 0.562	1	0.562	0.281	
MB	2-Chlorophenol	95-57-8	< 1.12	1	1.12	0.56	
MB	2-Methylnaphthalene	91-57-6	< 0.562	1	0.562	0.281	
MB	2-Methylphenol	95-48-7	< 1.12	1	1.12	0.56	
MB	2-Nitrophenol	88-75-5	< 1.12	1	1.12	0.56	
MB	3,3-Dichlorobenzidine	91-94-1	< 0.562	1	0.562	0.281	
MB	4,6-Dinitro-2-methylphenol	534-52-1	< 1.12	1	1.12	0.56	
MB	4-Bromophenyl phenyl ether	101-55-3	< 0.562	1	0.562	0.281	
MB	4-Chloro-3-methylphenol	59-50-7	< 1.12	1	1.12	0.56	
MB	4-Chlorophenyl phenyl ether	7005-72-3	< 0.562	1	0.562	0.281	
MB	4-Methylphenol	106-44-5	< 1.12	1	1.12	0.56	
MB	4-Nitrophenol	100-02-7	< 1.12	1	1.12	0.56	
MB	Acenaphthene	83-32-9	< 0.562	1	0.562	0.281	
MB	Acenaphthylene	208-96-8	< 0.562	1	0.562	0.281	
MB	Anthracene	120-12-7	< 0.562	1	0.562	0.281	
MB	Benzidine	92-87-5	< 0.562	1	0.562	0.281	
MB	Benzo(a)anthracene	56-55-3	< 0.562	1	0.562	0.281	
MB	Benzo(a)pyrene	50-32-8	< 0.562	1	0.562	0.281	
MB	Benzo(b)fluoranthene	205-99-2	< 0.562	1	0.562	0.281	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081827

Samples in This QC Batch : 1608151.09,10,11,12,13,14,15

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Benzo(g,h,i)perylene	191-24-2	< 0.562	1	0.562	0.281	
MB	Benzo(k)fluoranthene	207-08-9	< 0.562	1	0.562	0.281	
MB	Benzoic acid	65-85-0	< 0.562	1	0.562	0.281	
MB	Benzyl alcohol	100-51-6	< 0.562	1	0.562	0.281	
MB	Bis(2-chloroethoxy) methane	111-91-1	< 0.562	1	0.562	0.281	
MB	Bis(2-chloroethyl) ether	111-44-4	< 0.562	1	0.562	0.281	
MB	Bis(2-chloroisopropyl) ether	108-60-1	< 0.562	1	0.562	0.281	
MB	Bis(2-ethylhexyl)phthalate	117-81-7	< 0.562	1	0.562	0.281	
MB	Butyl benzyl phthalate	85-68-7	< 0.562	1	0.562	0.281	
MB	Chrysene	218-01-9	< 0.562	1	0.562	0.281	
MB	Dibenzo(a,h)anthracene	53-70-3	< 0.562	1	0.562	0.281	
MB	Dibenzofuran	132-64-9	< 0.562	1	0.562	0.281	
MB	Diethyl phthalate	84-66-2	< 0.562	1	0.562	0.281	
MB	Dimethyl phthalate	131-11-3	< 0.562	1	0.562	0.281	
MB	Di-n-butyl phthalate	84-74-2	< 0.562	1	0.562	0.281	
MB	Di-n-octyl Phthalate	117-84-0	< 0.562	1	0.562	0.281	
MB	Fluoranthene	206-44-0	< 0.562	1	0.562	0.281	
MB	Fluorene	86-73-7	< 0.562	1	0.562	0.281	
MB	Hexachlorobenzene	118-74-1	< 0.562	1	0.562	0.281	
MB	Hexachlorobutadiene	87-68-3	< 0.562	1	0.562	0.281	
MB	Hexachlorocyclopentadiene	77-47-4	< 0.562	1	0.562	0.281	
MB	Hexachloroethane	67-72-1	< 0.562	1	0.562	0.281	
MB	Indeno(1,2,3-cd)pyrene	193-39-5	< 0.562	1	0.562	0.281	
MB	Isophorone	78-59-1	< 0.562	1	0.562	0.281	
MB	Naphthalene	91-20-3	< 0.562	1	0.562	0.281	
MB	Nitrobenzene	98-95-3	< 0.562	1	0.562	0.281	
MB	n-Nitrosodimethylamine	62-75-9	< 0.562	1	0.562	0.281	
MB	n-nitroso-di-n-propylamine	621-64-7	< 0.562	1	0.562	0.281	
MB	n-Nitrosodiphenylamine	86-30-6	< 0.562	1	0.562	0.281	
MB	Pentachlorophenol	87-86-5	< 1.12	1	1.12	0.56	
MB	Phenanthrene	85-01-8	< 0.562	1	0.562	0.281	
MB	Phenol	108-95-2	< 1.12	1	1.12	0.56	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081827

Samples in This QC Batch : 1608151.09,10,11,12,13,14,15

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Pyrene	129-00-0	< 0.562	1	0.562	0.281	
MB	2-Fluorophenol (Surr)	367-12-4	39.9	1			S
MB	Phenol-d5 (Surr)		27.5	1			
MB	Nitrobenzene-d5 (Surr)	4165-60-0	15.4	1			S
MB	2-Fluorobiphenyl (Surr)	132-60-8	9.11	1			
MB	2,4,6-Tribromophenol (Surr)	118-79-6	46.6	1			S
MB	Terphenyl-d14 (Surr)		10.0	1			

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	1,2,4-Trichlorobenzene	10	11.8	118	10	11.5	115	2.74	40	60-140	
LCSD	1,2-Dichlorobenzene	10	9.29	92.9	10	5.72	57.2	47.57	40	60-140	J1
LCSD	1,2-Diphenylhydrazine as Azobenzene	10	24.0	240	10	24.2	242	0.77	40	60-140	J1
LCSD	1,3-Dichlorobenzene	10	8.12	81.2	10	5.59	55.9	36.91	40	60-140	J1
LCSD	1,4-Dichlorobenzene	10	7.50	75.0	10	5.92	59.2	23.55	40	60-140	J1
LCSD	2,4,6-Trichlorophenol	20	6.26	31.3	20	6.03	30.2	3.74	40	60-140	J1
LCSD	2,4-Dichlorophenol	20	29.8	149	20	31.6	158	5.70	40	60-140	J1
LCSD	2,4-Dimethylphenol	20	36.9	184	20	36.4	182	1.26	40	60-140	J1
LCSD	2,4-Dinitrophenol	20	33.6	168	20	59.4	297	55.40	40	60-140	J1
LCSD	2,4-Dinitrotoluene	10	10.1	101	10	10.3	103	1.96	40	60-140	
LCSD	2,6-Dinitrotoluene	10	5.97	59.7	10	6.40	64	6.95	40	60-140	J1
LCSD	2-Chloronaphthalene	10	12.3	123	10	13.5	135	9.46	40	60-140	
LCSD	2-Chlorophenol	20	22.9	114	20	19.9	99.6	13.98	40	60-140	
LCSD	2-Methylnaphthalene	10	11.6	117	10	11.5	115	1.28	40	60-140	
LCSD	2-Methylphenol	20	47.4	237	20	51.9	260	9.11	40	60-140	J1
LCSD	2-Nitrophenol	20	17.9	89.3	20	19.5	97.7	8.78	40	60-140	
LCSD	3,3-Dichlorobenzidine	10	5.59	55.9	10	5.61	56.1	0.36	40	60-140	J1
LCSD	4,6-Dinitro-2-methylphenol	20	5.98	29.9	20	3.88	19.4	42.60	40	60-140	J1
LCSD	4-Bromophenyl phenyl ether	10	17.6	176	10	16.9	169	3.77	40	60-140	J1
LCSD	4-Chloro-3-methylphenol	20	54.3	272	20	32.4	162	50.52	40	60-140	J1

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081827

Samples in This QC Batch : 1608151.09,10,11,12,13,14,15

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	4-Chlorophenyl phenyl ether	10	11.8	118	10	11.9	119	1.27	40	60-140	
LCSD	4-Methylphenol	20	21.2	106	20	26.1	131	20.53	40	60-140	
LCSD	4-Nitrophenol	20	54.0	270	20	30.1	151	56.84	40	60-140	J1
LCSD	Acenaphthene	10	8.13	81.3	10	8.21	82.1	0.98	40	60-140	
LCSD	Acenaphthylene	10	9.52	95.2	10	9.76	97.6	2.49	40	60-140	
LCSD	Anthracene	10	10.7	107	10	10.2	102	4.60	40	60-140	
LCSD	Benzo(a)anthracene	10	10.1	101	10	10.1	101	0.00	40	60-140	
LCSD	Benzo(a)pyrene	10	9.32	93.2	10	9.61	96.1	3.06	40	60-140	
LCSD	Benzo(b)fluoranthene	10	10.4	104	10	9.65	96.5	7.29	40	60-140	
LCSD	Benzo(g,h,i)perylene	10	8.73	87.3	10	8.80	88	0.80	40	60-140	
LCSD	Benzo(k)fluoranthene	10	10.4	104	10	10.8	108	3.87	40	60-140	
LCSD	Benzoic acid	10	5.36	53.6	10	4.83	48.3	10.40	40	60-140	J1
LCSD	Benzyl alcohol	10	4.46	44.6	10	4.26	42.6	4.59	40	60-140	J1
LCSD	Bis(2-chloroethoxy) methane	10	10.3	103	10	12.1	121	16.46	40	60-140	
LCSD	Bis(2-chloroethyl) ether	10	15.6	156	10	12.7	127	20.68	40	60-140	J1
LCSD	Bis(2-chloroisopropyl) ether	10	8.32	83.2	10	6.76	67.6	20.69	40	60-140	
LCSD	Bis(2-ethylhexyl)phthalate	10	12.2	122	10	12.6	126	3.23	40	60-140	
LCSD	Butyl benzyl phthalate	10	17.0	170	10	17.5	175	3.02	40	60-140	J1
LCSD	Chrysene	10	10.8	108	10	10.7	107	1.12	40	60-140	
LCSD	Dibenzo(a,h)anthracene	10	9.61	96.1	10	9.53	95.3	0.84	40	60-140	
LCSD	Dibenzofuran	10	9.85	98.5	10	10.3	103	4.47	40	60-140	
LCSD	Diethyl phthalate	10	12.2	122	10	12.7	127	4.34	40	60-140	
LCSD	Dimethyl phthalate	10	11.3	113	10	11.6	116	2.44	40	60-140	
LCSD	Di-n-butyl phthalate	10	11.7	117	10	11.8	118	0.59	40	60-140	
LCSD	Di-n-octyl Phthalate	10	13.0	130	10	13.6	136	4.51	40	60-140	
LCSD	Fluoranthene	10	14.7	147	10	15.5	155	5.50	40	60-140	J1
LCSD	Fluorene	10	10.0	100	10	10.2	102	2.48	40	60-140	
LCSD	Hexachlorobenzene	10	8.80	88.0	10	8.43	84.3	4.29	40	60-140	
LCSD	Hexachlorobutadiene	10	11.2	112	10	11.0	111	2.16	40	60-140	
LCSD	Hexachlorocyclopentadiene	10	1.28	12.8	10	4.07	40.7	104.30	40	60-140	J1
LCSD	Hexachloroethane	10	10.9	109	10	8.80	88	21.50	40	60-140	
LCSD	Indeno(1,2,3-cd)pyrene	10	7.80	78.0	10	7.86	78.6	0.77	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081827

Samples in This QC Batch : 1608151.09,10,11,12,13,14,15

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCSD	Isophorone	10	8.53	85.3	10	9.46	94.6	10.34	40	60-140	
LCSD	Naphthalene	10	11.3	113	10	11.8	118	4.33	40	60-140	
LCSD	Nitrobenzene	10	10.2	102	10	12.9	129	22.99	40	60-140	
LCSD	n-Nitrosodimethylamine	10	1.37	13.7	10	5.22	52.2	116.84	40	60-140	J1
LCSD	n-nitroso-di-n-propylamine	10	11.9	119	10	20.8	208	54.51	40	60-140	J1
LCSD	n-Nitrosodiphenylamine	10	9.72	97.2	10	9.12	91.2	6.37	40	60-140	
LCSD	Pentachlorophenol	20	58.8	294	20	67.4	337	13.68	40	60-140	J1
LCSD	Phenanthrene	10	9.19	91.9	10	8.98	89.8	2.31	40	60-140	
LCSD	Phenol	20	25.2	126	20	29.4	147	15.50	40	60-140	J1
LCSD	Pyrene	10	10.3	103	10	9.64	96.4	6.62	40	60-140	
LCS	2-Fluorophenol (Surr)	20	19.2	95.9	20	18.4	92			60-140	
LCS	Phenol-d5 (Surr)	20	22.3	111	20	27.5	138			60-140	
LCS	Nitrobenzene-d5 (Surr)	10	12.7	127	10	13.9	139			60-140	
LCS	2-Fluorobiphenyl (Surr)	10	8.15	81.5	10	8.22	82.2			60-140	
LCS	2,4,6-Tribromophenol (Surr)	20	26.0	130	20	38.9	195			60-140	S
LCS	Terphenyl-d14 (Surr)	10	8.12	81.2	10	8.27	82.7			60-140	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.09	1,2,4-Trichlorobenzene	< 0.281	10	11.5	115	10	12.3	123	6.82	40	60-140	
MS	1608151.09	1,2-Dichlorobenzene	< 0.281	10	6.14	61.4	10	6.28	62.8	2.25	40	60-140	
MS	1608151.09	1,2-Diphenylhydrazine as Azobenzene	< 0.281	10	25.9	259	10	7.89	78.9	106.54	40	60-140	J1
MS	1608151.09	1,3-Dichlorobenzene	< 0.281	10	8.56	85.6	10	7.63	76.3	11.49	40	60-140	
MS	1608151.09	1,4-Dichlorobenzene	< 0.281	10	7.74	77.4	10	7.34	73.4	5.31	40	60-140	
MS	1608151.09	2,4,6-Trichlorophenol	< 0.56	20	5.66	28.3	20	5.35	26.8	5.63	40	60-140	J1
MS	1608151.09	2,4-Dichlorophenol	< 0.56	20	31.8	159	20	31.5	158	0.73	40	60-140	J1
MS	1608151.09	2,4-Dimethylphenol	< 0.56	20	33.3	166	20	41.1	205	20.97	40	60-140	J1
MS	1608151.09	2,4-Dinitrophenol	< 9.00	20	60.0	300	20	51.3	256	15.68	40	60-140	J1
MS	1608151.09	2,4-Dinitrotoluene	< 0.281	10	10.9	109	10	9.56	95.6	12.73	40	60-140	
MS	1608151.09	2,6-Dinitrotoluene	< 0.281	10	6.59	65.9	10	5.58	55.8	16.60	40	60-140	J1
MS	1608151.09	2-Chloronaphthalene	< 0.281	10	13.7	137	10	12.8	128	6.41	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081827

Samples in This QC Batch : 1608151.09,10,11,12,13,14,15

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.09	2-Chlorophenol	< 0.56	10	20.8	208	20	23.5	118	12.50	40	60-140	J1
MS	1608151.09	2-Methylnaphthalene	< 0.281	10	11.3	113	10	11.7	117	3.83	40	60-140	
MS	1608151.09	2-Methylphenol	< 0.56	20	64.6	323	20	43.8	219	38.45	40	60-140	J1
MS	1608151.09	2-Nitrophenol	< 0.56	20	23.2	116	20	24.2	121	4.23	40	60-140	
MS	1608151.09	3,3-Dichlorobenzidine	< 0.281	10	3.64	36.4	10	2.52	25.2	36.36	40	60-140	J1
MS	1608151.09	4,6-Dinitro-2-methylphenol	< 0.56	20	24.6	123	20	24.6	123	0.00	40	60-140	
MS	1608151.09	4-Bromophenyl phenyl ether	< 0.281	10	16.6	166	10	15.5	155	6.78	40	60-140	J1
MS	1608151.09	4-Chloro-3-methylphenol	< 0.56	20	32.8	164	20	28.9	145	12.58	40	60-140	J1
MS	1608151.09	4-Chlorophenyl phenyl ether	< 0.281	10	16.6	166	10	15.5	155	6.78	40	60-140	J1
MS	1608151.09	4-Methylphenol	< 0.56	20	23.2	116	20	25.2	126	8.14	40	60-140	
MS	1608151.09	4-Nitrophenol	< 0.56	20	31.0	155	20	28.8	144	7.55	40	60-140	J1
MS	1608151.09	Acenaphthene	< 0.281	10	8.04	80.4	10	8.17	81.7	1.60	40	60-140	
MS	1608151.09	Acenaphthylene	< 0.281	10	10.1	101	10	9.31	93.1	8.24	40	60-140	
MS	1608151.09	Anthracene	< 0.281	10	9.87	98.7	10	10.1	101	2.30	40	60-140	
MS	1608151.09	Benzo(a)anthracene	< 0.281	10	10.5	105	10	9.89	98.9	6.17	40	60-140	
MS	1608151.09	Benzo(a)pyrene	< 0.281	10	9.62	96.2	10	9.28	92.8	3.60	40	60-140	
MS	1608151.09	Benzo(b)fluoranthene	< 0.281	10	9.45	94.5	10	8.57	85.7	9.77	40	60-140	
MS	1608151.09	Benzo(g,h,i)perylene	< 0.281	10	9.19	91.9	10	8.33	83.3	9.82	40	60-140	
MS	1608151.09	Benzo(k)fluoranthene	< 0.281	10	10.7	107	10	10.0	100	6.88	40	60-140	
MS	1608151.09	Benzoic acid	< 0.281	10	5.58	55.8	10	4.04	40.4	32.02	40	60-140	J1
MS	1608151.09	Benzyl alcohol	< 0.281	10	3.83	38.3	10	4.11	41.1	7.05	40	60-140	J1
MS	1608151.09	Bis(2-chloroethoxy) methane	< 0.281	10	12.4	124	10	11.1	111	11.09	40	60-140	
MS	1608151.09	Bis(2-chloroethyl) ether	< 0.281	10	17.0	170	10	14.7	147	14.32	40	60-140	J1
MS	1608151.09	Bis(2-chloroisopropyl) ether	< 0.281	10	8.15	81.5	10	8.40	84	3.02	40	60-140	
MS	1608151.09	Bis(2-ethylhexyl)phthalate	< 0.281	10	13.0	130	10	11.7	117	9.89	40	60-140	
MS	1608151.09	Butyl benzyl phthalate	< 0.281	10	17.2	172	10	16.6	166	3.91	40	60-140	J1
MS	1608151.09	Chrysene	< 0.281	10	10.6	106	10	10.8	108	2.34	40	60-140	
MS	1608151.09	Dibenzo(a,h)anthracene	< 0.281	10	9.88	98.8	10	9.17	91.7	7.45	40	60-140	
MS	1608151.09	Dibenzofuran	< 0.281	10	10.6	106	10	9.84	98.4	7.15	40	60-140	
MS	1608151.09	Diethyl phthalate	< 0.281	10	13.3	133	10	11.4	115	15.17	40	60-140	
MS	1608151.09	Dimethyl phthalate	< 0.281	10	12.2	123	10	10.4	104	16.53	40	60-140	
MS	1608151.09	Di-n-butyl phthalate	< 0.281	10	12.1	121	10	10.7	107	12.61	40	60-140	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Semivolatile Organic Compounds **Method : SW846 8270D** **Units : ug/L**

QC Batch ID : Qb16081827

Samples in This QC Batch : 1608151.09,10,11,12,13,14,15

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.09	Di-n-octyl Phthalate	< 0.281	10	13.1	131	10	12.5	125	4.84	40	60-140	
MS	1608151.09	Fluoranthene	< 0.281	10	14.8	149	10	14.4	144	3.08	40	60-140	J1
MS	1608151.09	Fluorene	< 0.281	10	10.7	107	10	9.37	93.7	13.53	40	60-140	
MS	1608151.09	Hexachlorobenzene	< 0.281	10	8.34	83.4	10	8.02	80.2	3.91	40	60-140	
MS	1608151.09	Hexachlorobutadiene	< 0.281	10	10.7	107	10	11.2	112	4.12	40	60-140	
MS	1608151.09	Hexachlorocyclopentadiene	< 0.281	10	6.48	64.8	10	4.48	44.8	36.50	40	60-140	J1
MS	1608151.09	Hexachloroethane	< 0.281	10	11.3	113	10	9.41	94.1	18.08	40	60-140	
MS	1608151.09	Indeno(1,2,3-cd)pyrene	< 0.281	10	8.19	81.9	10	7.45	74.5	9.46	40	60-140	
MS	1608151.09	Isophorone	< 0.281	10	9.52	95.2	10	8.15	81.5	15.51	40	60-140	
MS	1608151.09	Naphthalene	< 0.281	10	10.6	106	10	11.6	116	9.56	40	60-140	
MS	1608151.09	Nitrobenzene	< 0.281	10	11.9	119	10	12.1	121	1.59	40	60-140	
MS	1608151.09	n-Nitrosodimethylamine	< 0.281	10	2.68	26.8	10	1.72	17.2	43.64	40	60-140	J1
MS	1608151.09	n-nitroso-di-n-propylamine	< 0.281	10	18.1	181	10	23.6	236	26.22	40	60-140	J1
MS	1608151.09	n-Nitrosodiphenylamine	11.5	10	8.68	-28.1	10	9.20	-22.9	5.82	40	60-140	J1
MS	1608151.09	Pentachlorophenol	< 0.56	20	61.8	309	20	54.5	273	12.57	40	60-140	J1
MS	1608151.09	Phenanthrene	< 0.281	10	9.27	92.7	10	8.57	85.7	7.85	40	60-140	
MS	1608151.09	Phenol	< 0.56	20	33.6	168	20	28.1	141	17.82	40	60-140	J1
MS	1608151.09	Pyrene	< 0.281	10	9.51	95.1	10	9.67	96.7	1.67	40	60-140	
MS	1608151.09	2-Fluorophenol (Surr)		20	26.8	134	20	22.3	112			60-140	
MS	1608151.09	Phenol-d5 (Surr)		20	25.3	127	20	21.0	105			60-140	
MS	1608151.09	Nitrobenzene-d5 (Surr)		10	15.5	155	10	12.9	129			60-140	S
MS	1608151.09	2-Fluorobiphenyl (Surr)		10	8.34	83.4	10	8.19	81.9			60-140	
MS	1608151.09	2,4,6-Tribromophenol (Surr)		20	40.7	203	20	29.2	146			60-140	S
MS	1608151.09	Terphenyl-d14 (Surr)		10	8.19	81.9	10	7.13	71.3			60-140	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Solids, Total **Method : SM 2540 G** **Units : %**

QC Batch ID : Qb16081828

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	% Solids		< 1.00	1	1.00	0.010	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.16	% Solids	40.1	40.0	0.10	30	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Volatile Solids, Total **Method : EPA 160.4** **Units : %**

QC Batch ID : Qb16081829

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Volatile Solids		< 1.00	1	1.00	0.010	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.16	Volatile Solids	9.30	7.97	15.40	30	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Total Organic Carbon **Method : SW846 9060A** **Units : %**

QC Batch ID : Qb16081831

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Total Organic Carbon		< 0.050	1	0.050	0.025	
MB2	Total Organic Carbon		< 0.050	1	0.050	0.025	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.16	Total Organic Carbon	0.80	2.77	3.45	95.7	2.81	3.69	103	6.72	20	80-120	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Ammonia **Method : EPA 350.2** **Units : mg/kg dw**

QC Batch ID : Qb16081833

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Ammonia as N		< 100	1	100	20.0	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.16	Ammonia as N	50.0	56.0	11.30	10	J1

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Ammonia as N	5000	478	95.6						90-110	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.16	Ammonia as N	56.0	5000	469	92.7		469				90-110	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Chromium, Hexavalent **Method : SW846 7196A** **Units : mg/kg**

QC Batch ID : Qb16081835

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Chromium, Hexavalent		< 1.00	1	1.00	0.500	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.16	Chromium, Hexavalent	< 0.500	< 1.25	NaN	20	

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Chromium, Hexavalent	12.5	11.8	94.4						85-115	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.16	Chromium, Hexavalent	< 1.25	12.5	11.4	91.2		11.4				75-125	
PDMS	1608151.16	Chromium, Hexavalent	< 1.25	12.5	12.2	97.6		12.2				85-115	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Cyanide, Total **Method : SW846 9014** **Units : mg/kg dw**

QC Batch ID : Qb16081837

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

Sample Preparation PB16081815 **Prep Method:** SW846 9010C **Prep Date:** **By:** Arazo

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Cyanide, Total		< 0.500	1	0.500	0.250	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.16	Cyanide, Total	< 0.250	< 0.62	NaN	20	

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Cyanide, Total	1.00	0.987	98.7						90-110	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.16	Cyanide, Total	< 0.62	1.00	0.913	91.3		0.913				80-120	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Mercury, Total **Method : EPA 245.1** **Units : ug/L**

QC Batch ID : Qb16081901

Samples in This QC Batch : 1608151.01,02,03,04,06,09,10,11,12,13,14,15

Sample Preparation PB16081901 **Prep Method:** EPA 245.1 **Prep Date:** **By:** Mwilson

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Mercury	7439-97-6	< 0.200	1	0.200	0.150	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.01	Mercury	< 0.150	< 0.150	NaN	30	
DUP2	1608151.14	Mercury	< 0.150	< 0.150	NaN	30	

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Mercury	5.00	4.94	98.8						90-110	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.01	Mercury	< 0.150	5.00	5.05	101		5.05				70-130	
MS2	1608151.14	Mercury	< 0.150	5.00	5.02	100		5.02				70-130	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Mercury, Total **Method : EPA 245.1** **Units : ug/L**

QC Batch ID : Qb16081902

Samples in This QC Batch : 1608151.05,07,08

Sample Preparation PB16081902 **Prep Method:** EPA 245.1 **Prep Date:** **By:** Mwilson

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Mercury	7439-97-6	< 0.200	1	0.200	0.150	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.08	Mercury	< 0.150	< 0.150	NaN	30	

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Mercury	5.00	4.80	96.1						90-110	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.08	Mercury	< 0.150	5.00	4.80	95.9		4.80				70-130	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Mercury, Total **Method : SW846 7471B** **Units : mg/kg dw**

QC Batch ID : Qb16081903

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

Sample Preparation PB16081903 **Prep Method:** SW846 7471B **Prep Date:** **By:** Mwilson

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Mercury	7439-97-6	< 0.020	1	0.020	0.010	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.16	Mercury	< 0.025	< 0.025	NaN	30	

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Mercury	0.250	0.246	98.4						80-120	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.16	Mercury	< 0.025	0.102	0.113	104		0.113				80-120	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Metals, Total **Method : EPA 200.8** **Units : mg/kg**

QC Batch ID : Qb16083002

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

Sample Preparation PB16083002 **Prep Method:** EPA 200.2 **Prep Date:** **By:** Cliles

QC Type: Method Blank

	Parameter	CAS #	Result	DF	LRL	SDL	Qual
MB	Antimony	7440-36-0	< 0.100	1	0.100	0.010	
MB	Arsenic	7440-38-2	< 0.050	1	0.050	0.0025	
MB	Beryllium	7440-41-7	< 0.004	1	0.004	0.004	
MB	Cadmium	7440-43-9	< 0.100	1	0.100	0.005	
MB	Chromium	7440-47-3	< 0.300	1	0.300	0.015	
MB	Copper	7440-50-8	< 0.100	1	0.100	0.017	
MB	Lead	7439-92-1	< 0.050	1	0.050	0.0025	
MB	Nickel	7440-02-0	< 0.100	1	0.100	0.005	
MB	Selenium	7782-49-2	0.046	1	0.040	0.040	
MB	Silver	7440-22-4	< 0.050	1	0.050	0.0025	
MB	Thallium	7440-28-0	< 0.010	1	0.010	0.002	
MB	Zinc	7440-66-6	< 0.200	1	0.200	0.010	

QC Type: Duplicate

	QC Sample ID	Parameter	Result	QC Sample Result	RPD	RPD Ctrl Limits	Qual
DUP	1608151.16	Antimony	< 0.020	< 0.020	NaN	30	
DUP	1608151.16	Arsenic	2.48	2.57	3.56	30	
DUP	1608151.16	Beryllium	0.338	0.351	3.77	30	
DUP	1608151.16	Cadmium	0.049	0.052	5.94	30	
DUP	1608151.16	Chromium	5.47	5.82	6.20	30	
DUP	1608151.16	Copper	5.11	5.31	3.84	30	
DUP	1608151.16	Lead	4.89	5.05	3.22	30	
DUP	1608151.16	Nickel	6.48	6.82	5.11	30	
DUP	1608151.16	Selenium	1.00	1.08	7.69	30	
DUP	1608151.16	Silver	0.018	0.019	5.41	30	
DUP	1608151.16	Thallium	0.040	0.042	4.88	30	
DUP	1608151.16	Zinc	17.6	18.4	4.40	30	

QUALITY CONTROL DATA

JobID :

1608151

8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Analysis : Metals, Total **Method : EPA 200.8** **Units : mg/kg**

QC Batch ID : Qb16083002

Samples in This QC Batch : 1608151.16,17,18,19,20,21,22

QC Type: LCS/LCSD

	Parameter	LCS Spk Amt	LCS Result	LCS % Rec	LCSD Spk Amt	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
LCS	Antimony	10	10.2	102						85-115	
LCS	Arsenic	5	5.06	101						85-115	
LCS	Beryllium	2	1.98	99.0						85-115	
LCS	Cadmium	10	10.1	101						85-115	
LCS	Chromium	30	30.1	100						85-115	
LCS	Copper	10	10.2	102						85-115	
LCS	Lead	5	5.10	102						85-115	
LCS	Nickel	10	10.2	102						85-115	
LCS	Selenium	20	20.2	101						85-115	
LCS	Silver	5	5.03	101						85-115	
LCS	Thallium	5	5.06	101						85-115	
LCS	Zinc	20	20.6	103						85-115	

QC Type: MS/MSD

	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MSD Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MS	1608151.16	Antimony	< 0.020	3.45	0.313	9.07		0.313				70-130	J1
MS	1608151.16	Arsenic	2.57	1.72	4.17	93		4.17				70-130	
MS	1608151.16	Beryllium	0.351	0.69	0.876	76.1		0.876				70-130	
MS	1608151.16	Cadmium	0.052	3.45	3.24	92.4		3.24				70-130	
MS	1608151.16	Chromium	5.82	10.34	14.9	87.8		14.9				70-130	
MS	1608151.16	Copper	5.31	3.45	8.20	83.8		8.20				70-130	
MS	1608151.16	Lead	5.05	1.72	6.65	93		6.65				70-130	
MS	1608151.16	Nickel	6.82	3.45	9.93	90.1		9.93				70-130	
MS	1608151.16	Selenium	1.08	6.90	5.50	64.1		5.50				70-130	J1
MS	1608151.16	Silver	0.019	1.72	1.57	90.2		1.57				70-130	
MS	1608151.16	Thallium	0.042	1.72	1.37	77.2		1.37				70-130	
MS	1608151.16	Zinc	18.4	6.90	24.5	88.4		24.5				70-130	

Refer to the Definition page for terms.

Chain ID: 62020693

CSN-1782009 Page 1 of 1

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North Water District Laboratory Services, Inc.

North Water District
Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.01

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-7982	QI-16-EQUIP	8/4	1300	GRAB	250mL	HDPE	Liquid	4°C	180D	DisMet SW846 6020A Filtered, then preserved w/HNO3
2	1147-7983	QI-16-EQUIP	8/4	1300	GRAB	250mL	HDPE	Liquid	HNO3	180D	TotalMet SW846 6020A Preserved w/HNO3 at receipt.
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NOTES: FTI003
Temp: 4.0
pH paper: CRL-17052-33
CRL-18881-4 AMC
HNO3: ~~CRL-17052-33~~ 8/4/16
Filter: CRL-18439-3

Sampler (Signature)	Relinquished By (Signature)	Date	Received By (Signature)	Date
Marisa Weber	Marisa Weber	8/4/16 Time 1400		8/4/16 Time 1400
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date 8/4/16 Time 1530	Received For Laboratory By (Signature)	Date 8/4/16 Time 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

NWDLS
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8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.02

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-7984	QI-16-01-W	8/4	12:43	GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260 EPA 8260
2	1147-7985	QI-16-01-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(D) EPA 8260
3	1147-7986	QI-16-01-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(T) EPA 8260
4	1147-7987	QI-16-01-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA EPA 625
5	1147-7988	QI-16-01-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(D) EPA 625
6	1147-7989	QI-16-01-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(T) EPA 625
7	1147-7990	QI-16-01-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082 EPA 8082
8	1147-7991	QI-16-01-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(D) EPA 8082
9	1147-7992	QI-16-01-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(T) EPA 8082
10	1147-7993	QI-16-01-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081 EPA 8081B
11	1147-7994	QI-16-01-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(D) EPA 8081B
12	1147-7995	QI-16-01-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(T) EPA 8081B
13	1147-7996	QI-16-01-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH TCEQ 1005
14	1147-7997	QI-16-01-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(D) TCEQ 1005
15	1147-7998	QI-16-01-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(T) TCEQ 1005
16	1147-7999	QI-16-01-W			GRAB	250mL	HDPE	Liquid	HNO3	180D	TotalMet SW846 6020A Preserved w/ HNO3 at receipt.

NOTES:
4.0°C
FTI003
HNO_3: CRL-18881-4
pH paper: CRL-17052-33

Sampler (Signature)	Relinquished By (Signature)	Date 8/4/16 Time 1400	Received By (Signature)	Date 8/4/16 Time 1400
Print Name	Relinquished By (Signature)	Date Time	Received By (Signature)	Date Time
Affiliation	Relinquished To Laboratory By (Signature)	Date 8/4/16 Time 1530	Received For Laboratory By (Signature)	Date 8/4/16 Time 1530

pH Meter Calibration		
Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration		
Time	Temp °C	D.O.

NWDLS
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North Water District
Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.02

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
17	1147-8000	QI-16-01-W	8/4/16	12:43	GRAB	250mL	HDPE	Liquid	4°C	180D	DisMet SW846 6020A Filtered, then preserved w/ HNO_3
18	1147-8001	QI-16-01-W	↓	↓	GRAB	250mL	HDPE	Liquid	H2SO4 4°C	28D	NH3-N SM 4500-NH3 D Preserved w/ H_2SO_4 at receipt.
19	1147-8002	QI-16-01-W			GRAB	250mL	HDPE	Liquid	NaOH 4°C	14D	CN SM 4500-CN-E Preserved w/ NaOH at receipt.
20	1147-8003	QI-16-01-W			GRAB	250mL	HDPE	Liquid	H2SO4 4°C	28D	TOC-415 EPA 415.1 Preserved w/ H_2SO_4 at receipt.
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NOTES:
4.0°C
FTI003
Filter: CRL-18439-3
H_2SO_4: CRL-18887-3
NaOH: WRB-16828-1
HNO_3: CRL-18881-4
pH paper: CRL-17052-33
CRL-17032-3

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)

Received By (Signature) Date: 8/4/16 Time: 1400
Received By (Signature) Date: Time:
Received For Laboratory By (Signature) Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

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Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.03

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8004	QI-16-02-W	8/4/16	12:13	GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260 EPA 8260
2	1147-8005	QI-16-02-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(D) EPA 8260
3	1147-8006	QI-16-02-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(T) EPA 8260
4	1147-8007	QI-16-02-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA EPA 625
5	1147-8008	QI-16-02-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(D) EPA 625
6	1147-8009	QI-16-02-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(T) EPA 625
7	1147-8010	QI-16-02-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082 EPA 8082
8	1147-8011	QI-16-02-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(D) EPA 8082
9	1147-8012	QI-16-02-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(T) EPA 8082
10	1147-8013	QI-16-02-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081 EPA 8081B
11	1147-8014	QI-16-02-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(D) EPA 8081B
12	1147-8015	QI-16-02-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(T) EPA 8081B
13	1147-8016	QI-16-02-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH TCEQ 1005
14	1147-8017	QI-16-02-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(D) TCEQ 1005
15	1147-8018	QI-16-02-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(T) TCEQ 1005
16	1147-8019	QI-16-02-W			GRAB	250mL	HDPE	Liquid	HNO3	180D	TotalMet SW846 6020A Preserved w/ HNO3 at receipt.

NOTES:
4.0°C
FT1003
HNO_3: CRL-18881-4
pH paper: CRL-17052-33

Sampler (Signature)	Relinquished By (Signature)	Date 8/4/16 Time 1400	Received By (Signature)
Print Name: Marisa Weber	Relinquished By (Signature)	Date Time	Received By (Signature)
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date 8/4/16 Time 1530	Received For Laboratory By (Signature)

Received By (Signature): Date 8/4/16 Time 1400
Received By (Signature): Date Time
Received For Laboratory By (Signature): Date 8/4/16 Time 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

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Laboratory Services, Inc.
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CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.03

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
17	1147-8020	QI-16-02-W	8/4/16	12:13	GRAB	250mL	HDPE	Liquid	4°C	180D	DisMet EPA 200.8 Filtered, then preserved w/HNO3
18	1147-8021	QI-16-02-W	"	"	GRAB	250mL	HDPE	Liquid	H2SO4 4°C	28D	NH3-N SM 4500-NH3 D Preserved w/H2SO4 at receipt.
19	1147-8022	QI-16-02-W	"	"	GRAB	250mL	HDPE	Liquid	NaOH 4°C	14D	CN SM 4500-CN- E Preserved w/NaOH at receipt.
20	1147-8023	QI-16-02-W	"	"	GRAB	250mL	HDPE	Liquid	H2SO4 4°C	28D	TOC-415 EPA 415.1 Preserved w/H2SO4 at receipt.
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NOTES:
4.0
FTI003
APC 8/4/16

H_2SO_4: CRL-18887-3
NaOH: WLB-16828-1
HNO_3: CRL-18881-4
Filter: CRL-18437-3
pH paper: CRL-17052-33
CRL-17032-3

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)	Date: 8/4/16 Time: 1400
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)	Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

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(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.04

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8024	QI-16-03-W	8/4/16	11:13	GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260 EPA 8260
2	1147-8025	QI-16-03-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(D) EPA 8260
3	1147-8026	QI-16-03-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(T) EPA 8260
4	1147-8027	QI-16-03-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA EPA 625
5	1147-8028	QI-16-03-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(D) EPA 625
6	1147-8029	QI-16-03-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(T) EPA 625
7	1147-8030	QI-16-03-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082 EPA 8082
8	1147-8031	QI-16-03-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(D) EPA 8082
9	1147-8032	QI-16-03-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(T) EPA 8082
10	1147-8033	QI-16-03-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081 EPA 8081B
11	1147-8034	QI-16-03-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(D) EPA 8081B
12	1147-8035	QI-16-03-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(T) EPA 8081B
13	1147-8036	QI-16-03-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH TCEQ 1005
14	1147-8037	QI-16-03-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(D) TCEQ 1005
15	1147-8038	QI-16-03-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(T) TCEQ 1005
16	1147-8039	QI-16-03-W			GRAB	250mL	HDPE	Liquid	HNO3	180D	TotalMet SW846 6020A Preserved with HNO3 at receipt.

NOTES:
4.0
FTI003
HNO_3: CRL-18881-4
PH paper: CRL-17052-33
ARC
8/4/16

Sampler (Signature)	Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
Marissa Weber	Marissa Weber	8/4/16 1400		8/4/16 1400
Print Name: Marissa Weber	Relinquished By (Signature)		Received By (Signature)	
Affiliation: LEI	Relinquished To Laboratory By (Signature)	8/4/16 1530	Received For Laboratory By (Signature)	8/4/16 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

NWDLS North Water District Laboratory Services, Inc.

North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.04

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
17	1147-8040	QI-16-03-W	8/4/16	11:13	GRAB	250mL	HDPE	Liquid	4°C	180D	DisMet SW846 6020A Filtered, then preserved w/ HNO_3
18	1147-8041	QI-16-03-W	8/4/16	11:13	GRAB	250mL	HDPE	Liquid	H2SO4 4°C	28D	NH3-N SM 4500-NH3 D Preserved w/ H_2SO_4 at receipt
19	~~1147-8042~~	~~QI-16-03-W~~			~~GRAB~~	~~250mL~~	~~HDPE~~	~~Liquid~~	NaOH 4°C	~~14D~~	~~CN~~ SM 4500-CN- E preserved w/ NaOH
20	1147-8043	~~QI-16-03-W~~			~~GRAB~~	~~250mL~~	~~HDPE~~	~~Liquid~~	H2SO4 ~~4°C~~	28D	TOC-415 EPA 415.1 preserved w/ H_2SO_4 at receipt
21											
22											
23											CN & TOC were
24											subsampled from
25											1147-8040/1147-8041.
26											
27											8/4/16
28											
29											
30											
31											
32											

NOTES:
4.0°C
FTIC03
Filter: CRL-18437-3
H_2SO_4: CRL-18887-3
NaOH: CRL-16828-
HNO_3: CRL-18881-4
Used these bottles for another kit b/c missing bottles

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)	Date: 8/4/16 Time: 1400	
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:	
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)	Date: 8/4/16 Time: 1530	

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

NWDLS
North Water District Laboratory Services, Inc.

North Water District
Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.05

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8044	QI-16-04-W	8/4/16	10:58	GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260 EPA 8260
2	1147-8045	QI-16-04-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(D) EPA 8260
3	1147-8046	QI-16-04-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(T) EPA 8260
4	1147-8047	QI-16-04-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA EPA 625
5	1147-8048	QI-16-04-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(D) EPA 625
6	1147-8049	QI-16-04-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(T) EPA 625
7	1147-8050	QI-16-04-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082 EPA 8082
8	1147-8051	QI-16-04-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(D) EPA 8082
9	1147-8052	QI-16-04-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(T) EPA 8082
10	1147-8053	QI-16-04-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081 EPA 8081B
11	1147-8054	QI-16-04-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(D) EPA 8081B
12	1147-8055	QI-16-04-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(T) EPA 8081B
13	1147-8056	QI-16-04-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH TCEQ 1005
14	1147-8057	QI-16-04-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(D) TCEQ 1005
15	1147-8058	QI-16-04-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(T) TCEQ 1005
16	1147-8059	QI-16-04-W			GRAB	250mL	HDPE	Liquid	HNO3	180D	TotalMet SW846 6020A Preserved w/ HNO3 at receipt.

NOTES: 4.0°C
HNO_3: CRL-18881-4
Filter: CRL-18439-3
pH paper: CRL-17052-33

Sampler (Signature)

Print Name: Marisa Webster

Affiliation: LEI

Relinquished By (Signature) — Date: 8/4/16 Time: 1400

Received By (Signature) — Date: 8/4/16 Time: 1400

Relinquished By (Signature) — Date: Temp:

Received By (Signature) — Date: Time:

Relinquished To Laboratory By (Signature) — Date: 8/4/16 Time: 1530

Received For Laboratory By (Signature) — Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

NWDLS
North Water District Laboratory Services, Inc.

North Water District
Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

160151.05

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
17	1147-8060	QI-16-04-W	8/4/16	10:58	GRAB	250mL	HDPE	Liquid	4°C	180D	DisMet SW846 6020A Filtered, then preserved w/HNO3
18	1147-8061	QI-16-04-W	8/4/16	10:58	GRAB	250mL	HDPE	Liquid	H2SO4 4°C	28D	NH3-N SM 4500-NH3 D Preserved w/H2SO4 at receipt.
19	1147-8062	QI-16-04-W			GRAB	250mL	HDPE	Liquid	NaOH 4°C	14D	CN SM 4500-CN- E Preserved w/NaOH at receipt.
20	1147-8063	QI-16-04-W			GRAB	250mL	HDPE	Liquid	H2SO4 4°C	28D	TOC-415 EPA 415.1 Preserved w/H2SO4 at receipt.
21											
22											
23											
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31											
32											

CN & TOC were subsampled from 1147-8060/8061
ARC 8/4/16

NOTES:
4.0°C
FTI003
Filter: CRL-18439-3
H2SO4: CRL-18887-3
NaOH: WB-16825-1
HNO3: CRL-18881-4
pH paper: CRL-17052-33
CRL-17032-3

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)

Received By (Signature) Date: 8/4/16 Time: 1400
Received By (Signature) Date: Time:
Received For Laboratory By (Signature) Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

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North Water District
Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151. DL

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8064	QI-16-05-W	8/4/16	16:00	GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260 EPA 8260
2	1147-8065	QI-16-05-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(D) EPA 8260
3	1147-8066	QI-16-05-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(T) EPA 8260
4	1147-8067	QI-16-05-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA EPA 625
5	1147-8068	QI-16-05-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(D) EPA 625
6	1147-8069	QI-16-05-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(T) EPA 625
7	1147-8070	QI-16-05-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082 EPA 8082
8	1147-8071	QI-16-05-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(D) EPA 8082
9	1147-8072	QI-16-05-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(T) EPA 8082
10	1147-8073	QI-16-05-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081 EPA 8081B
11	1147-8074	QI-16-05-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(D) EPA 8081B
12	1147-8075	QI-16-05-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(T) EPA 8081B
13	1147-8076	QI-16-05-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH TCEQ 1005
14	1147-8077	QI-16-05-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(D) TCEQ 1005
15	1147-8078	QI-16-05-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(T) TCEQ 1005
16	1147-8079	QI-16-05-W			GRAB	250mL	HDPE	Liquid	HNO3	180D	TotalMet SW846 6020A Preserved w/HNO3 at receipt.

NOTES:
4.0°C
FT1003
HNO_3: CRL-18881-4
pH paper: CRL-17052-33

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)	Date: 8/4/16 Time: 1400
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LET	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)	Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

NWDLS
North Water District Laboratory Services, Inc.

North Water District
Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.06

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
17	1147-8080	QI-16-05-W	8/4/16	10:00	GRAB	250mL	HDPE	Liquid	4°C	180D	DisMet SW846 6020A Filtered, then preserved w/HNO3
18	1147-8081	QI-16-05-W	8/4/16	10:00	GRAB	250mL	HDPE	Liquid	H2SO4 4°C	28D	NH3-N SM 4500-NH3 D Preserved w/H2SO4 at receipt.
19	1147-8082	QI-16-05-W			GRAB	250mL	HDPE	Liquid	NaOH 4°C	14D	CN SM 4500-CN- E Preserved w/NaOH at receipt.
20	1147-8083	QI-16-05-W			GRAB	250mL	HDPE	Liquid	H2SO4 4°C	28D	TOC-415 EPA 415.1 preserved w/H2SO4 at receipt.
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											

NOTES:
4.0°C
FTI003
Filter: CRL-18439-3
HNO_3: CRL-18881-4
H_2SO_4: CRL-18887-3
NaOH: WLB-16828-1
pH paper: CRL-17052-33
CRL-17032-3

Sampler (Signature)
Marsa Weber
Print Name
Marsa Weber
Affiliation
LEI

Relinquished By (Signature)
Marsa Weber
Date: 8/4/16
Time: 1400

Relinquished By (Signature)
Date:
Time:

Relinquished To Laboratory By (Signature)
Date: 8/4/16
Time: 1530

Received By (Signature)
Date: 8/4/16
Time: 1400

Received By (Signature)
Date:
Time:

Received For Laboratory By (Signature)
Date: 8/4/16
Time: 1630

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

Chain ID: 68020593

CSN-1782015 Page 1 of 2

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North Water District
Laboratory Services, Inc.
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(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.07

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8084	QI-16-06-W	8/4	9:41	GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260 EPA 8260
2	1147-8085	QI-16-06-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(D) EPA 8260
3	1147-8086	QI-16-06-W	8/		GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(T) EPA 8260
4	1147-8087	QI-16-06-W	8/4	9:41	GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA EPA 625
5	1147-8088	QI-16-06-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(D) EPA 625
6	1147-8089	QI-16-06-W	8/4		GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(T) EPA 625
7	1147-8090	QI-16-06-W	8/4	9:41	GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082 EPA 8082
8	1147-8091	QI-16-06-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(D) EPA 8082
9	1147-8092	QI-16-06-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(T) EPA 8082
10	1147-8093	QI-16-06-W	8/4	9:41	GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081 EPA 8081B
11	1147-8094	QI-16-06-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(D) EPA 8081B
12	1147-8095	QI-16-06-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(T) EPA 8081B
13	1147-8096	QI-16-06-W	8/4	9:41	GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH TCEQ 1005
14	1147-8097	QI-16-06-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(D) TCEQ 1005
15	1147-8098	QI-16-06-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(T) TCEQ 1005
16	1147-8099	QI-16-06-W	8/4	9:41	GRAB	250mL	HDPE	Liquid	HNO3	180D	TotalMet SW846 6020A Preserved w/ HNO3 at receipt.

NOTES: 4.0°C FT7003? HNO_3: CRL-18887-4 pH paper: CRL-17052 5 Hes Run QI-16-3-5 to cover missing container QI-16-06

Sampler (Signature): [signature]	Relinquished By (Signature): [signature]	Date: 8/4/16 Time: 2:30	Received By (Signature): [signature] Date: 8/4/16 Time: 1430
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature) Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature): [signature]	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature): [signature] Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

NWDLS
North Water District Laboratory Services, Inc.

North Water District
Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.07

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
17	1147-8100	QI-16-06-W	8/4	9:41	GRAB	250mL	HDPE	Liquid	4°C	180D	DisMet SW846 6020A Preserved w/HNO_3 after Filtration.
18	1147-8101	QI-16-06-W	8/4	9:41	GRAB	250mL	HDPE	Liquid	H_2SO_4 4°C	28D	NH3-N SM 4500-NH3 D Preserved w/H_2SO_4 at receipt. rec: 8/4/16
19	~~1147-8102~~	~~QI-16-06-W~~			~~GRAB~~	~~250mL~~	~~HDPE~~	~~Liquid~~	NaOH 4°C	14D	~~CN SM 4500-CN- E~~ Preserved w/~~HNO_3~~ NaOH at receipt.
20	1147-8103	QI-16-06-W			GRAB	250mL	HDPE	Liquid	H_2SO_4 4°C	28D	~~TOC 415.1~~ EPA 415.1 Preserved w/H_2SO_4 at receipt.
21											
22											
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29											
30											
31											
32											

NOTES: 4.0°C FTZ003

HNO_3: CRL-18881-4
Filter: CRL-18439-3
NaOH: WLB-160828-1
H_2SO_4: CRL-18887-3
pH paper: CRL-17052-33
CRL-17032-3

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 14:00	Received By (Signature)
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)

Received By (Signature): Date: 8/4/16 Time: 1400

Received By (Signature): Date: Time:

Received For Laboratory By (Signature): Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

NWDLS
North Water District Laboratory Services, Inc.

North Water District
Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.08

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8104	QI-16-07-W	10:40	8/4	GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260 EPA 8260
2	1147-8105	QI-16-07-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(D) EPA 8260
3	1147-8106	QI-16-07-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	VOA-8260(T) EPA 8260
4	1147-8107	QI-16-07-W	10:40	8/4	GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA EPA 625
5	1147-8108	QI-16-07-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(D) EPA 625
6	1147-8109	QI-16-07-W			GRAB	60mL	VOA VIAL	Liquid	4°C	7D	SVOA(T) EPA 625
7	1147-8110	QI-16-07-W	8/4	10:40	GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082 EPA 8082
8	1147-8111	QI-16-07-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(D) EPA 8082
9	1147-8112	QI-16-07-W			GRAB	60mL	VOA VIAL	Liquid	4°C		PCB 8082(T) EPA 8082
10	1147-8113	QI-16-07-W	8/4	10:40	GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081 EPA 8081B
11	1147-8114	QI-16-07-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(D) EPA 8081B
12	1147-8115	QI-16-07-W			GRAB	60mL	VOA VIAL	Liquid	H2SO4 4°C	7D	OCP 8081(T) EPA 8081B
13	1147-8116	QI-16-07-W	8/4	10:40	GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH TCEQ 1005
14	1147-8117	QI-16-07-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(D) TCEQ 1005
15	1147-8118	QI-16-07-W			GRAB	40mL	VOA VIAL	Liquid	HCl <6°C	14D	TPH(T) TCEQ 1005
16	1147-8119	QI-16-07-W	8/4	10:40	GRAB	250mL	HDPE	Liquid	HNO3	180D	TotalMet SW846 6020A Preserved w/ HNO_3 at receipt.

NOTES: 4.0 °C FT1003
HNO_3: CRL-18881-4
pH paper: CRL-17052-35
Pulled bottles from other kits to cover missing containers in QI-16-07

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1405	Received By (Signature)	Date: 8/4/16 Time: 1410
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)	Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

NWDLS
North Water District Laboratory Services, Inc.

North Water District
Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.08

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
17	1147-8120	QI-16-07-W	8/4	10:40	GRAB	250mL	HDPE	Liquid	4°C	180D	DisMet SW846 6020A — Filtered, then preserved w/HNO3.
18	1147-8121	QI-16-07-W	8/4	10:40	GRAB	250mL	HDPE	Liquid	H2SO4 4°C	28D	NH3-N SM 4500-NH3 D — Preserved w/H2SO4 at receipt.
19	~~1147-8122~~	~~QI-16-07-W~~			~~GRAB~~	~~250mL~~	~~HDPE~~	~~Liquid~~	NaOH 4°C	~~14D~~	CN SM 4500-CN- E — Preserved w/NaOH at receipt.
20	1147-8123	QI-16-07-W			~~GRAB~~	~~250mL~~	~~HDPE~~	~~Liquid~~	H2SO4 4°C	28D	TOC-415 EPA 415.1 — Preserved w/H2SO4 at receipt.
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NOTES:
4.0°C
FTI003
CRL-17032-3
pH paper: CRL-17052-33
HNO_3: CRL-18881-4
H_2SO_4: CRL-18884-3
NaOH: CRL-16828-1

Sampler (Signature)	Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)	Date: 8/4/16 Time: 1530

Relinquished By (Signature): Date 8/4/16 Time 14:00
Received By (Signature): Date 8/4/16 Time 1400

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

NWDLS
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CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.09

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8144	QI-16-01-E	8/4/16	12:43	GRAB	1000mL	WM Glass	Solid	4°C		CORESED
2	1147-8145	QI-16-01-E	"	"	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
3	1147-8146	QI-16-01-E	"	"	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
4	1147-8147	QI-16-01-E	"	"	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
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NOTES:
4.0°C
FT7003

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)	Date: 8/4/16 Time: 1400
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)	Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

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CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

160815.10

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8148	QI-16-02-E	8/4/16	12:13	GRAB	1000mL	WM Glass	Solid	4°C		CORESED
2	1147-8149	QI-16-02-E	"	"	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
3	1147-8150	QI-16-02-E	"	"	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
4	1147-8151	QI-16-02-E	"	"	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
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16											

NOTES:
4.0°C
FT7003

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16	Received By (Signature)	Date: 8/4/16	pH Meter Calibration
Print Name: Marisa Weber	Relinquished By (Signature)	Time: 1400	Received By (Signature)	Time: 1400	Time / Slope / Buffers: 4 7 10
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16	Received For Laboratory By (Signature)	Date: 8/4/16	DO Meter 100% Air Calibration
		Time: 1530		Time: 1550	Time / Temp °C / D.O.

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CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.11

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8152	QI-16-03-E	8/4/16	11:13	GRAB	1000mL	WM Glass	Solid	4°C		CORESED
2	1147-8153	QI-16-03-E	↓	↓	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
3	1147-8154	QI-16-03-E	↓	↓	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
4	1147-8155	QI-16-03-E	↓	↓	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
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NOTES:
4.0°C
F77003

Sampler (Signature)	Relinquished By (Signature)	Date / Time	Received By (Signature)	Date / Time
[signature]	[signature]	Date: 8/4/16 Time: 1400	[signature]	Date: 8/4/16 Time: 1400
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature) [signature]	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature) [signature]	Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

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CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

160815I.12

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8156	QI-16-04-E	8/4/16	10:58	GRAB	1000mL	WM Glass	Solid	4°C		CORESED
2	1147-8157	QI-16-04-E			GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
3	1147-8158	QI-16-04-E			GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
4	1147-8159	QI-16-04-E			GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
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NOTES:
4.0°C
FT1003

Sampler (Signature)	Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
Marisa Weber	Marisa Weber	Date: 8/4/16 Time: 1400		Date: 8/4/16 Time: 1400
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)	Date: 8/4/16 Time: 1550

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

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CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.13

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8160	QI-16-05-E	8/4/16	10:00	GRAB	1000mL	WM Glass	Solid	4°C		CORESED
2	1147-8161	QI-16-05-E	"	"	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
3	1147-8162	QI-16-05-E	"	"	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
4	1147-8163	QI-16-05-E	"	"	GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
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NOTES:
4.0°C
F77003

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)	Date: 8/4/16 Time: 1400
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)	Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

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CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.14

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8164	QI-16-06-E	8/4/16	9:41	GRAB	1000mL	WM Glass	Solid	4°C		CORESED
2	1147-8165	QI-16-06-E			GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
3	1147-8166	QI-16-06-E			GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
4	1147-8167	QI-16-06-E			GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
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NOTES:
4.0°C
FTI003

Sampler (Signature)	Relinquished By (Signature) Date: 8/4/16 Time: 1400	Received By (Signature) Date: 8/4/16 Time: 1400	pH Meter Calibration: Time / Slope / Buffers (4 7 10)
Print Name: Marisa Weber	Relinquished By (Signature) Date: Time:	Received By (Signature) Date: Time:	DO Meter 100% Air Calibration: Time / Temp °C / D.O.
Affiliation: LEI	Relinquished To Laboratory By (Signature) Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature) Date: 8/4/16 Time: 1530	

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CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.15

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8168	QI-16-07-E	8/4/16	10:40	GRAB	1000mL	WM Glass	Solid	4°C		CORESED
2	1147-8169	QI-16-07-E			GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
3	1147-8170	QI-16-07-E			GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
4	1147-8171	QI-16-07-E			GRAB	1000mL	Amber Glass	Liquid	4°C		CORE H2O
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NOTES:
4.0°C
FT7003

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)
Print Name: Marisa Webb	Relinquished By (Signature)	Date: Time:	Received By (Signature)
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)

pH Meter Calibration		
Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration		
Time	Temp °C	D.O.

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CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.16

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8176	QI-16-01-S	8/4/16	12:43	GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
2	1147-8177	QI-16-01-S			GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
3	1147-8178	QI-16-01-S			GRAB	250mL	Glass, FP-cap	Solid	4°C	14D	TPH S&CM TCEQ 1005
4	1147-8179	QI-16-01-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S EPA 8260
5	1147-8180	QI-16-01-S	"	"	GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S(D) EPA 8260
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NOTES:
4.0°C
FTI003

Sampler (Signature)	Relinquished By (Signature)	Date 8/4/16 Time 1400	Received By (Signature)	Date 8/4/16 Time 1400
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date 8/4/16 Time 1530	Received For Laboratory By (Signature)	Date 8/4/16 Time 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

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CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.17

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8181	QI-16-02-S	8/4/16	12:13	GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
2	1147-8182	QI-16-02-S	↓	↓	GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
3	1147-8183	QI-16-02-S			GRAB	250mL	Glass, FP-cap	Solid	4°C	14D	TPH S&CM TCEQ 1005
4	1147-8184	QI-16-02-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S EPA 8260
5	1147-8185	QI-16-02-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S(D) EPA 8260
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NOTES:
4.0°C
FTI003

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)	Date: 8/4/16 Time: 1400
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)	Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

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CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.18

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8186	QI-16-03-S	8/4/16	11:13	GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
2	1147-8187	QI-16-03-S	"	"	GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
3	1147-8188	QI-16-03-S			GRAB	250mL	Glass, FP-cap	Solid	4°C	14D	TPH S&CM TCEQ 1005
4	1147-8189	QI-16-03-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S EPA 8260
5	1147-8190	QI-16-03-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S(D) EPA 8260
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NOTES:
4.0°C
FT2003

Sampler (Signature): Marisa Weber	Relinquished By (Signature): Marisa Weber	Date: 8/4/16 Time: 1400	Received By (Signature):	Date: 8/4/16 Time: 1400
Print Name: Marisa Weber	Relinquished By (Signature):	Date: Time:	Received By (Signature):	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature):	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature):	Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

NWDLS
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North Water District
Laboratory Services, Inc.
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(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.19

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8191	QI-16-04-S	8/4/16	10:58	GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
2	1147-8192	QI-16-04-S			GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
3	1147-8193	QI-16-04-S			GRAB	250mL	Glass, FP-cap	Solid	4°C	14D	TPH S&CM TCEQ 1005
4	1147-8194	QI-16-04-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S EPA 8260
5	1147-8195	QI-16-04-S	↓	↓	GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S(D) EPA 8260
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											

NOTES:
4.0°C
FTIR3

Sampler (Signature)	Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
Marisa Weber	Marisa Weber	Date: 8/4/16 Time: 1400		Date: 8/4/16 Time: 1400
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)	Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

NWDLS
North Water District Laboratory Services, Inc.

North Water District
Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.20

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8196	QI-16-05-S	8/4/16	12.43	GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
2	1147-8197	QI-16-05-S	↓	↓	GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
3	1147-8198	QI-16-05-S			GRAB	250mL	Glass, FP-cap	Solid	4°C	14D	TPH S&CM TCEQ 1005
4	1147-8199	QI-16-05-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S EPA 8260
5	1147-8200	QI-16-05-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S(D) EPA 8260
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											

NOTES:
4.0°C
FT2003

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)

pH Meter Calibration		
Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration		
Time	Temp °C	D.O.

NWDLS
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North Water District
Laboratory Services, Inc.
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(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1608151.21

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8201	QI-16-06-S	8/4/16	9:41	GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
2	1147-8202	QI-16-06-S			GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
3	1147-8203	QI-16-06-S			GRAB	250mL	Glass, FP-cap	Solid	4°C	14D	TPH S&CM TCEQ 1005
4	1147-8204	QI-16-06-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S EPA 8260
5	1147-8205	QI-16-06-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S(D) EPA 8260
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											

NOTES:
4.0°C
FTI003

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)	Date: 8/4/16 Time: 1400
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)	Date: Time:
Affiliation: LEI	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)	Date: 8/4/16 Time: 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

RP16090102

NWDLS
North Water District Laboratory Services, Inc.

North Water District
Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385
(936) 321-6060 - fax (936) 321-6061 - lab@nwdls.com

CHAIN OF CUSTODY RECORD

3472 - Quintana Term. Dock1 Maint. Dredge

Site: 3472
Quintana Term. Dock1 Maint. Dredge

Customer: LLD
Lloyd Engineering, Inc.
6565 West Loop, Suite 708
Bellaire, TX 77401

1604151.22

#	Sample ID	Collection Point	Date	Time	Sample Type	Container Size	Container Type	Container Content	Preserve	Hold	Requested Analysis & Remarks
1	1147-8206	QI-16-07-S	8/4/16	10:40	GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
2	1147-8207	QI-16-07-S			GRAB	250mL	Glass, FP-cap	Solid	4°C		CORESED
3	1147-8208	QI-16-07-S			GRAB	250mL	Glass, FP-cap	Solid	4°C	14D	TPH S&CM TCEQ 1005
4	1147-8209	QI-16-07-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S EPA 8260
5	1147-8210	QI-16-07-S			GRAB	40mL	VOA VIAL	Solid	4°C	7D	VOA-S(D) EPA 8260
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											

NOTES:
4.0°C
FTI003

Sampler (Signature)	Relinquished By (Signature)	Date: 8/4/16 Time: 1400	Received By (Signature)
Print Name: Marisa Weber	Relinquished By (Signature)	Date: Time:	Received By (Signature)
Affiliation: LET	Relinquished To Laboratory By (Signature)	Date: 8/4/16 Time: 1530	Received For Laboratory By (Signature)

Received By (Signature): Date 8/4/16 Time 1400

Received For Laboratory By (Signature): Date 8/4/16 Time 1530

pH Meter Calibration

Time	Slope	Buffers
		4 7 10

DO Meter 100% Air Calibration

Time	Temp °C	D.O.

RP16090102

SAMPLE CONDITION CHECKLIST

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name : Lloyd Engineering, Inc.		**Contact :** Marisa Weber
Client Address : 6565 West Loop, Suite 708		**Contact Phone :** 8324264656
JobID : 1608151	**Date Received :** 08/04/2016	**Time Received :** 03:30 PM
Temperature : 4.0 degrees C	**Sample pH :** Verified upon receipt	
ThermometerID : FTI003	**pHPaperID :** CRL-17052-33	

Comments : Include actions taken to resolve discrepancies/problem:

	Check Points	Yes	No	N/A
1	All samples were logged or labeled.	✔		
2	Bottle count on C-O-C matches bottle received	✔		
3	C-O-C signed and dated.	✔		
4	Cooler seal present and signed.			✔
5	If requested, sample(s) received with signed sample custody seal			✔
6	Sample amount is sufficient for analyses requested	✔		
7	Sample containers arrived intact. (if no, comment)	✔		
8	Sample ID lables Match C-O-C ID's	✔		
9	Sample received at 6°C or Less	✔		
10	Sample(s) in a cooler.	✔		
11	Sample(s) were received in appropriate contatiner. (If no, comment)	✔		
12	Sample(s) were received with proper preserative.	✔		
13	Samples accepted.	✔		
14	Samples received within holding time for analysis requested	✔		
15	Zero headspace in liquid VOA vials	✔		

RP16090102

SAMPLE CONDITION CHECKLIST

NWDLS
North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

Client Name : Lloyd Engineering, Inc.		**Contact :** Marisa Weber
Client Address : 6565 West Loop, Suite 708		**Contact Phone :** 8324264656
JobID : 1608151	**Date Received :** 08/04/2016	**Time Received :** 03:30 PM
Temperature : 4.0 degrees C	**Sample pH :** Verified upon receipt	
ThermometerID : FTI003	**pHPaperID :** CRL-17052-33	

Comments : Include actions taken to resolve discrepancies/problem:

	Check Points	Yes	No	N/A

CheckIn By : Arturo Razo CheckIn Date : 08/04/2016

TERM AND QUALIFIER DEFINITION

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

General Term Definition

Conc.	Concentration
DF	Dilution Factor - the factor applied to the reported data due to sample preparation, dilution, or moisture content
mg/l	Milligrams per Liter
mg/kg	Milligrams per Kilogram
ppm	Parts per Million
µg/L	Micrograms per Liter
µg/g	Micrograms per Gram
ppb	Parts per Billion
gr/gal	Grains per Gallon
SU	Standard Units
CCU	Cobalt Color Units
NTU	Nephelometric Turbidity Units
µS/cm	Microsiemens per cm at 25C
P/A	Presence/Absence
CFU	Colony Forming Units
MPN	Most Probable Number
RB	Reagent Blank
MB	Method Blank
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LFM	Laboratory Fortified Matrix (MS – Matrix Spike)
LFMD	Laboratory Fortified Matrix Duplicate (MSD – Matrix Spike Duplicate)
DUP	Sample Duplicate
RPD	Relative Percent Difference
%Rec	Percent Recovery
TNTC	Too numerous to count
NC	Not Calculable
SG	Silica Gel - Clean-Up
BRL	Below Reporting Limit
BDL	Below Detection Limit

Qualifier Definition

B	Analyte was found in the associated method blank.

TERM AND QUALIFIER DEFINITION

NWDLS North Water District Laboratory Services, Inc.
8725 Fawn Trail - The Woodlands, TX 77385 - www.NWDLS.com - (936) 321-6060

J1	Estimated value-The reported value failed the established quality control criteria for accuracy and /or precision.
S	The surrogate recovery was outside the established laboratory recovery limit.
U	Non-detected compound.
MDL	Method Detection Limit – The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero. Based on standard deviation of replicate spiked samples taken through all steps of the analytical procedure following 40 CFR Part 136 Appendix B.
SDL	Sample Detection Limit – The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero. The SDL is an adjusted limit thus sample specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments. If there are no sample specific parameters, the MDL=SDL.
LOQ	Limit of Quantitation - Analyte concentration that corresponds to the lowest level lab reports with confidence in accuracy of quantitation and without qualification (i.e. J-flagged). The LOQ is at or above the lowest calibration standard.
LRL	Laboratory Reporting Limit – Analyte concentration that corresponds to the lowest level lab reports with confidence in accuracy of quantitation and without qualification (i.e. J-flagged). The LRL is an adjusted limit thus sample specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments. If there are no sample specific parameters, the LOQ=LRL.
TDL	Target Detection Limit – Performance goal set greater than the lowest, technically feasible detection limit for routine analytical methods and less than the available regulatory criteria or guidelines for evaluating dredged material.
J	Estimated value - The reported value is between the detection limit (MDL/SDL) and quantitation limit (LOQ/LRL).

Appendix C

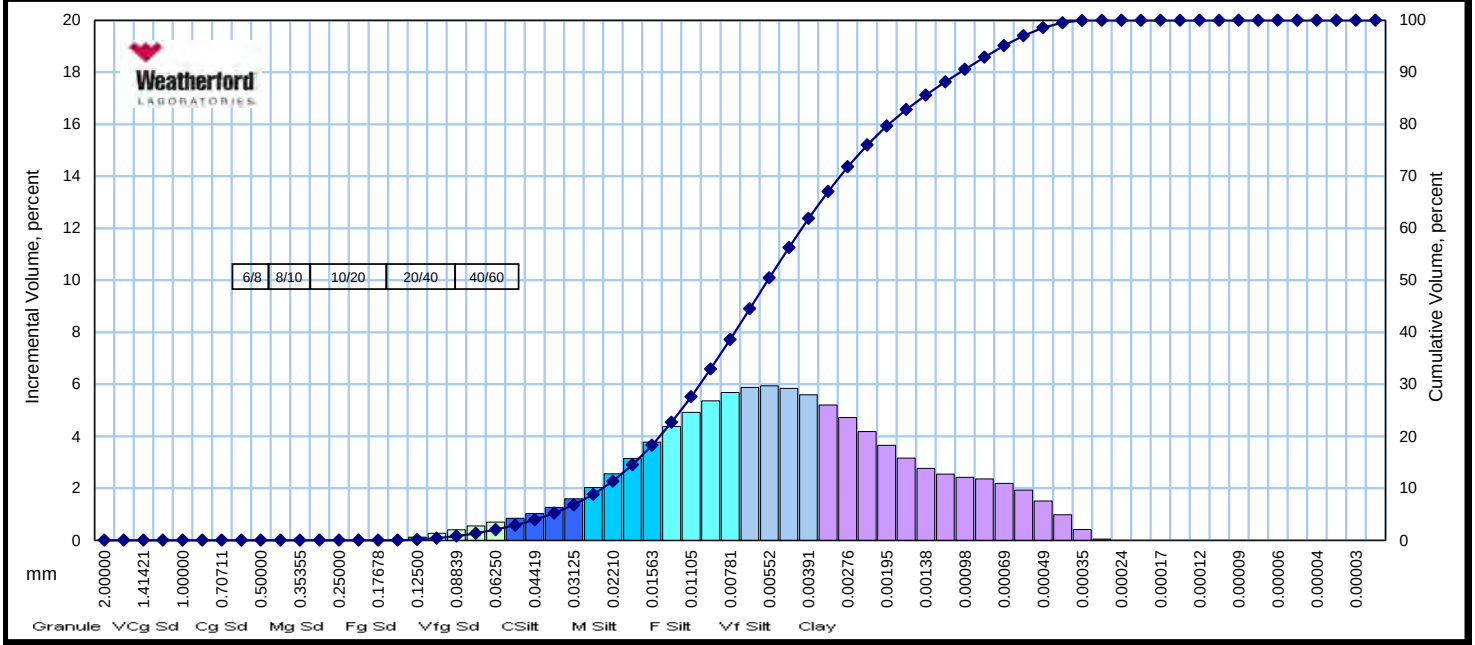
Grainsize Data

LASER GRAIN SIZE ANALYSIS

Soil

North Water District Laboratory Services, Inc.
QI-16

Sample ID: QI-16-01-S
File: HH-92909



Wentworth Size Class	Mesh Size Inches	Mesh Size Millimeters	Phi of Screen	U.S. Sieve No.	Incremental Volume, percent	Cumulative Volume, percent
Granule & >	0.078740	2.00000	- 1.00	10	0.0	0.0
VCg Sand	0.066212	1.68179	- 0.75	12	0.0	0.0
	0.055678	1.41421	- 0.50	14	0.0	0.0
	0.046819	1.18921	- 0.25	16	0.0	0.0
	0.039370	1.00000	0.00	18	0.0	0.0
Cg Sand	0.033106	0.84090	0.25	20	0.0	0.0
	0.027839	0.70711	0.50	25	0.0	0.0
	0.023410	0.59460	0.75	30	0.0	0.0
	0.019685	0.50000	1.00	35	0.0	0.0
Mg Sand	0.016553	0.42045	1.25	40	0.0	0.0
	0.013919	0.35355	1.50	45	0.0	0.0
	0.011705	0.29730	1.75	50	0.0	0.0
	0.009843	0.25000	2.00	60	0.0	0.0
Fg Sand	0.008277	0.21022	2.25	70	0.0	0.0
	0.006960	0.17678	2.50	80	0.0	0.0
	0.005852	0.14865	2.75	100	0.0	0.0
	0.004921	0.12500	3.00	120	0.1	0.1
Vfg Sand	0.004138	0.10511	3.25	140	0.3	0.4
	0.003480	0.08839	3.50	170	0.4	0.8
	0.002926	0.07433	3.75	200	0.6	1.4
	0.002461	0.06250	4.00	230	0.7	2.1
C Silt	0.002069	0.05256	4.25	270	0.8	2.9
	0.001740	0.04419	4.50	325	1.0	3.9
	0.001463	0.03716	4.75	400	1.3	5.2
	0.001230	0.03125	5.00	450	1.6	6.8
M Silt	0.001035	0.02628	5.25	500	2.0	8.8
	0.000870	0.02210	5.50	635	2.6	11.4
	0.000732	0.01858	5.75		3.1	14.5
	0.000615	0.01563	6.00		3.8	18.3
F Silt	0.000517	0.01314	6.25		4.4	22.7
	0.000435	0.01105	6.50		4.9	27.6
	0.000366	0.00929	6.75		5.4	32.9
	0.000308	0.00781	7.00		5.7	38.6
Vf Silt	0.000259	0.00657	7.25		5.9	44.5
	0.000217	0.00552	7.50		5.9	50.4
	0.000183	0.00465	7.75		5.8	56.3
	0.000154	0.00391	8.00		5.6	61.9
Clay	0.000129	0.00329	8.25		5.2	67.1
	0.000109	0.00276	8.50		4.7	71.8
	0.000091	0.00232	8.75		4.2	76.0
	0.000077	0.00195	9.00		3.7	79.7
	0.000065	0.00164	9.25		3.2	82.8
	0.000054	0.00138	9.50		2.8	85.6
	0.000046	0.00116	9.75		2.5	88.1
	0.000038	0.00098	10.00		2.4	90.6
	0.000032	0.00082	10.25		2.4	92.9
	0.000027	0.00069	10.50		2.2	95.1
	0.000023	0.00058	10.75		1.9	97.0
	0.000019	0.00049	11.00		1.5	98.6
	0.000016	0.00041	11.25		1.0	99.5
	0.000014	0.00035	11.50		0.4	100.0
	0.000011	0.00029	11.75		0.0	100.0
	0.000010	0.00024	12.00		0.0	100.0
	0.000008	0.00021	12.25		0.0	100.0
	0.000007	0.00017	12.50		0.0	100.0
	0.000006	0.00015	12.75		0.0	100.0
	0.000005	0.00012	13.00		0.0	100.0
	0.000004	0.00010	13.25		0.0	100.0
	0.000003	0.00009	13.51		0.0	100.0
	0.000003	0.00007	13.74		0.0	100.0
	0.000002	0.00006	14.00		0.0	100.0
	0.000002	0.000051	14.26		0.0	100.0
	0.000002	0.000043	14.51		0.0	100.0
	0.000001	0.000036	14.76		0.0	100.0
	0.000001	0.000031	14.98		0.0	100.0
	0.000001	0.000026	15.23		0.0	100.0
	TOTALS				100.0	100.0

Description	Sieve Size	Volume Percent
Granule	10	0.0
Very Coarse Sand	18	0.0
Coarse Sand	35	0.0
Medium Sand	60	0.0
Fine Sand	120	0.1
Very Fine Sand	230	1.9
Coarse Silt	450	4.7
Medium Silt		11.5
Fine Silt		20.3
Very Fine Silt		23.3
Clay		38.1
	Total	100.0

Cumulative Volume Percent greater than			
	Phi	Particle Size	
Percentile	Value	Inches	Millimeters
5	4.7154	0.0015	0.0381
10	5.3731	0.0009	0.0241
16	5.8533	0.0007	0.0173
25	6.3717	0.0005	0.0121
50	7.4811	0.0002	0.0056
75	8.6872	0.0001	0.0024
84	9.3532	0.0001	0.0015
90	9.9415	0.0000	0.0010
95	10.4866	0.0000	0.0007

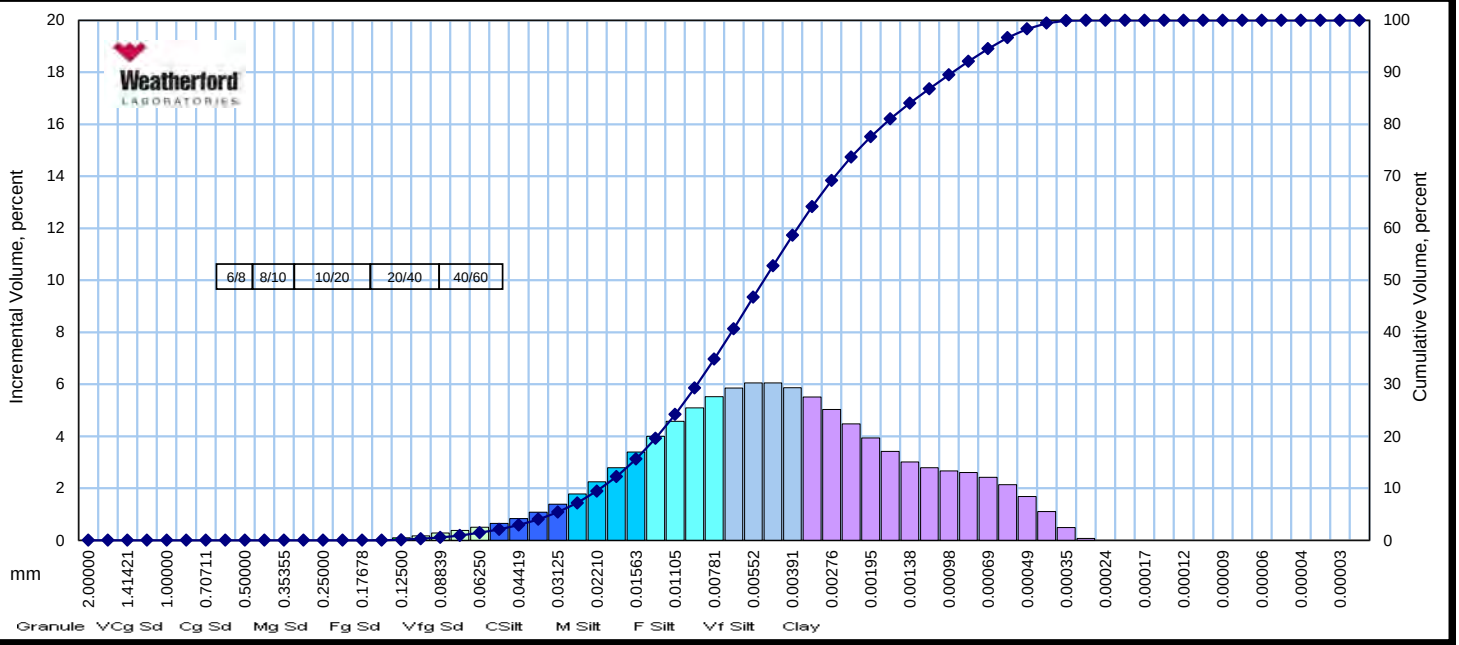
Measure	Trask, mm	Folk, phi	Inches
Median	0.0056	7.4811	0.0002
Mean	0.0073	7.5626	0.0003
Sorting	2.2311	1.7494	
Skewness	0.9352	0.0557	
Kurtosis	0.2088	1.0215	

LASER GRAIN SIZE ANALYSIS

Soil

North Water District Laboratory Services, Inc.
QI-16

Sample ID: QI-16-02-S
File: HH-92909



Wentworth Size Class	Mesh Size Inches	Mesh Size Millimeters	Phi of Screen	U.S. Sieve No.	Incremental Volume, percent	Cumulative Volume, percent
Granule & >	0.078740	2.00000	- 1.00	10	0.0	0.0
VCg Sand	0.066212	1.68179	- 0.75	12	0.0	0.0
	0.055678	1.41421	- 0.50	14	0.0	0.0
	0.046819	1.18921	- 0.25	16	0.0	0.0
	0.039370	1.00000	0.00	18	0.0	0.0
Cg Sand	0.033106	0.84090	0.25	20	0.0	0.0
	0.027839	0.70711	0.50	25	0.0	0.0
	0.023410	0.59460	0.75	30	0.0	0.0
	0.019685	0.50000	1.00	35	0.0	0.0
Mg Sand	0.016553	0.42045	1.25	40	0.0	0.0
	0.013919	0.35355	1.50	45	0.0	0.0
	0.011705	0.29730	1.75	50	0.0	0.0
	0.009843	0.25000	2.00	60	0.0	0.0
Fg Sand	0.008277	0.21022	2.25	70	0.0	0.0
	0.006960	0.17678	2.50	80	0.0	0.0
	0.005852	0.14865	2.75	100	0.0	0.0
	0.004921	0.12500	3.00	120	0.1	0.1
Vfg Sand	0.004138	0.10511	3.25	140	0.2	0.3
	0.003480	0.08839	3.50	170	0.3	0.6
	0.002926	0.07433	3.75	200	0.4	0.9
	0.002461	0.06250	4.00	230	0.5	1.4
C Silt	0.002069	0.05256	4.25	270	0.7	2.1
	0.001740	0.04419	4.50	325	0.8	2.9
	0.001463	0.03716	4.75	400	1.1	4.0
	0.001230	0.03125	5.00	450	1.4	5.4
M Silt	0.001035	0.02628	5.25	500	1.8	7.2
	0.000870	0.02210	5.50	635	2.2	9.4
	0.000732	0.01858	5.75		2.8	12.2
	0.000615	0.01563	6.00		3.4	15.6
F Silt	0.000517	0.01314	6.25		4.0	19.6
	0.000435	0.01105	6.50		4.6	24.2
	0.000366	0.00929	6.75		5.1	29.3
	0.000308	0.00781	7.00		5.5	34.8
Vf Silt	0.000259	0.00657	7.25		5.9	40.7
	0.000217	0.00552	7.50		6.0	46.7
	0.000183	0.00465	7.75		6.1	52.8
	0.000154	0.00391	8.00		5.9	58.7
Clay	0.000129	0.00329	8.25		5.5	64.2
	0.000109	0.00276	8.50		5.0	69.2
	0.000091	0.00232	8.75		4.5	73.7
	0.000077	0.00195	9.00		3.9	77.6
	0.000065	0.00164	9.25		3.4	81.0
	0.000054	0.00138	9.50		3.0	84.0
	0.000046	0.00116	9.75		2.8	86.8
	0.000038	0.00098	10.00		2.7	89.5
	0.000032	0.00082	10.25		2.6	92.1
	0.000027	0.00069	10.50		2.4	94.5
	0.000023	0.00058	10.75		2.1	96.7
	0.000019	0.00049	11.00		1.7	98.3
	0.000016	0.00041	11.25		1.1	99.4
	0.000014	0.00035	11.50		0.5	99.9
	0.000011	0.00029	11.75		0.1	100.0
	0.000010	0.00024	12.00		0.0	100.0
	0.000008	0.00021	12.25		0.0	100.0
	0.000007	0.00017	12.50		0.0	100.0
	0.000006	0.00015	12.75		0.0	100.0
	0.000005	0.00012	13.00		0.0	100.0
	0.000004	0.00010	13.25		0.0	100.0
	0.000003	0.00009	13.51		0.0	100.0
	0.000003	0.00007	13.74		0.0	100.0
	0.000002	0.00006	14.00		0.0	100.0
	0.000002	0.000051	14.26		0.0	100.0
	0.000002	0.000043	14.51		0.0	100.0
	0.000001	0.000036	14.76		0.0	100.0
	0.000001	0.000031	14.98		0.0	100.0
	0.000001	0.000026	15.23		0.0	100.0
	TOTALS				100.0	100.0

Description	Sieve Size	Volume Percent
Granule	10	0.0
Very Coarse Sand	18	0.0
Coarse Sand	35	0.0
Medium Sand	60	0.0
Fine Sand	120	0.1
Very Fine Sand	230	1.3
Coarse Silt	450	4.0
Medium Silt		10.2
Fine Silt		19.2
Very Fine Silt		23.8
Clay		41.3
	Total	100.0

Cumulative Volume Percent greater than			
	Phi	Particle Size	
Percentile	Value	Inches	Millimeters
5	4.9326	0.0013	0.0327
10	5.5546	0.0008	0.0213
16	6.0253	0.0006	0.0154
25	6.5409	0.0004	0.0107
50	7.6349	0.0002	0.0050
75	8.8296	0.0001	0.0022
84	9.4959	0.0001	0.0014
90	10.0474	0.0000	0.0009
95	10.5522	0.0000	0.0007

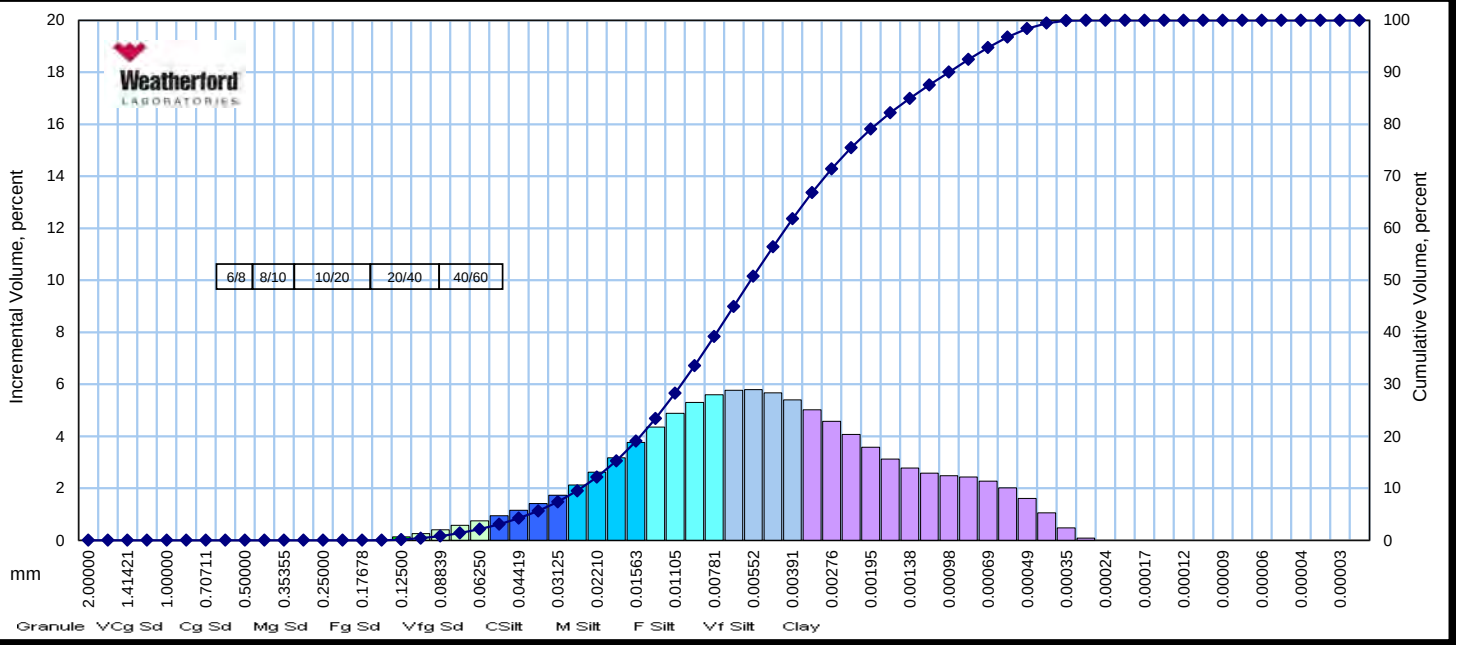
Measure	Trask, mm	Folk, phi	Inches
Median	0.0050	7.6349	0.0002
Mean	0.0065	7.7187	0.0003
Sorting	2.2105	1.7191	
Skewness	0.9327	0.0553	
Kurtosis	0.2101	1.0063	

LASER GRAIN SIZE ANALYSIS

Soil

North Water District Laboratory Services, Inc.
QI-16

Sample ID: QI-16-03-S
File: HH-92909



Wentworth Size Class	Mesh Size Inches	Mesh Size Millimeters	Phi of Screen	U.S. Sieve No.	Incremental Volume, percent	Cumulative Volume, percent
Granule & >	0.078740	2.00000	- 1.00	10	0.0	0.0
VCg Sand	0.066212	1.68179	- 0.75	12	0.0	0.0
	0.055678	1.41421	- 0.50	14	0.0	0.0
	0.046819	1.18921	- 0.25	16	0.0	0.0
	0.039370	1.00000	0.00	18	0.0	0.0
Cg Sand	0.033106	0.84090	0.25	20	0.0	0.0
	0.027839	0.70711	0.50	25	0.0	0.0
	0.023410	0.59460	0.75	30	0.0	0.0
	0.019685	0.50000	1.00	35	0.0	0.0
Mg Sand	0.016553	0.42045	1.25	40	0.0	0.0
	0.013919	0.35355	1.50	45	0.0	0.0
	0.011705	0.29730	1.75	50	0.0	0.0
	0.009843	0.25000	2.00	60	0.0	0.0
Fg Sand	0.008277	0.21022	2.25	70	0.0	0.0
	0.006960	0.17678	2.50	80	0.0	0.0
	0.005852	0.14865	2.75	100	0.0	0.0
	0.004921	0.12500	3.00	120	0.1	0.1
Vfg Sand	0.004138	0.10511	3.25	140	0.3	0.4
	0.003480	0.08839	3.50	170	0.4	0.8
	0.002926	0.07433	3.75	200	0.6	1.4
	0.002461	0.06250	4.00	230	0.8	2.1
C Silt	0.002069	0.05256	4.25	270	0.9	3.1
	0.001740	0.04419	4.50	325	1.2	4.2
	0.001463	0.03716	4.75	400	1.4	5.6
	0.001230	0.03125	5.00	450	1.7	7.4
M Silt	0.001035	0.02628	5.25	500	2.1	9.5
	0.000870	0.02210	5.50	635	2.6	12.1
	0.000732	0.01858	5.75		3.2	15.3
	0.000615	0.01563	6.00		3.8	19.1
F Silt	0.000517	0.01314	6.25		4.4	23.4
	0.000435	0.01105	6.50		4.9	28.3
	0.000366	0.00929	6.75		5.3	33.6
	0.000308	0.00781	7.00		5.6	39.2
Vf Silt	0.000259	0.00657	7.25		5.8	45.0
	0.000217	0.00552	7.50		5.8	50.8
	0.000183	0.00465	7.75		5.7	56.4
	0.000154	0.00391	8.00		5.4	61.8
Clay	0.000129	0.00329	8.25		5.0	66.9
	0.000109	0.00276	8.50		4.6	71.4
	0.000091	0.00232	8.75		4.1	75.5
	0.000077	0.00195	9.00		3.6	79.1
	0.000065	0.00164	9.25		3.1	82.2
	0.000054	0.00138	9.50		2.8	85.0
	0.000046	0.00116	9.75		2.6	87.6
	0.000038	0.00098	10.00		2.5	90.0
	0.000032	0.00082	10.25		2.4	92.5
	0.000027	0.00069	10.50		2.3	94.8
	0.000023	0.00058	10.75		2.0	96.8
	0.000019	0.00049	11.00		1.6	98.4
	0.000016	0.00041	11.25		1.1	99.4
	0.000014	0.00035	11.50		0.5	99.9
	0.000011	0.00029	11.75		0.1	100.0
	0.000010	0.00024	12.00		0.0	100.0
	0.000008	0.00021	12.25		0.0	100.0
	0.000007	0.00017	12.50		0.0	100.0
	0.000006	0.00015	12.75		0.0	100.0
	0.000005	0.00012	13.00		0.0	100.0
	0.000004	0.00010	13.25		0.0	100.0
	0.000003	0.00009	13.51		0.0	100.0
	0.000003	0.00007	13.74		0.0	100.0
	0.000002	0.00006	14.00		0.0	100.0
	0.000002	0.000051	14.26		0.0	100.0
	0.000002	0.000043	14.51		0.0	100.0
	0.000001	0.000036	14.76		0.0	100.0
	0.000001	0.000031	14.98		0.0	100.0
	0.000001	0.000026	15.23		0.0	100.0
	TOTALS				100.0	100.0

Description	Sieve Size	Volume Percent
Granule	10	0.0
Very Coarse Sand	18	0.0
Coarse Sand	35	0.0
Medium Sand	60	0.0
Fine Sand	120	0.1
Very Fine Sand	230	2.0
Coarse Silt	450	5.2
Medium Silt		11.7
Fine Silt		20.1
Very Fine Silt		22.6
Clay		38.2
	Total	100.0

Cumulative Volume Percent greater than			
	Phi	Particle Size	
Percentile	Value	Inches	Millimeters
5	4.6429	0.0016	0.0400
10	5.3020	0.0010	0.0253
16	5.8008	0.0007	0.0179
25	6.3344	0.0005	0.0124
50	7.4673	0.0002	0.0057
75	8.7179	0.0001	0.0024
84	9.4090	0.0001	0.0015
90	9.9949	0.0000	0.0010
95	10.5264	0.0000	0.0007

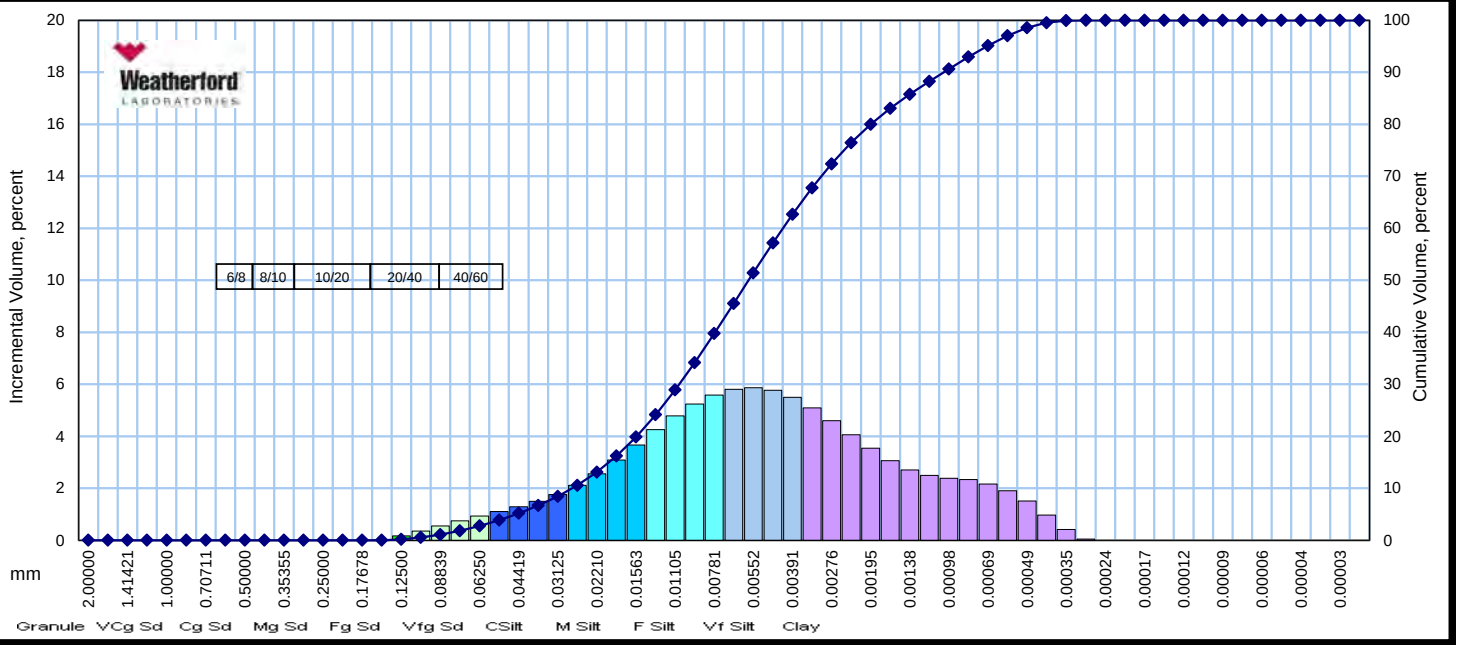
Measure	Trask, mm	Folk, phi	Inches
Median	0.0057	7.4673	0.0002
Mean	0.0074	7.5590	0.0003
Sorting	2.2842	1.7935	
Skewness	0.9216	0.0581	
Kurtosis	0.2055	1.0117	

LASER GRAIN SIZE ANALYSIS

Soil

North Water District Laboratory Services, Inc.
QI-16

Sample ID: QI-16-04-S
File: HH-92909



Wentworth Size Class	Mesh Size Inches	Mesh Size Millimeters	Phi of Screen	U.S. Sieve No.	Incremental Volume, percent	Cumulative Volume, percent
Granule & >	0.078740	2.00000	- 1.00	10	0.0	0.0
VCg Sand	0.066212	1.68179	- 0.75	12	0.0	0.0
	0.055678	1.41421	- 0.50	14	0.0	0.0
	0.046819	1.18921	- 0.25	16	0.0	0.0
	0.039370	1.00000	0.00	18	0.0	0.0
Cg Sand	0.033106	0.84090	0.25	20	0.0	0.0
	0.027839	0.70711	0.50	25	0.0	0.0
	0.023410	0.59460	0.75	30	0.0	0.0
	0.019685	0.50000	1.00	35	0.0	0.0
Mg Sand	0.016553	0.42045	1.25	40	0.0	0.0
	0.013919	0.35355	1.50	45	0.0	0.0
	0.011705	0.29730	1.75	50	0.0	0.0
	0.009843	0.25000	2.00	60	0.0	0.0
Fg Sand	0.008277	0.21022	2.25	70	0.0	0.0
	0.006960	0.17678	2.50	80	0.0	0.0
	0.005852	0.14865	2.75	100	0.0	0.0
	0.004921	0.12500	3.00	120	0.2	0.2
Vfg Sand	0.004138	0.10511	3.25	140	0.4	0.5
	0.003480	0.08839	3.50	170	0.6	1.1
	0.002926	0.07433	3.75	200	0.8	1.8
	0.002461	0.06250	4.00	230	0.9	2.8
C Silt	0.002069	0.05256	4.25	270	1.1	3.9
	0.001740	0.04419	4.50	325	1.3	5.2
	0.001463	0.03716	4.75	400	1.5	6.7
	0.001230	0.03125	5.00	450	1.8	8.4
M Silt	0.001035	0.02628	5.25	500	2.1	10.6
	0.000870	0.02210	5.50	635	2.6	13.1
	0.000732	0.01858	5.75		3.1	16.2
	0.000615	0.01563	6.00		3.7	19.9
F Silt	0.000517	0.01314	6.25		4.3	24.1
	0.000435	0.01105	6.50		4.8	28.9
	0.000366	0.00929	6.75		5.2	34.2
	0.000308	0.00781	7.00		5.6	39.7
Vf Silt	0.000259	0.00657	7.25		5.8	45.5
	0.000217	0.00552	7.50		5.9	51.4
	0.000183	0.00465	7.75		5.8	57.2
	0.000154	0.00391	8.00		5.5	62.7
Clay	0.000129	0.00329	8.25		5.1	67.8
	0.000109	0.00276	8.50		4.6	72.4
	0.000091	0.00232	8.75		4.1	76.4
	0.000077	0.00195	9.00		3.5	80.0
	0.000065	0.00164	9.25		3.1	83.1
	0.000054	0.00138	9.50		2.7	85.8
	0.000046	0.00116	9.75		2.5	88.3
	0.000038	0.00098	10.00		2.4	90.6
	0.000032	0.00082	10.25		2.3	93.0
	0.000027	0.00069	10.50		2.2	95.1
	0.000023	0.00058	10.75		1.9	97.0
	0.000019	0.00049	11.00		1.5	98.6
	0.000016	0.00041	11.25		1.0	99.5
	0.000014	0.00035	11.50		0.4	99.9
	0.000011	0.00029	11.75		0.1	100.0
	0.000010	0.00024	12.00		0.0	100.0
	0.000008	0.00021	12.25		0.0	100.0
	0.000007	0.00017	12.50		0.0	100.0
	0.000006	0.00015	12.75		0.0	100.0
	0.000005	0.00012	13.00		0.0	100.0
	0.000004	0.00010	13.25		0.0	100.0
	0.000003	0.00009	13.51		0.0	100.0
	0.000003	0.00007	13.74		0.0	100.0
	0.000002	0.00006	14.00		0.0	100.0
	0.000002	0.000051	14.26		0.0	100.0
	0.000002	0.000043	14.51		0.0	100.0
	0.000001	0.000036	14.76		0.0	100.0
	0.000001	0.000031	14.98		0.0	100.0
	0.000001	0.000026	15.23		0.0	100.0
	TOTALS				100.0	100.0

Description	Sieve Size	Volume Percent
Granule	10	0.0
Very Coarse Sand	18	0.0
Coarse Sand	35	0.0
Medium Sand	60	0.0
Fine Sand	120	0.2
Very Fine Sand	230	2.6
Coarse Silt	450	5.7
Medium Silt		11.4
Fine Silt		19.9
Very Fine Silt		22.9
Clay		37.3
	Total	100.0

Cumulative Volume Percent greater than			
	Phi	Particle Size	
Percentile	Value	Inches	Millimeters
5	4.4672	0.0018	0.0452
10	5.1891	0.0011	0.0274
16	5.7347	0.0007	0.0188
25	6.2974	0.0005	0.0127
50	7.4397	0.0002	0.0058
75	8.6566	0.0001	0.0025
84	9.3344	0.0001	0.0015
90	9.9316	0.0000	0.0010
95	10.4824	0.0000	0.0007

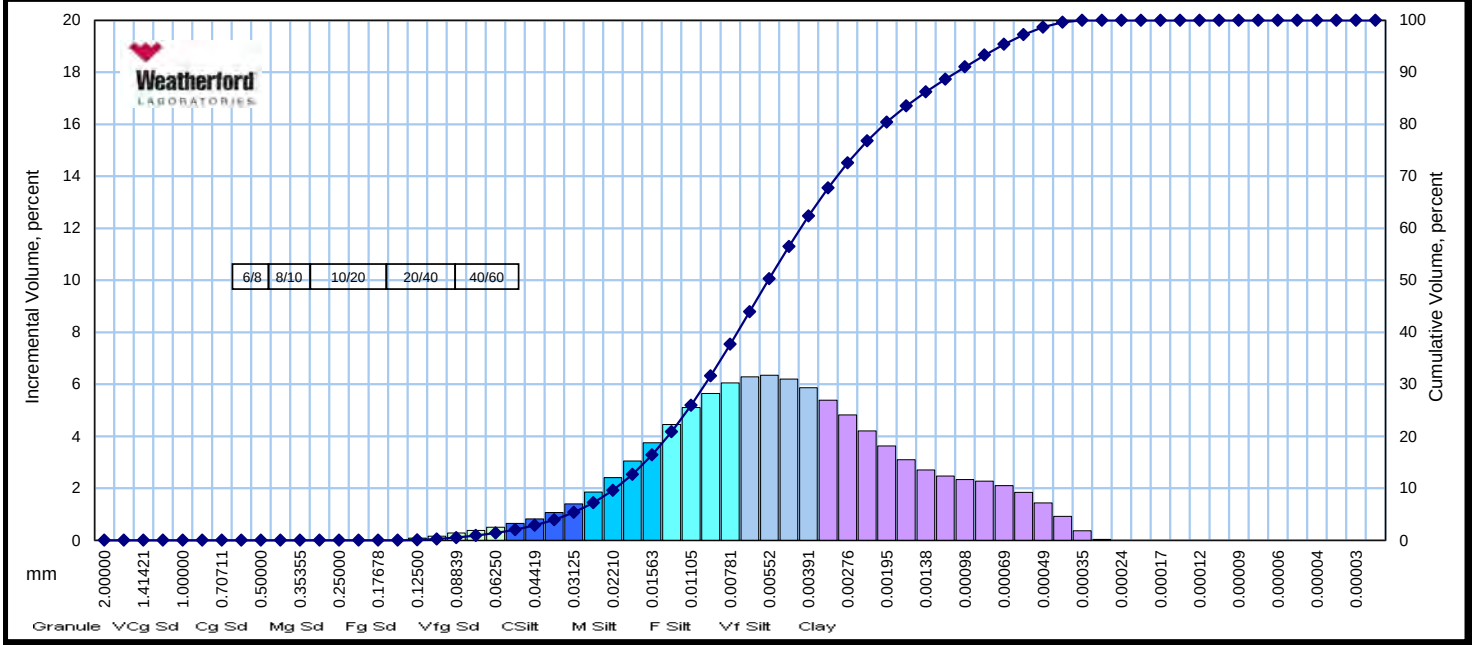
Measure	Trask, mm	Folk, phi	Inches
Median	0.0058	7.4397	0.0002
Mean	0.0076	7.5029	0.0003
Sorting	2.2651	1.8113	
Skewness	0.9496	0.0322	
Kurtosis	0.1940	1.0450	

LASER GRAIN SIZE ANALYSIS

Soil

North Water District Laboratory Services, Inc.
QI-16

Sample ID: QI-16-05-S
File: HH-92909



Wentworth Size Class	Mesh Size Inches	Mesh Size Millimeters	Phi of Screen	U.S. Sieve No.	Incremental Volume, percent	Cumulative Volume, percent
Granule & >	0.078740	2.00000	- 1.00	10	0.0	0.0
VCg Sand	0.066212	1.68179	- 0.75	12	0.0	0.0
	0.055678	1.41421	- 0.50	14	0.0	0.0
	0.046819	1.18921	- 0.25	16	0.0	0.0
	0.039370	1.00000	0.00	18	0.0	0.0
Cg Sand	0.033106	0.84090	0.25	20	0.0	0.0
	0.027839	0.70711	0.50	25	0.0	0.0
	0.023410	0.59460	0.75	30	0.0	0.0
	0.019685	0.50000	1.00	35	0.0	0.0
Mg Sand	0.016553	0.42045	1.25	40	0.0	0.0
	0.013919	0.35355	1.50	45	0.0	0.0
	0.011705	0.29730	1.75	50	0.0	0.0
	0.009843	0.25000	2.00	60	0.0	0.0
Fg Sand	0.008277	0.21022	2.25	70	0.0	0.0
	0.006960	0.17678	2.50	80	0.0	0.0
	0.005852	0.14865	2.75	100	0.0	0.0
	0.004921	0.12500	3.00	120	0.1	0.1
Vfg Sand	0.004138	0.10511	3.25	140	0.2	0.2
	0.003480	0.08839	3.50	170	0.3	0.5
	0.002926	0.07433	3.75	200	0.4	0.9
	0.002461	0.06250	4.00	230	0.5	1.4
C Silt	0.002069	0.05256	4.25	270	0.6	2.0
	0.001740	0.04419	4.50	325	0.8	2.9
	0.001463	0.03716	4.75	400	1.1	3.9
	0.001230	0.03125	5.00	450	1.4	5.4
M Silt	0.001035	0.02628	5.25	500	1.9	7.2
	0.000870	0.02210	5.50	635	2.4	9.6
	0.000732	0.01858	5.75		3.1	12.7
	0.000615	0.01563	6.00		3.8	16.4
F Silt	0.000517	0.01314	6.25		4.5	20.9
	0.000435	0.01105	6.50		5.1	26.0
	0.000366	0.00929	6.75		5.7	31.6
	0.000308	0.00781	7.00		6.0	37.7
Vf Silt	0.000259	0.00657	7.25		6.3	44.0
	0.000217	0.00552	7.50		6.3	50.3
	0.000183	0.00465	7.75		6.2	56.5
	0.000154	0.00391	8.00		5.9	62.4
Clay	0.000129	0.00329	8.25		5.4	67.8
	0.000109	0.00276	8.50		4.8	72.6
	0.000091	0.00232	8.75		4.2	76.8
	0.000077	0.00195	9.00		3.6	80.4
	0.000065	0.00164	9.25		3.1	83.5
	0.000054	0.00138	9.50		2.7	86.2
	0.000046	0.00116	9.75		2.5	88.7
	0.000038	0.00098	10.00		2.3	91.0
	0.000032	0.00082	10.25		2.3	93.3
	0.000027	0.00069	10.50		2.1	95.4
	0.000023	0.00058	10.75		1.8	97.2
	0.000019	0.00049	11.00		1.4	98.7
	0.000016	0.00041	11.25		0.9	99.6
	0.000014	0.00035	11.50		0.4	100.0
	0.000011	0.00029	11.75		0.0	100.0
	0.000010	0.00024	12.00		0.0	100.0
	0.000008	0.00021	12.25		0.0	100.0
	0.000007	0.00017	12.50		0.0	100.0
	0.000006	0.00015	12.75		0.0	100.0
	0.000005	0.00012	13.00		0.0	100.0
	0.000004	0.00010	13.25		0.0	100.0
	0.000003	0.00009	13.51		0.0	100.0
	0.000003	0.00007	13.74		0.0	100.0
	0.000002	0.00006	14.00		0.0	100.0
	0.000002	0.000051	14.26		0.0	100.0
	0.000002	0.000043	14.51		0.0	100.0
	0.000001	0.000036	14.76		0.0	100.0
	0.000001	0.000031	14.98		0.0	100.0
	0.000001	0.000026	15.23		0.0	100.0
	TOTALS				100.0	100.0

Description	Sieve Size	Volume Percent
Granule	10	0.0
Very Coarse Sand	18	0.0
Coarse Sand	35	0.0
Medium Sand	60	0.0
Fine Sand	120	0.1
Very Fine Sand	230	1.3
Coarse Silt	450	3.9
Medium Silt		11.1
Fine Silt		21.3
Very Fine Silt		24.7
Clay		37.6
	Total	100.0

Cumulative Volume Percent greater than			
	Phi	Particle Size	
Percentile	Value	Inches	Millimeters
5	4.9437	0.0013	0.0325
10	5.5354	0.0008	0.0216
16	5.9746	0.0006	0.0159
25	6.4543	0.0004	0.0114
50	7.4878	0.0002	0.0056
75	8.6392	0.0001	0.0025
84	9.2922	0.0001	0.0016
90	9.8899	0.0000	0.0011
95	10.4498	0.0000	0.0007

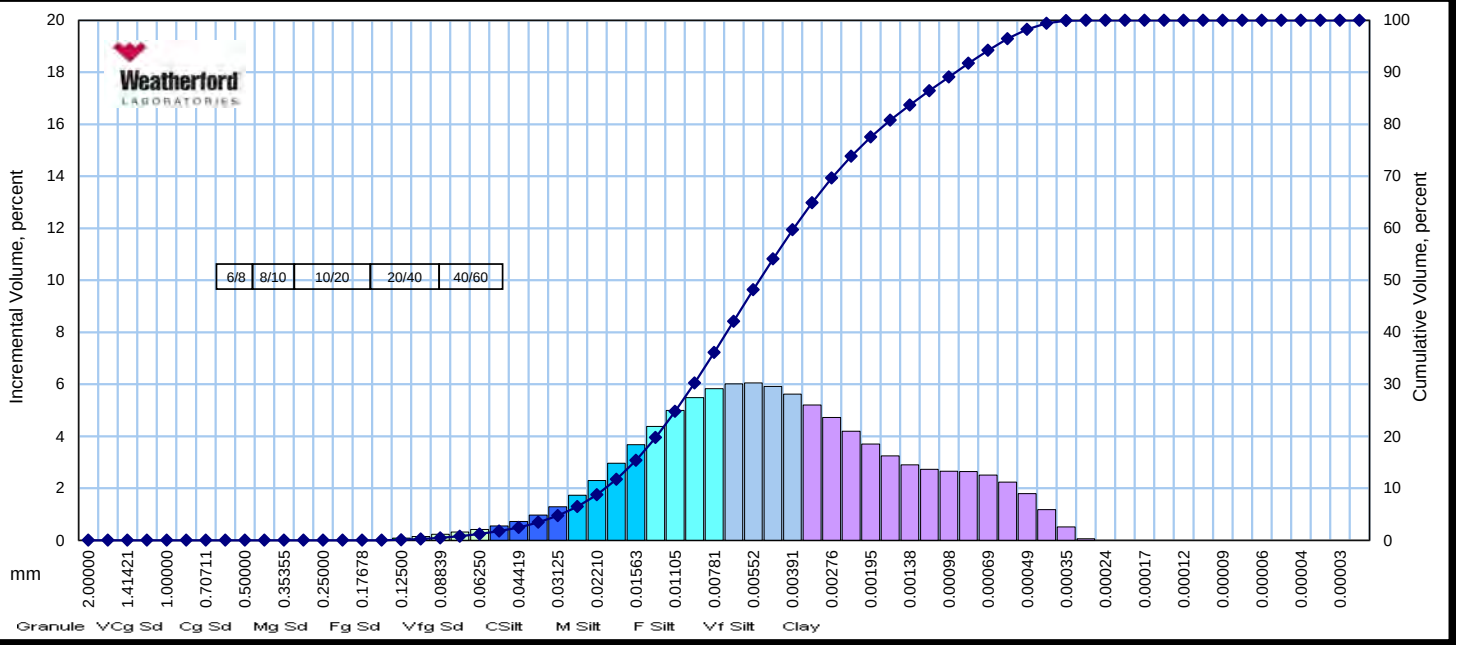
Measure	Trask, mm	Folk, phi	Inches
Median	0.0056	7.4878	0.0002
Mean	0.0070	7.5849	0.0003
Sorting	2.1324	1.6637	
Skewness	0.9215	0.0818	
Kurtosis	0.2169	1.0328	

LASER GRAIN SIZE ANALYSIS

Soil

North Water District Laboratory Services, Inc.
QI-16

Sample ID: QI-16-06-S
File: HH-92909



Wentworth Size Class	Mesh Size Inches	Mesh Size Millimeters	Phi of Screen	U.S. Sieve No.	Incremental Volume, percent	Cumulative Volume, percent
Granule & >	0.078740	2.00000	- 1.00	10	0.0	0.0
VCg Sand	0.066212	1.68179	- 0.75	12	0.0	0.0
	0.055678	1.41421	- 0.50	14	0.0	0.0
	0.046819	1.18921	- 0.25	16	0.0	0.0
	0.039370	1.00000	0.00	18	0.0	0.0
Cg Sand	0.033106	0.84090	0.25	20	0.0	0.0
	0.027839	0.70711	0.50	25	0.0	0.0
	0.023410	0.59460	0.75	30	0.0	0.0
	0.019685	0.50000	1.00	35	0.0	0.0
Mg Sand	0.016553	0.42045	1.25	40	0.0	0.0
	0.013919	0.35355	1.50	45	0.0	0.0
	0.011705	0.29730	1.75	50	0.0	0.0
	0.009843	0.25000	2.00	60	0.0	0.0
Fg Sand	0.008277	0.21022	2.25	70	0.0	0.0
	0.006960	0.17678	2.50	80	0.0	0.0
	0.005852	0.14865	2.75	100	0.0	0.0
	0.004921	0.12500	3.00	120	0.1	0.1
Vfg Sand	0.004138	0.10511	3.25	140	0.1	0.2
	0.003480	0.08839	3.50	170	0.2	0.5
	0.002926	0.07433	3.75	200	0.3	0.8
	0.002461	0.06250	4.00	230	0.4	1.2
C Silt	0.002069	0.05256	4.25	270	0.6	1.7
	0.001740	0.04419	4.50	325	0.7	2.5
	0.001463	0.03716	4.75	400	1.0	3.4
	0.001230	0.03125	5.00	450	1.3	4.7
M Silt	0.001035	0.02628	5.25	500	1.7	6.5
	0.000870	0.02210	5.50	635	2.3	8.8
	0.000732	0.01858	5.75		3.0	11.7
	0.000615	0.01563	6.00		3.7	15.4
F Silt	0.000517	0.01314	6.25		4.4	19.8
	0.000435	0.01105	6.50		5.0	24.8
	0.000366	0.00929	6.75		5.5	30.3
	0.000308	0.00781	7.00		5.8	36.1
Vf Silt	0.000259	0.00657	7.25		6.0	42.1
	0.000217	0.00552	7.50		6.1	48.2
	0.000183	0.00465	7.75		5.9	54.1
	0.000154	0.00391	8.00		5.6	59.7
Clay	0.000129	0.00329	8.25		5.2	64.9
	0.000109	0.00276	8.50		4.7	69.6
	0.000091	0.00232	8.75		4.2	73.8
	0.000077	0.00195	9.00		3.7	77.5
	0.000065	0.00164	9.25		3.2	80.8
	0.000054	0.00138	9.50		2.9	83.7
	0.000046	0.00116	9.75		2.7	86.4
	0.000038	0.00098	10.00		2.7	89.1
	0.000032	0.00082	10.25		2.6	91.7
	0.000027	0.00069	10.50		2.5	94.2
	0.000023	0.00058	10.75		2.2	96.5
	0.000019	0.00049	11.00		1.8	98.3
	0.000016	0.00041	11.25		1.2	99.4
	0.000014	0.00035	11.50		0.5	99.9
	0.000011	0.00029	11.75		0.1	100.0
	0.000010	0.00024	12.00		0.0	100.0
	0.000008	0.00021	12.25		0.0	100.0
	0.000007	0.00017	12.50		0.0	100.0
	0.000006	0.00015	12.75		0.0	100.0
	0.000005	0.00012	13.00		0.0	100.0
	0.000004	0.00010	13.25		0.0	100.0
	0.000003	0.00009	13.51		0.0	100.0
	0.000003	0.00007	13.74		0.0	100.0
	0.000002	0.00006	14.00		0.0	100.0
	0.000002	0.000051	14.26		0.0	100.0
	0.000002	0.000043	14.51		0.0	100.0
	0.000001	0.000036	14.76		0.0	100.0
	0.000001	0.000031	14.98		0.0	100.0
	0.000001	0.000026	15.23		0.0	100.0
	TOTALS				100.0	100.0

Description	Sieve Size	Volume Percent
Granule	10	0.0
Very Coarse Sand	18	0.0
Coarse Sand	35	0.0
Medium Sand	60	0.0
Fine Sand	120	0.1
Very Fine Sand	230	1.1
Coarse Silt	450	3.5
Medium Silt		10.7
Fine Silt		20.7
Very Fine Silt		23.6
Clay		40.3
	Total	100.0

Cumulative Volume Percent greater than			
	Phi	Particle Size	
Percentile	Value	Inches	Millimeters
5	5.0443	0.0012	0.0303
10	5.6125	0.0008	0.0204
16	6.0371	0.0006	0.0152
25	6.5108	0.0004	0.0110
50	7.5768	0.0002	0.0052
75	8.8244	0.0001	0.0022
84	9.5275	0.0001	0.0014
90	10.0861	0.0000	0.0009
95	10.5806	0.0000	0.0007

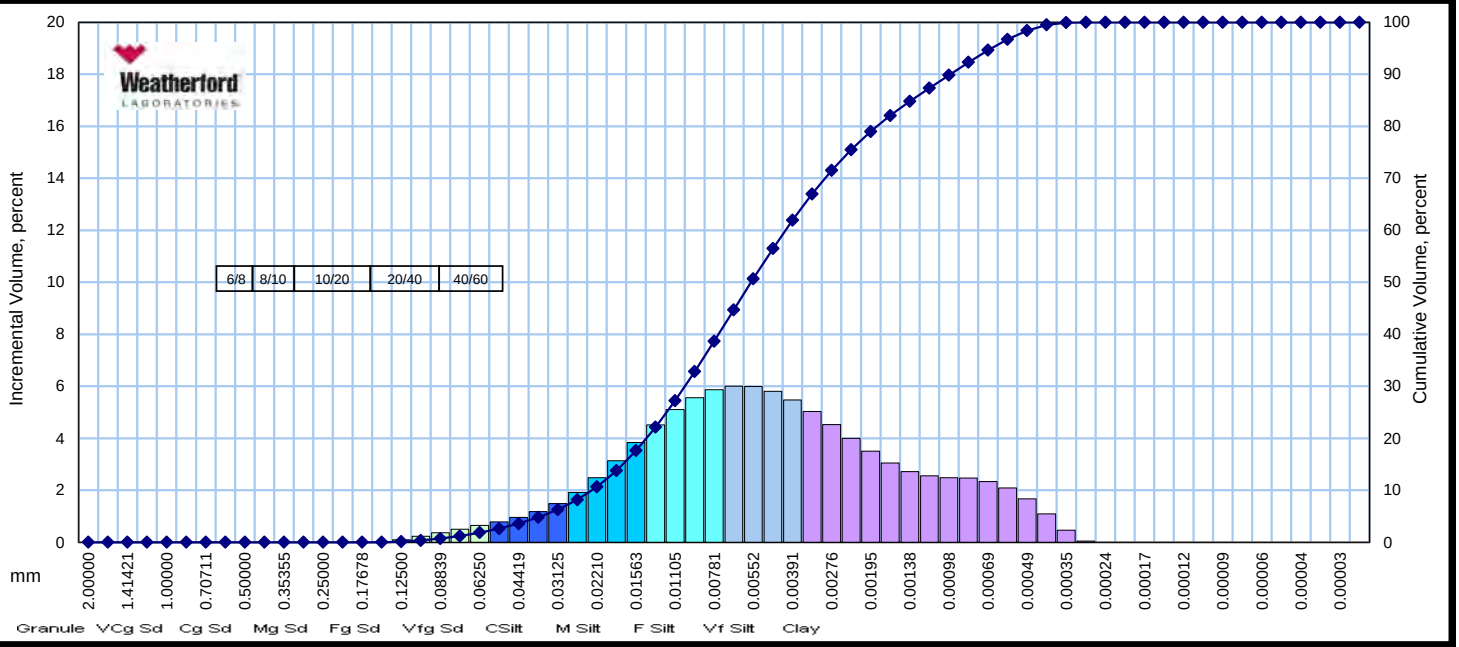
Measure	Trask, mm	Folk, phi	Inches
Median	0.0052	7.5768	0.0002
Mean	0.0066	7.7138	0.0003
Sorting	2.2296	1.7114	
Skewness	0.8817	0.1015	
Kurtosis	0.2244	0.9807	

LASER GRAIN SIZE ANALYSIS

Soil

North Water District Laboratory Services, Inc.
QI-16

Sample ID: QI-16-07-S
File: HH-92909



Wentworth Size Class	Mesh Size Inches	Mesh Size Millimeters	Phi of Screen	U.S. Sieve No.	Incremental Volume, percent	Cumulative Volume, percent
Granule & >	0.078740	2.00000	- 1.00	10	0.0	0.0
VCg Sand	0.066212	1.68179	- 0.75	12	0.0	0.0
	0.055678	1.41421	- 0.50	14	0.0	0.0
	0.046819	1.18921	- 0.25	16	0.0	0.0
	0.039370	1.00000	0.00	18	0.0	0.0
Cg Sand	0.033106	0.84090	0.25	20	0.0	0.0
	0.027839	0.70711	0.50	25	0.0	0.0
	0.023410	0.59460	0.75	30	0.0	0.0
	0.019685	0.50000	1.00	35	0.0	0.0
Mg Sand	0.016553	0.42045	1.25	40	0.0	0.0
	0.013919	0.35355	1.50	45	0.0	0.0
	0.011705	0.29730	1.75	50	0.0	0.0
	0.009843	0.25000	2.00	60	0.0	0.0
Fg Sand	0.008277	0.21022	2.25	70	0.0	0.0
	0.006960	0.17678	2.50	80	0.0	0.0
	0.005852	0.14865	2.75	100	0.0	0.0
	0.004921	0.12500	3.00	120	0.1	0.1
Vfg Sand	0.004138	0.10511	3.25	140	0.2	0.3
	0.003480	0.08839	3.50	170	0.4	0.7
	0.002926	0.07433	3.75	200	0.5	1.2
	0.002461	0.06250	4.00	230	0.6	1.8
C Silt	0.002069	0.05256	4.25	270	0.8	2.6
	0.001740	0.04419	4.50	325	1.0	3.6
	0.001463	0.03716	4.75	400	1.2	4.8
	0.001230	0.03125	5.00	450	1.5	6.3
M Silt	0.001035	0.02628	5.25	500	1.9	8.2
	0.000870	0.02210	5.50	635	2.5	10.7
	0.000732	0.01858	5.75		3.1	13.8
	0.000615	0.01563	6.00		3.8	17.6
F Silt	0.000517	0.01314	6.25		4.5	22.1
	0.000435	0.01105	6.50		5.1	27.2
	0.000366	0.00929	6.75		5.6	32.8
	0.000308	0.00781	7.00		5.9	38.7
Vf Silt	0.000259	0.00657	7.25		6.0	44.7
	0.000217	0.00552	7.50		6.0	50.7
	0.000183	0.00465	7.75		5.8	56.5
	0.000154	0.00391	8.00		5.5	61.9
Clay	0.000129	0.00329	8.25		5.0	67.0
	0.000109	0.00276	8.50		4.5	71.5
	0.000091	0.00232	8.75		4.0	75.5
	0.000077	0.00195	9.00		3.5	79.0
	0.000065	0.00164	9.25		3.1	82.1
	0.000054	0.00138	9.50		2.7	84.8
	0.000046	0.00116	9.75		2.6	87.3
	0.000038	0.00098	10.00		2.5	89.8
	0.000032	0.00082	10.25		2.5	92.3
	0.000027	0.00069	10.50		2.3	94.6
	0.000023	0.00058	10.75		2.1	96.7
	0.000019	0.00049	11.00		1.7	98.4
	0.000016	0.00041	11.25		1.1	99.5
	0.000014	0.00035	11.50		0.5	100.0
	0.000011	0.00029	11.75		0.0	100.0
	0.000010	0.00024	12.00		0.0	100.0
	0.000008	0.00021	12.25		0.0	100.0
	0.000007	0.00017	12.50		0.0	100.0
	0.000006	0.00015	12.75		0.0	100.0
	0.000005	0.00012	13.00		0.0	100.0
	0.000004	0.00010	13.25		0.0	100.0
	0.000003	0.00009	13.51		0.0	100.0
	0.000003	0.00007	13.74		0.0	100.0
	0.000002	0.00006	14.00		0.0	100.0
	0.000002	0.000051	14.26		0.0	100.0
	0.000002	0.000043	14.51		0.0	100.0
	0.000001	0.000036	14.76		0.0	100.0
	0.000001	0.000031	14.98		0.0	100.0
	0.000001	0.000026	15.23		0.0	100.0
	TOTALS				100.0	100.0

Description	Sieve Size	Volume Percent
Granule	10	0.0
Very Coarse Sand	18	0.0
Coarse Sand	35	0.0
Medium Sand	60	0.0
Fine Sand	120	0.1
Very Fine Sand	230	1.7
Coarse Silt	450	4.4
Medium Silt		11.4
Fine Silt		21.0
Very Fine Silt		23.3
Clay		38.1
	Total	100.0

Cumulative Volume Percent greater than			
	Phi	Particle Size	
Percentile	Value	Inches	Millimeters
5	4.7939	0.0014	0.0361
10	5.4398	0.0009	0.0230
16	5.8994	0.0007	0.0168
25	6.3931	0.0005	0.0119
50	7.4719	0.0002	0.0056
75	8.7166	0.0001	0.0024
84	9.4267	0.0001	0.0015
90	10.0172	0.0000	0.0010
95	10.5393	0.0000	0.0007

Measure	Trask, mm	Folk, phi	Inches
Median	0.0056	7.4719	0.0002
Mean	0.0071	7.5994	0.0003
Sorting	2.2373	1.7523	
Skewness	0.8913	0.0881	
Kurtosis	0.2157	1.0134	

Appendix E

Excerpts from Final Environmental Impact Statement for Proposed Port Freeport Channel Widening (2008)

PORT FREEPORT℠

THE COAST IS CLEAR

Freeport Channel Widening Permitting

J200.50170

HDR | SHINER MOSELEY AND ASSOCIATES, INC.

EXECUTIVE SUMMARY

The widening of the Freeport channel seaway of the Outer Turning Basin will generate 3.2 mcy of dredged material, including 2.9 mcy of clay and 300,000 cy of silty sand. The silty sand is suitable for certain beneficial uses in the area; however, no suitable beneficial uses for the 2.9 mcy of clay were identified through the process described below.

A DMMP Working Group was formed consisting of participants from U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), U.S. Environmental Protection Agency (USEPA), Texas Parks and Wildlife Department (TPWD), Texas General Land Office (TGLO), Texas Commission on Environmental Quality (TCEQ) and the National Oceanographic and Air Administration (NOAA), Third Party EIS Contractor (PBS&J), and the Ports Consultant HDR|Shiner Moseley and Associates, Inc. (HDR|SMA). to identify regulatory issues related to the project and to identify and evaluate potential beneficial uses for the dredged material produced during the project.

There are a total of 17 alternative disposal sites, including confined placement areas, Offshore Dredged Material Disposal Sites (ODMDS), and two types of beneficial uses: habitat restoration and beach nourishment. A preliminary screening reduced the potential candidates to 6 options: three habitat restoration sites, two beach nourishment sites, and, as a last resort, an ODMDS.

Further analysis eliminated two of the beneficial use habitat restoration sites, Swan Lake and Bryan Lake, leaving the SH332 Beneficial Use site. The limited suitable material (300,000 cy) would support only one BU site, either habitat restoration or beach nourishment. Detailed cost estimates indicate that the cost of the SH 332 site restoration would exceed the cost of beach nourishment by approximately $527,750.

The recommended Dredge Material Management Plan contains the following key features:

- Use a mix of dredging methods:
    - pipeline dredge to remove the 300,000 cy of silty sand
    - mechanical excavation to deepen the project area to provide hopper dredge access
    - hopper dredge for the remaining 2.9 mcy of clay
- Place the 300,000 cy of sand on Quintana Beach in front of the Seaway Placement Area to:
    - provide accessible public beach
    - protect the containment levee.
- Place the 2.9 mcy of clay in the ODMDS, the permitting of which should begin immediately.

TABLE OF CONTENTS

I. INTRODUCTION

1. Project Description and Area Setting

The existing Federal channel is approximately 5.2 miles in length and is approximately 400 ft in width at the bottom. Water depths in the Freeport Ship Channel are currently maintained by the USACE to a depth of -47 ft from Mean Low Tide (MLT). The proposed project entails widening the Freeport Ship Channel from the Outer Turning Basin to the -49 ft contour. The widening increment will be at the same depth as the existing Federal Channel. Portions of the Jetty Channel and all of the Entrance Channel will be widened to a total bottom width of 600 feet. Exhibit A is a copy of the original U.S. Army Corps of Engineers (USACE) Permit Application #23752 that covers the proposed widening. The Brazos River Harbor Navigation District (Port Freeport or Port) is the permit applicant.

The purpose of the project is to permit the use of non-Federal funds to widen the existing Federal Channel. The need is to eliminate operational constraints preventing the transit of larger ships into the Port of Freeport. The constraints are threefold: (a) limits on large vessels when the wind exceeds 20 knots or currents exceed 2 knots, (b) limitations on nighttime transit, and (c) restriction on two way traffic. Elimination of these operational constraints will increase port efficiency and reduce shipping costs due to delays.

Construction of the project will generate approximately 3.2 mcy of uncontaminated dredged material that consists of 2.9 mcy of clay and 300,000 cy of silty sand.

The Freeport area is unique in that it does not have barrier islands or extensive bays. The primary tributaries, the Brazos River and the San Bernard River, drain directly into the Gulf of Mexico from the mainland rather than via bays between the mainland and barrier islands and do not provide freshwater inflow at the Port.

The Freeport Ship Channel follows the lower portion of what is called the "Old River." In 1929 the lower 6.8 miles of the Brazos River were diverted via a new man-made channel into the Gulf approximately 6 miles west of the Old River. The overall effect of this relocation was the elimination of significant currents in the port area, the elimination of riverine flood flows through the port, and the direct discharge of the sediment laden river water into the Gulf. Benefits to the port include less maintenance dredging, fewer operational interruptions due to high water, and increased navigation safety.

The beachfront on both sides of the Ship Channel is developed. On the north lies the community of Surfside, population 763. It is predominately a single family residential area, with some beach related commercial development. On the south lies the community of Quintana, population 38, which is single family residential. A dominant feature of Quintana is the Freeport LNG terminal, which is under construction. Two large dredged material disposal areas and Bryan Beach State Park are also in Quintana.

2. Beneficial Uses Concept

Federal policy suggests that dredged material be used for beneficial purposes if deemed practical. Typically, beneficial uses may include a wide spectrum of purposes:

- Habitat creation or restoration.
- Shoreline restoration.
- Beach nourishment.
- Dune reconstruction.

In making the decision as to whether or not a beneficial use is feasible, a number of factors may be considered:

- Likelihood of success or failure.
- Environmental effects.
- Construction costs.
- Sustainability.
- Type and extent of benefits.

3. Approach

The following steps outline the steps taken during the planning and permitting process. Beneficial uses have been considered throughout the process.

Step 1 – Conducted Regulatory Assessment

Meetings were held with the regulatory and resource agencies (U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), U.S. Environmental Protection Agency (USEPA), Texas Parks and Wildlife Department (TPWD), Texas General Land Office (TGLO), Texas Commission on Environmental Quality (TCEQ) and the National Oceanographic and Air Administration (NOAA)) to get opinions and comments regarding the proposed project. Beneficial uses were proposed during these meetings, primarily wetland restoration and an offshore habitat berm.

Step 2 – Drafted Initial Application

An initial draft permit application was prepared and submitted to the USACE on April 14, 2005 and assigned permit application number 23752. Three beneficial use possibilities were identified and included in the initial permit application: beach nourishment, offshore habitat berm, and onshore wetlands enhancement.

Step 3 – Participated in Joint Evaluation Meeting (JEM)

A Joint Evaluation Meeting was held with the Port, USACE, TXGLO, TCEQ, TPWD, USEPA, USFWS, NMFS, and HDR|SMA to discuss the project concept and details of various beneficial uses that were identified. The agencies participating in the JEM generally acknowledged their support for the concept and provided comments.

Step 4 – Scoping Meeting and NEPA Process

The NEPA compliance process formally started with the Scoping Meeting on November 25, 2005. The idea of beneficial use of dredged material was presented to state and federal agency representatives and the public, including the formation of a DMMP Work Group. The Work Group consisted of representatives from the following: U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), U.S. Environmental Protection Agency (USEPA), Texas Parks and Wildlife Department (TPWD), Texas General Land Office (TGLO), Texas Commission on Environmental Quality (TCEQ), Port, Third Party EIS Contractor (PBS&J), and the Ports Consultant HDR|Shiner Moseley and Associates, Inc. (HDR|SMA).

Step 5 - Operations of Work Group

Between early December 2005, and late February 2006, the Work Group met four times and completed the following steps:

- Step 5-A - Decided on an approach to identify and evaluate alternatives.
- Step 5-B - Identified a total of 17 disposal sites of which 9 sites were beneficial use alternatives.
- Step 5-C - Used available information to screen the 9 potential beneficial uses down to 3 sites meriting further scrutiny.
- Step 5-D - Visited the remaining candidate sites and collected additional site specific information and prepared summary documents.
- Step 5-E - Reviewed results with the DMMP Work Group and made recommendations for an overall Dredged Material Management Plan.
- Step 5-F - Compiled the results into a plan for incorporation in the EIS and other appropriate NEPA compliance documents.

Section II of this document describes the alternatives analyzed and how the process was used to arrive at the recommended DMMP. Section III of this document presents the findings and results of the process.

II. ALTERNATIVES IDENTIFICATION AND EVALUATION

1. Introduction

For preliminary screening purposes, potential onshore placement sites within approximately 5 miles of the project site were considered. Offshore placement was also considered. The potential placement areas included both potential beneficial use sites as well as conventional disposal sites. A total of 17 placement areas were identified in 4 major categories. Of the 17 alternatives below, 9 can be considered beneficial uses (denoted with an asterisk):

Marsh Restoration and Creation/GIWW Bank Stabilization

- Swan Lake *
- Bryan Lake *
- Highway 332 Marsh *
- GIWW Bank Stabilization *

Upland Confined Placement Area (UCPA)

- DMPA "Seaway"
- DMPA "85"
- DMPA "2/3"
- DMPA "86/87"
- DMPA "88"
- DMPA "7"
- DMPA "1"

Offshore Placement

- Offshore Berm – Fish Habitat *
- Offshore Berm – Wave Protection *
- Nearshore Berm – Beach Feeder and Surf Break *
- ODMDS Placement

Beach Nourishment

- Surfside *
- Quintana *

Table II.1 is a matrix that assesses the suitability of each site according to the following criteria:

- Dredge Method
- Potential Capacity – Silty Sand
- Potential Capacity – Clay
- Beneficial Use
- Containment Requirements
- Regulatory Requirements
- Issues
- Viable Alternatives

All confined placement areas were eliminated due to two reasons: resource agencies require that dredged material be used beneficially, if possible, and the existing confined placement areas have very limited available capacity. The preliminary screening reflected in Table II.1 identifies five potential beneficial uses for the 300,000 cy of silty-sand material that merited further attention:

- Marsh restoration at Swan Lake
- Marsh restoration at Highway 332
- Marsh restoration at Bryan Lake
- Beach nourishment at Quintana Beach – adjacent to Seaway DMPA
- Beach nourishment at Surfside Beach

Other potential beneficial use sites were eliminated for the following reasons:

- Gulf Intracoastal Waterways (GIWW) Bank Stabilization was determined to be unsuitable due to inadequate capacity and difficulty of containment.
- Offshore Berm – Fish Habitat. These merits are debatable and similar benefits would result from placement in a designated disposal area.
- Offshore Berm – Shoreline Protection. A cursory analysis indicated that the benefits were negligible.

- Offshore Berm – Beach Feeder. Benefits would be very minimal and most (90%) of the dredged material is not suitable for beach nourishment.

The three potential habitat restoration sites, refer to Figure 1, are each briefly discussed below. A habitat assessment with photos is included as Exhibit B.

Swan Lake Beneficial Use Site

This potential beneficial use site is located approximately two miles east of the Freeport Jetty Channel. The overall area identified as a potential beneficial use site is roughly 578 acres, which includes open water, tidal streams, wetlands, and potentially some uplands. It is bounded on the north by the GIWW, on the west by a canal connected to the GIWW, and on the east and south by developed properties and roadways. As a potential beneficial use site for the placement of dredged materials, the focus of the initial investigation was on the open water portions for wetland restoration and/or creation. Two distinct bodies of open water were identified by examining an aerial photograph of the area. The western body is roughly 85 acres in size and the eastern body is approximately 225 acres in size, refer to Figure 2. In aggregate, the two bodies of open water encompass approximately 310 acres.

Ownership of these two areas was not confirmed during the initial investigation. However, based on the nature of the bodies of water, it is assumed they are state owned land.

The initial investigation also compared a 2005 aerial photograph against historic photographs available on the Texas General Land Office web site. An aerial photograph from 1944 was used for comparison purposes. Although a significant portion of the 225 acre area was not covered in the 1944 photograph, the nature of both areas appears to be quite similar, with the exception of the western-most portion of the 85 acre site that appears to encompass a larger area that is now the open water. In general, the comparison indicates that over the past 61 years there has been no substantial loss of wetland acreage in this area, beyond that described above for the 85 acre site.

A site visit was performed on 12/20/05 to supplement the initial investigation efforts. Photographs obtained during that visit are provided in Exhibit 2 of Exhibit B.

The following pertinent observations were made during the site visit:

- There is evidence of oyster beds and fishing activities (i.e., presence of traps) in the 225 acre eastern body of open water.
- There is evidence of oyster beds in the 85 acre western body of open water.
- No evidence of sea grass presence was found; however, the visit was limited to an investigation along a portion of the shorelines and not the full bodies of water.

Bryan Lake Beneficial Use Site

This potential beneficial use site is located approximately three miles west of the Freeport Jetty Channel, refer to Exhibit 3 of Exhibit B. The overall area identified as a potential beneficial use site is roughly 913 acres, which includes open water, tidal streams, wetlands, and potentially some uplands. It is bounded on the south by the Gulf Intracoastal Waterway (GIWW), on the west by the Bryan Mound Strategic Petroleum Reserve (SPR) facility, on the north by a levee with roadway, and on the east by a developed roadway. As a potential beneficial use site for the placement of dredged materials, the focus of the desktop investigation was on the open water portions for wetland restoration and/or creation. Three distinct bodies of open water were identified by examining aerial photographs of the area. The east body is approximately 50 acres in size, the west body is approximately 100 acres in size, and the central area is approximately 30 acres in size, refer to Exhibit 3 of Exhibit B. In aggregate, the three bodies of open water encompass approximately 180 acres.

Ownership of these three areas was not confirmed during the desktop investigation. However, based on the nature of the bodies of water it is assumed they are state owned land.

The initial desktop investigation also compared a recent aerial photograph against historic photographs available on the Texas General Land Office web site. An aerial photograph from 1944 was used for comparison purposes. Based on the comparison it is evident that all three bodies of water have been in existence since 1944. Both the western 100 acre area and the central 30 acre area appear to be similar in both photographs. The eastern 50 acre area appears to be smaller in size today as compared to 61 years ago, which may indicate accretion in the area. In general, the comparison indicates that there has been no substantial conversion of wetlands or uplands to open water in this area over the past 61 years.

A site visit was performed on 12/20/05 to supplement the desktop investigation efforts. Photographs obtained during that visit are provided as in Exhibit 2 of Exhibit B. During that site visit discussions were held with Mr. Jimmy Salinas, Environmental Safety and Health Coordinator for the Bryan Mound SPR facility to obtain his input on potential beneficial use projects adjacent to the facility. The following pertinent observations were made during the site visit and discussions with Mr. Salinas:

- There is evidence of oyster beds in the 100 acre western body of open water.
- Mr. Salinas indicated that the SPR facility would likely have strong reservations about marsh creation in the 100 acre and 30 acre areas because of security concerns. Specifically, the growth of marsh grasses would restrict perimeter security vision in this area.
- There was no obvious evidence of oyster beds in the 50 acre area and SPR did not have any specific concerns with potential beneficial use for marsh creation in this area.
- No evidence of sea grass presence was found; however, the visit was limited to an investigation along a portion of the shorelines and not the full bodies of water.

SH 332 Bridge Beneficial Use Site

This potential beneficial use site is located approximately one mile northeast of the Freeport Jetty Channel, refer to Exhibit 1 of Exhibit B. The overall area identified as a potential beneficial use site is roughly 328 acres, which includes open water, tidal streams, wetlands, and potentially some uplands. It is bounded on the north and west by canals, on the south by developed land and roadways, and on the east by undeveloped land. State Highway (SH) 332 runs through the center of this area in a general north-south direction. As a potential beneficial use site for the placement of dredged materials, the focus of the desktop investigation was on the open water portions for wetland restoration and/or creation. Four distinct bodies of open water were identified by examining aerial photographs of the area. Two areas, 42 acres and 12 acres in size respectively, are located west of SH 332 and two areas, each 4 acres in size are located east of SH 332, refer to Exhibit 1 of Exhibit B. In aggregate, the four areas of open water encompass approximately 62 acres.

Ownership of these four areas was not confirmed during the desktop investigation. However, based on the nature of the 42 acre body of water, it is assumed that it is state owned land.

The desktop investigation also compared a recent aerial photograph against historic photographs available on the Texas General Land Office web site. Aerial photographs from 1944 and 1965 were used for comparison purposes. Although the 1944 photograph of the area is not very clear, the 1965 photograph indicates that the two 4 acre areas were bodies of water 40 years ago, with stronger evidence of this on the northernmost 4 acre area. Furthermore, the comparison with the 1965 photograph indicates that the areas west of SH 332 were wetlands and have broken up over the past 40 years to become predominantly open water.

A site visit was performed on 12/20/05 to supplement the desktop investigation efforts. Photographs obtained during that visit area provided in Exhibit 2 of Exhibit B for informational purposes. The following pertinent observations were made during the site visit:

- No evidence of oyster beds in any of the areas was found; however, the visit was limited to an investigation along a portion of the shorelines and not the full bodies of water.
- No evidence of sea grass presence was found; however, the visit was limited to an investigation along a portion of the shorelines and not the full bodies of water.
- The two 4 acre areas and the 12 acre area appear to be functional wetlands with tidal conveyances.
- The 42 acre site appears to be broken up marsh area with a predominance of open water.

For the reasons discussed above, the only viable marsh restoration project is at the SH 332 bridge area. The other alternative beneficial use is placement of the material on the beach to counter shoreline erosion. The 300,000 cy of silty sand from the Jetty Channel is available and suitable for either beneficial use.

A cost comparison of using the silty sand for the SH 332 marsh creation and beach nourishment was completed. The two alternatives are discussed below:

Marsh Restoration.
Dredged material produced during this project consists of silty sand and stiff clays. Stiff clays are not suitable for proper vegetation growth and wildlife habitat and therefore not suitable for marsh restoration uses. Approximately 300,000 cy of the silty sand material located in the Jetty Channel is available to be placed in the SH 332 Bridge Beneficial Use location. Roughly 200,000 cy would be used to properly fill one of the two areas to an elevation that would allow growth of low marsh habitat for marsh restoration. The remaining 100,000 cy would be used to properly fill in the other area to an elevation that would allow growth of low marsh habitat for marsh restoration.

Assumptions used in the analysis are as follows:

- A single 20" to 24" hydraulic dredge unit will be mobilized and used for the placement of materials in both the SH 332 Bridge Beneficial Use locations.
- The average pumping distance for the SH 332 Bridge Beneficial Use areas is approximately 1.7 nautical miles. The pipeline will cross the GIWW. The high volume of barge traffic associated with the GIWW will require significant operational interruptions. The pipeline will have to be outfitted with a diffuser or baffle at the discharge end to allow for a better control of the discharged dredged material into the marsh area.

Beach Nourishment. Approximately 300,000 cy of the silty sand material, located in the Jetty Channel is available to be placed on either the Surfside or the Quintana Beach, but not a combination thereof due to the relatively small amount of material available. Assumptions include:

- A single 20" to 24" hydraulic dredge unit will be mobilized and used for the placement of the materials on one or the other beach, but not split between the two.
- The average pumping distance for beach placement is approximately 2.0 nautical miles. No crossing of the ship channel is assumed here; however, one will be required if the material goes to Quintana Beach.

The costs of the two alternatives are as follows:

ITEM DESCRIPTION	QUANTITY		UNIT COST	TOTAL	EXTENDED TOTALS
	NUMBER	UNIT			
Beach Nourishment					**$1,066,000**
Mob/Demob (2)	1	LS	$2,000.00	$2,000	
300 hp bulldozer	360	HR	$160.00	$57,600	
200 hp bulldozer	360	HR	$120.00	$43,200	
Pipeline	8,500	FT	$12.00	$102,000	
Dredge	360	HR	$1,800.00	$648,000	
25% Contingency				$213,200	
Marsh Placement					**$1,593,750**
Mob/Demob (3)	1	LS	$4,500.00	$4,500	
Dredge (4)	450	HR	$1,800.00	$810,000	
Backhoe/barge					
1. Levee	300	HR	$350.00	$105,000	
2. Discharge	450	HR	$350.00	$157,500	
3. Deconstruct	100	HR	$350.00	$35,000	
Pipeline	9,000	FT	$12.00	$108,000	
Weir	1	LS	$20,000.00	$20,000	
Marsh Buggy	100	HR	$350.00	$35,000	
25% Contingency				$318,750	
Difference					**$527,750**

Notes:

1. Original mob/demob of dredge equipment assumed same for both options at ~$500,000
2. Beach nourishment requires additional mob/demob of two bulldozers
3. Marsh placment requires additional mob/demob of marsh backhoe with barge and marsh buggy
4. Dredge production reduced by 25% due to shallow depths at marsh and need for elevation control

Summary

- The additional cost associated with marsh restoration at SH 332 bridge, relative to beach placement, is approximately $527,750.
- There is a great deal of public support for placement of the silty sand material on either the Quintana or Surfside beach. Removing the littoral zone material and placing it further inland on a marsh is contrary to the evident public desires.
- The nature of the stiff clay material is not optimally suited for either habitat restoration or beach nourishment; consequently, it should go to an Offshore Dredged Material Disposal Site (ODMDS).

III. FINDINGS AND RECOMMENDATIONS

A. New construction material volume and characteristics

1. The initial construction of the widening will generate 3.2 mcy of dredged material, which includes 300,000 cy of silty sand and 2.9 mcy of stiff clay.

2. The 300,000 cy of silty sand can be used for either of two types of beneficial use in the immediate project area: habitat restoration or beach nourishment.

3. The stiff clay is not suitable for the identified beneficial uses.

B. Maintenance Material Volume and Characteristics

1. The average maintenance volume for the widening increment is on the order of 1 mcy per year.

2. It is fine silty clay and is not suitable for any of the available beneficial uses.

C. Dredging Methods

1. Several scenarios are possible depending on the equipment available at the time of dredging. The most likely scenario involves a mix of hopper dredge, pipeline dredge, and mechanical excavation.

2. A pipeline dredge will be used to excavate the silty sand and pump it to the beach nourishment site.

3. Mechanical excavation will be used to deepen the project area to about 25-30 feet, which is the minimum operation depth for a hopper dredge.

4. A hopper dredge will be used to excavate the stiff clay and transport it to the Offshore Dredged Material Disposal Site (ODMDS).

D. Alternative and Recommended Placement Areas

1. A total of 17 potential placement areas were identified (see Table II.1) and divided into four separate categories:

- Upland Confined Upland Placement Area (UCPA).
- Offshore Dredged Material Disposal Sites (ODMDS).
- Beneficial Uses – Habitat Restoration (BU – HR).
- Beneficial Uses – Beach Nourishment (BU-BN).

2. An initial screening reduced the original 17 alternatives to 5 alternatives meriting further attention.

- All existing UCPAs were eliminated due to other commitments and limited capacity. No new UCPAs were proposed due to the scarcity of suitable upland sites.
- To comply with existing Federal guidance, the ODMDS are considered only as a last resort if no other practical options exist.

- Three potential Beneficial Use – Habitat Restoration sites were identified: Swan Lake, Bryan Lake, SH 332 Bridge.
- Two Beneficial Use sites – Beach Nourishment were identified: Quintana and Surfside.

3. The above surviving alternatives were subjected to further evaluation, which included site visits to better characterize existing conditions, placement options, and potential benefits.

- Two of the BU – HR sites, Swan Lake and Bryan Lake, were eliminated due to the presence of oysters and existing good habitat that might be significantly degraded by any restoration attempts.
- The other BU – HR site SH 332 Bridge appears to offer potentially attractive habitat restoration options.
- Both the BU – BN sites offered positive potential. Closer evaluation favors Quintana in front of the Seaway Confined Placement Area for two public purposes:
    - reestablish public access to the public beach in front of the disposal area
    - provide erosion protection for the containment levee of the Seaway Confined Placement Area.
- Because of the limited volume of suitable material (300,000 cy of suitable silty sand) for the beneficial uses, only one project can be done – either the habitat restoration or beach nourishment.
- A more in depth cost comparison of the SH 332 and Quintana Beach was done. Placement at the SH 332 exceeds the cost of placement at Quintana by approximately $527,750.
- Public support is for beach nourishment.

E. Summary of Recommended Placement Areas

- Place the 300,000 cy of silty sand on the Quintana beach in front of Seaway UCPA to provide improved public access and provide erosion protection for the UCPA containment.
- Place the remaining 2.9 mcy of stiff clay in the ODMDS.
- Maintenance material should be placed in the ODMDS.
- Permitting of the ODMDS should be expedited.

Figure 1

Figure 2

Figure 3

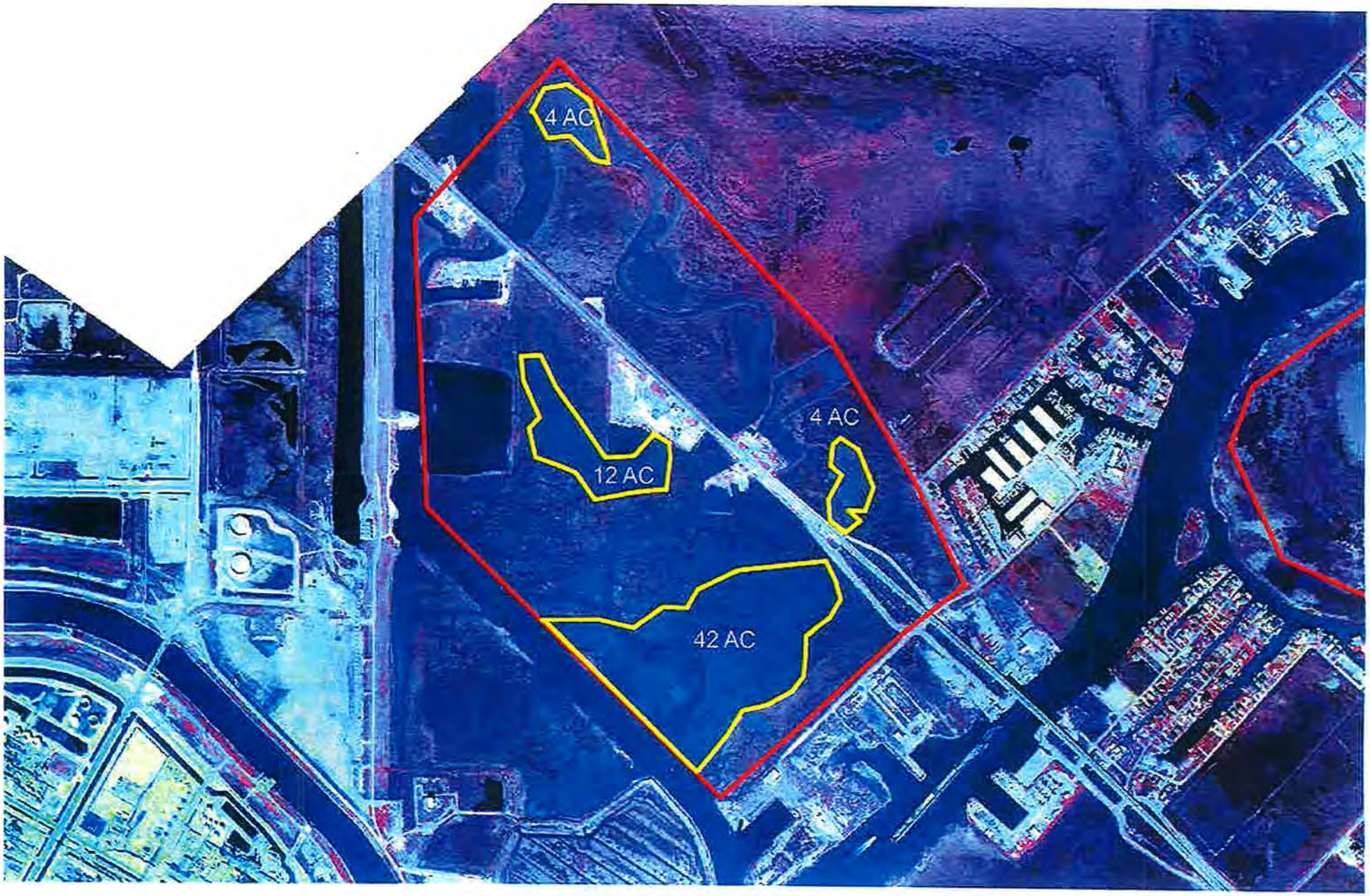


Figure 4

Figure II.1
Freeport Entrance & Jetty Channel Widening Project
Dredge Material Management Plan – Placement Evaluation Matrix

Placement Alternative	Dredge Methodology	Potential Capacity Silty-Sand Material[1]	Potential Capacity Clay Material[2]	Beneficial Use	Containment Requirements	Regulatory Requirements (Beyond 404/10 Permit)	Issues	Viable Alternative
Swan Lake Marsh Restoration/Creation	Hydraulic	~ 100K CY (33%)	~ 250K CY (20%)	Yes	ICW Interface	None	▪ Presence of oyster beds ▪ Active fishing area ▪ Freeport Wiggles Sect. 216 study (conflict)	No
Bryan Lake Marsh Restoration/Creation	Hydraulic	~ 60K CY (20%)	~ 0K CY (0%)	Yes	None	None	▪ Presence of oyster beds ▪ Strategic Petroleum Reserve security concerns ▪ Potential future mitigation or development site (Port)	No
332 Bridge Marsh Restoration/Creation	Hydraulic	~ 300K CY (10%)	~ 0 CY (0%)	Yes	Drainage Canal Interface	None	▪ Presence of oyster beds ▪ Active fishing area	Yes
ICW Bank 'Stabilization'	Hydraulic	Not Suitable (0%)	??%[3]	Yes	Yes	None	▪ Construction difficulty (long, narrow placement corridor) ▪ Containment needs along bank a major factor	No
Beach Placement – Quintana or Surfside	Hydraulic	100% (Suitable Mat'l Only)	Not Suitable (0%)	Yes	None	None	▪ Quality of sandy material	Yes
Beach Placement – DMPA "Seaway" Levee Protection	Hydraulic	Not Suitable (0%)	~ 150K CY (12%)	Yes	None	None	▪ Undertaking would most likely preclude driving on this section of beach ▪ Material would be sacrificial in nature, fines would be on beach for a long time	No
Upland Confined Placement DMPA "Seaway"	Hydraulic	Not Considered for Sandy Mat'l	~ 150K CY (12%)	No	Dike Raising Required	None	▪ Freeport LNG borrow pit not large enough to accommodate material without additional dike raising efforts ▪ Port Freeport prefers not to place material in this Port controlled DMPA	No
Upland Confined Placement DMPA "85"	Hydraulic	Not Considered for Sandy Mat'l	~ 0 CY (0%)	No	Dike Raising Required	None	▪ DMPA Capacity has been reached without significant dike raising	No
Upland Confined Placement DMPA "2 / 3"	Hydraulic	Not Considered for Sandy Mat'l	~ 0 CY (0%)	No	In Place	None	▪ Limited existing capacity is already designated for use (Freeport LNG)	No
Upland Confined Placement DMPA "86 / 87"	Hydraulic	Not Considered for Sandy Mat'l	~ 0 CY (0%)	No	In Place	None	▪ DMPA is designated for ICW maintenance material placement	No
Upland Confined Placement DMPA "88"	Hydraulic	Not Considered for Sandy Mat'l	~ 0 CY (0%)	No	In Place	None	▪ DMPA is designated for ICW maintenance material placement	No
Upland Confined Placement DMPA "7"	Hydraulic	Not Considered for Sandy Mat'l	~ 0 CY (0%)	No	In Place	None	▪ DMPA capacity has been reached ▪ Adjacent property restrictions do not allow expansion	No
Upland Confined Placement DMPA "1"	Hydraulic	Not Considered for Sandy Mat'l	~ 0 CY (0%)	No	In Place	None	▪ Limited existing capacity is already designated for use (Freeport LNG and Federal Channel Maintenance)	No

Figure II.1
Freeport Entrance & Jetty Channel Widening Project
Dredge Material Management Plan – Placement Evaluation Matrix

Placement Alternative	Dredge Methodology	Potential Capacity Silty-Sand Material[1]	Potential Capacity Clay Material[2]	Beneficial Use	Containment Requirements	Regulatory Requirements (Beyond 404/10 Permit)	Issues	Viable Alternative
Offshore Berm – Fish Habitat	Mechanical / Hydraulic	100% (Including Entrance Chnl)	100% (Including Entrance Chnl)	Yes (See Issues)	None	102/103	• The typical application of this concept is considered a Beneficial Use; however the project's application was not considered a true Beneficial Use through further analysis (i.e., concept is not similar to model concept in Mobile, AL. • The same 'benefit' would occur with placement in the ODMDS, just in a different location (i.e., a location that has been used for dredge material placement in the past.	No
Offshore Berm – Wave Protection	Mechanical / Hydraulic	100% (Including Entrance Chnl)	100% (Including Entrance Chnl)	Yes (See Issues)	None	102/103	• The typical application of this concept is considered a Beneficial Use; however the project's application was not considered a Beneficial Use through further analysis.	No
Nearshore Berm – Beach Feeder Berm / Surf Break	Hydraulic	100% (Including Entrance Chnl)	Not Considered for Clayey Mat'l	Yes	None	102/103	• Sandy materials better suited for direct beach placement in this project's application.	No
ODMDS Placement	Mechanical / Hopper	100% (Including Entrance Chnl)	100% (Including Entrance Chnl)	No	None	102/103	• Designated ODMDS	Yes

[1] Based on preliminary analysis of geotechnical information, the quantity of silty-sand materials in the Jetty Channel is assumed to be approximately 300,000 cubic yards.
[2] Based on the overall quantity of material in the Jetty Channel with the aforementioned estimated quantity of silty-sand materials removed, the quantity of clay materials is assumed to be approximately 1,300,000 cubic yards (the remaining 1.6 MCY of material is located in the Entrance Channel.
[3] ICW 'Bank Stabilization' Capacity was not calculated because of the multiple factors that make this alternative non-viable.

Exhibit B-Habitat Assessment

332 Bridge

The 332 Bridge site is located approximately one mile northeast of the Freeport Jetty Channel (Exhibit 1). Photographs of the site taken during the January 23rd site visit are provided in Exhibit 2. This 328 acre site is comprised of four potential BU areas including a four acre area located at the northern corner of the site, a four acre area located at the eastern corner of the site, a 12 acre area located just south of Hwy 332 near the western extent of the site, and a 42 acre area located at the southern corner of the site (Exhibit 1). A fifth potential BU area was identified and considered as well; this area is approximately 14 acres in size and is located adjacent to the 12 acre area described above.

The January 23rd site visit revealed that approximately 132 acres of the 328 acre site is low marsh and consists of characteristic wetland vegetation including *Spartina alterniflora*, *Distichilis spicata*, *Batis maritima*, and *Salicornia virginica*. Also observed within the low marsh habitat were vegetated flats consisting mostly of *Monanthochloe littoralis* and *Salicornia virginica*. Open water areas that could be elevated for low marsh plant growth occupy approximately 76 acres of the site. Open water areas at the site appear to be tidally connected via a natural channel that connects to an existing drainage canal at both the northwestern and southwestern ends of the site (Exhibit 1). Approximately 7 acres of the 328 acre site contain oyster beds. A test pit sample at the 328 acre site revealed a low chroma silty clay soil, which is indicative of hydric soils.

The northern four acre area is an open water pond which is connected to adjacent water bodies via the natural channel. The pond is surrounded by functional low salt marsh habitat consisting mostly of *Spartina alterniflora*. This low marsh transitions into high salt marsh and vegetated flats to the south. The water in the pond is approximately 1-1.5 ft. deep at this location. No evidence of oysters was observed (Exhibit 1). During the site visit, several waterfowl species, including Reddish Egrets, Griebs, and Great Egrets, were observed utilizing this area.

The eastern four acre area is located adjacent to Hwy 332 and due to low tide, was not inundated during the site visit. This area is also surrounded by functional low marsh habitat consisting mostly of *Spartina alterniflora*. Several oyster beds, with an approximate total acreage of 0.1 acres, were observed fringing the perimeter of the area (Exhibit 1). Approximately 60% oyster coverage was observed within the 0.1 acre area. The natural channel also provides tidal influence to this location.

The 12 acre area is located adjacent to an upland area containing a Texaco Station and a fish market. The area consists of functional estuarine low marsh habitat and an open water area approximately 1-1.5 ft. in depth. The area also contains several oyster beds with an approximate total acreage of 0.3 acres and an estimated percent coverage of 60%. Oyster beds were also located along an existing channel adjacent to the 12 acre area. Oyster beds within this channel have an approximate total acreage of 0.6 acres with an estimated percent coverage of 60% (Exhibit 1). Conversations with Mr. Kurt Evans, owner of the Texaco Station, revealed that historically most of the 12 acre area consisted

of low marsh habitat with little open water. Over time, it appears that subsidence has caused a transition from a dominant low marsh habitat to a more open water habitat with functional fringing low marsh. Mr. Evans also presented an historical aerial photo of the area, dated early 1980s, that showed low marsh habitat extending approximately 10-15 ft. from the upland area with little open water.

The 42 acre area consists mostly of open water with a few fringing low marsh areas along its western boundary (Exhibit 1). Several oyster reefs, with an approximate total acreage of 6 acres, were observed along the western boundary of the 42 acre area (where the natural channel flows through this location) and also in several locations within the middle of the water body (Exhibit 1). It should also be noted that small scattered oyster clumps were appeared to be located in other parts of the area. Approximately 30% oyster coverage was observed within the 6 acre area. Water depths during the site visit were approximately 2-2.5 ft. Mr. Evans stated that historically, the 42 acre area contained more of a low marsh habitat but that over time subsidence had transitioned the area to open water. He estimated that 60% of the existing open water areas were marsh 30 years ago. He also stated that this area was frequently used for fishing.

The 14 acre area consists entirely of open water with fringing low marsh along its eastern, northern and western boundaries and the drainage canal along its western boundary, with a large opening into the canal. Based on conversations with Mr. Evans this area was excavated for fill material approximately 40 to 50 years ago. The water depth in this area is roughly 5-6 ft. on average with a soft bottom. Mr. Evans also stated that this area is an extremely popular recreational fishing area with a typical abundance of trout, redfish and flounder being caught.

Marsh Restoration/Creation Potential at 332 Bridge Site:

Both the northern and eastern 4 acre sites are surrounded by healthy functional marsh and do not have the capacity to receive a substantial quantity of dredged material from the project (approximately 3,200,000 CY total and 300,000 CY of silty sand material from the jetty channel). Water depths at these locations are shallow (1-1.5 ft at northern 4 acre site; 0-1 ft. at eastern 4 acre site) and site acreages are too small to utilize a significant amount of dredged material for marsh restoration. In addition, the shallow open water of these sites provides diversity within the entire existing low marsh complex and infilling would likely reduce rather than improve the habitat quality.

The 12 acre area also appears to be a healthy functional marsh consisting of low marsh habitat interspersed with shallow open water areas. In our opinion, it appears that this area may not benefit from additional dredged material to raise elevations for low marsh vegetation growth. The 12 acre open water area also provides circulation, habitat diversity and contains several oyster beds that would most likely be displaced should dredged material be placed in this area.

Of the potential BUs at the 332 Bridge site, the 42 acre area and the 14 acre area appear to have the most potential for marsh creation / restoration. The 42 acre area is almost entirely open water with water depths of 2-2.5 ft; however a deeper water natural channel is still apparent on the aerial photo. If many of the oyster beds correspond to the edges of

this 'channel', dredged material may be strategically placed to avoid them. The goal of dredged material placement would be to raise elevations to a water depth (1-1.5 ft) that would be suitable for low marsh vegetation such as *Spartina alterniflora* establishment. Although there are several oyster beds within the 42 acre area, they are found mostly on the western fringe and are distributed sparsely within the main water body. The 14 acre area is open water with depths of 5-6 ft. If dredged material is placed to raise the elevation to 1-1.5 ft., low marsh vegetation would likely establish. The primary drawback of filling this area would be the loss of recreational fishing grounds. Should these potential BU areas be utilized, well-controlled placement of the dredged material, maintenance and/or creation of tidal conveyances, and containment measures to prevent material from entering the drainage canal would be needed.

Bryan Lake

The Bryan Lake site is located approximately three miles west of the Freeport Jetty Channel (Exhibit 3). Photographs of the site taken during the January 23rd site visit are provided in Exhibit 2. The roughly 913 acre site is comprised of three potential BU areas including a 100 acre area, 30 acre area, and 50 acre area. The 30 acre and 100 acre areas are located just east of the Bryan Mound Strategic Petroleum Reserve facility. The 50 acre area is located east of the 100 and 30 acre areas.

The January 23rd site visit revealed that approximately 660 acres of the 913 acre site is low estuarine marsh and consists of characteristic wetland vegetation including *Spartina alterniflora, Bolboschoenus robustus, Distichilis spicata, Batis maritima*, and *Salicornia virginica. Spartina alterniflora* mainly fringes the perimeter of the marsh. In some areas, *Bolboschoenus robustus* is found growing immediately landward of *Spartina alterniflora.* High marsh habitat consisted mostly of *Iva frutescens* which fringed the perimeter of the marsh just landward of *Spartina alterniflora* and *Bolboschoenus robustus*. Open water areas that could be elevated for low marsh plant growth occupy approximately 180 acres of the site. The 100 acre and 30 acre sites appear to be tidally connected to the Gulf Intracoastal Waterway (GIWW). Approximately 6 acres of the site contains oyster beds.

The 100 acre area can be characterized as open water. A natural channel connects the 100 acre area with the 30 acre area and the GIWW. Low marsh habitat surrounds the 100 acre area and several oyster beds were observed fringing the shoreline on the northern section of the water body. Scattered oyster beds, with an approximate total acreage of 5.8 acres were also observed within the main water body and along connecting channels at this location. Approximate percent coverage of oysters within the 5.8 acre area is estimated at 70%. Water elevations at this location were approximately 1-1.5 ft. During the site visit, several waterfowl, including Great Egrets and Roseate Spoonbills, were observed utilizing this area.

The 30 acre area is tidally connected to the 100 acre area and the GIWW via a natural channel. Low marsh habitat surrounds the perimeter of this area and evidence of oyster beds was observed. Approximately 0.2 acres of oyster beds were located within the 30 acre area with an estimated percent coverage of 60%. Several waterfowl species, including a flock of Roseate Spoonbills, were seen utilizing this area. Water depths at this location are approximately 1-1.5 ft, on an average tide.

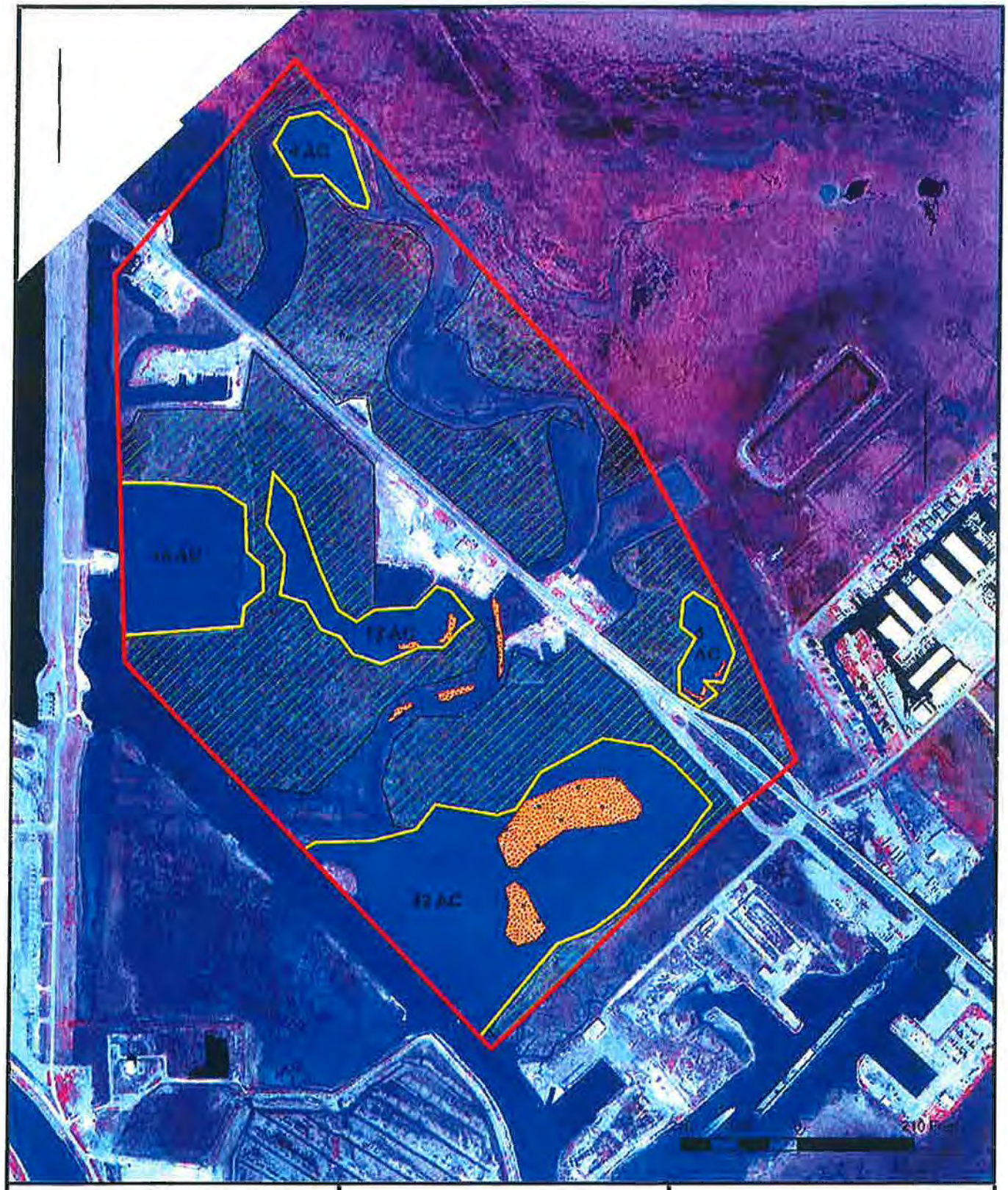
The 50 acre area, located east of the other two sites, is also surrounded by low marsh habitat. A natural channel connects this area to the GIWW and water depth at this location is less than 1 ft. A small oyster bed was observed at the mouth of the natural channel, with an approximate acreage of 0.4 acres and an estimated percent coverage of 50%. Several waterfowl species were also seen utilizing this site.

Marsh Restoration/Creation Potential at Bryan Lake:

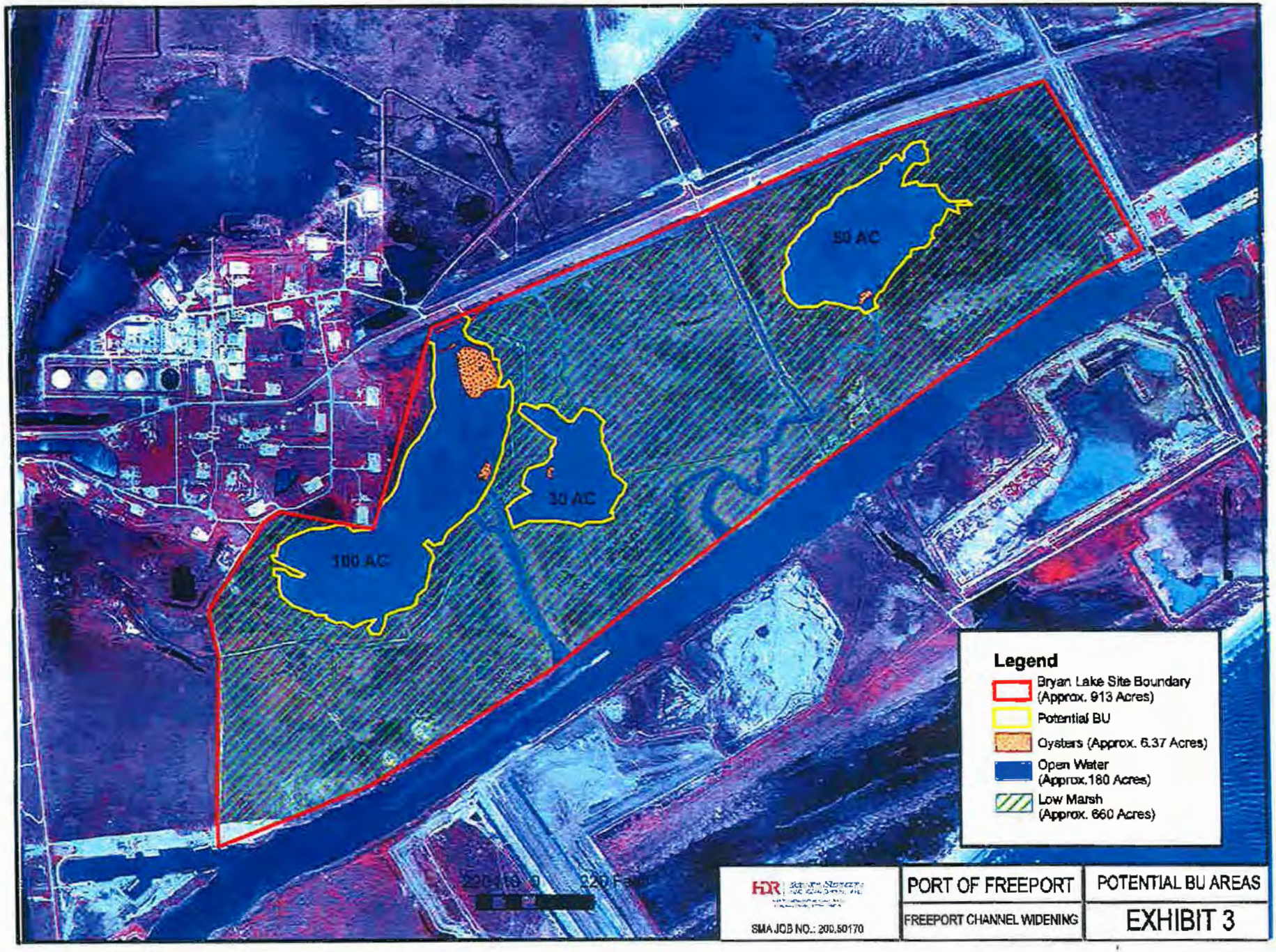
The three open water areas at Bryan Lake are not well suited as viable BUs. All three water bodies are shallow (1.5 ft or less) and contain oysters. The surrounding low marsh habitat is healthy and functional and the area does not appear to require additional dredged material to raise elevations for low marsh vegetation growth. In addition, the shallow open water of these sites provides diversity within the entire existing low marsh complex. This area also appears to be frequently utilized by waterfowl for foraging and loafing.

Conclusion and Recommendations

It is our opinion that of the sites reviewed during the January 23rd site visit, only the 42 acre area and the 14 acre area located within the 332 Bridge site should be considered potentially viable BU options for the placement of dredged material. Although these areas are considered potentially viable for this purpose, it must be reiterated that filling of these areas to create low marsh vegetation grounds will negatively impact some functioning oyster beds as well as popular and functioning recreational fishing grounds.



HDR | SHINER MOSLEY AND ASSOCIATES, INC.	PORT OF FREEPORT	POTENTIAL BU AREAS
SMA JOB NO.: 200.50170	FREEPORT CHANNEL WIDENING	EXHIBIT 1


50 AC
30 AC
100 AC
Legend
Bryan Lake Site Boundary
(Approx. 913 Acres)
Potential BU
Oysters (Approx. 6.37 Acres)
Open Water
(Approx.160 Acres)
Low Marsh
(Approx. 660 Acres)
SMA JOB NO.: 200.50170
PORT OF FREEPORT
FREEPORT CHANNEL WIDENING
POTENTIAL BU AREAS
EXHIBIT 3