TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATE OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	DATE April 7, 2015	TRANSMITTAL NO. TO 011-005

SECTION 1 - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE:
U.S. Army Corps of Engineers New Orleans District P.O. Box 60267 New Orleans, LA 70160	BCE-MMG Joint Venture, LLC New Orleans, LA	W912P8-12-D-0005	Ξ THIS IS A NEW TRANSMITTAL _ THIS IS A RESUBMITTAL OF TRANSMITTAL ____

SPECIFICATION SECTION; (Cover only one section with each transmittal)	PROJECT TITLE AND LOCATION
	Task Order 011 – 005- Risk Re-evaluation of the 2007 USCG- Aerostar Report on the Former US Coast Guard Station, AI#9009, New Orleans, Orleans Parish, Louisiana

ITEM NO. a.	DESCRIPTION OF ITEM *(Type, size, model number, etc.)* b.	MFG. OR CONTR. CAT. CURVE DRAWING OR BROCHURE NO. (*See instruction no. 8*) c.	NO. OF COPIES d.	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE g.	VARIATION *(See instruction no. 6)* h.	FOR CE USE CODE I
				SPEC. PARA. NO. e.	DRAWING SHEET NO. f.			
1	Task Order No. 11 Final Report Submittal		1			4013-ACE		

REMARKS

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

C. Paul Lo/
Lester Nicosia, Project Manager

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE
		April 7,2015

April 2015

FINAL RISK RE-EVALUATION OF THE 2007 USCG-AEROSTAR REPORT ON THE FORMER US COAST GUARD STATION, AI# 9009 REVISION 2 NEW ORLEANS, ORLEANS PARISH, LOUISIANA

Prepared for

US Army Corps of Engineers®

New Orleans District

Under Contract to
U.S. Army Corps of Engineers – New Orleans District
Contract No. W912P8-12-D-0005
Task Order # 11

By:

BCE-MMG Joint Venture, LLC.

Bayou Cajun Enterprise, LLC

MMG
Materials Management Group, Inc.

Final Report

for

Risk Re-Evaluation of the 2007 USCG-Aerostar Report on the Former US Coast Guard Station, AI# 9009

New Orleans, Orleans Parish, Louisiana

Approval Page

Materials Management Group, Inc.
C. Paul Lo, Project Manager/Chemist

Materials Management Group, Inc.
Colette Brogna, Environmental Scientist

USACE-MVN
Contracting Officer Representative

USACE-MVN
Technical Representative

USACE-MVN
Technical Representative

USACE-MVN
Technical Representative

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1.0 Introduction

Under Task Order 10 of contract number W912P8-12-D-0005 with the U.S. Army Corps of Engineers (USACE), New Orleans District, Bayou Cajun Enterprises - Materials Management Group Joint Venture, LLC. (BCE-MMG) has conducted a risk evaluation of residual soil concentrations left onsite following an emergency cleanup response at the former U.S. Coast Guard (USCG) facility at the Inner Harbor Navigation Canal (IHNC) lock. Soil excavation was conducted in five areas at the site between February and May 2007 based on elevated concentrations of contaminants identified during soil sampling from 16 borings conducted in June 2006. Following completion of excavation activities, confirmatory sample results in two of the areas (former borings B8 and B12) indicated residual petroleum hydrocarbon (diesel and oil ranges) concentrations remaining onsite. Based on discussions with the Louisiana Department of Environmental Quality (LDEQ) and the requirement to address the contamination, BCE-MMG has conducted a re-evaluation of the soil concentrations under the LDEQ Risk Evaluation/Corrective Action Program (RECAP), 2003 (found at http://www.deq.louisiana.gov/portal/DIVISIONS/UndergroundStorageTankandRemediationDivision/RemediationServices/RECAP/RECAPDocument2003.aspx) to determine if the residual contamination found in a few of the confirmatory samples can be left in place.

2.0 Project Background

The site is a former U.S. Coast Guard (USCG) base/support center located at the IHNC lock in New Orleans (4640 Urquhart St.) (see Figure 1). The USCG has occupied the site since the 1930's, with site use including a machine shop as well as administrative offices and barracks. The site was impacted by the flooding that resulted from Hurricane Katrina in 2005, with releases of petroleum products and other hazardous and non-hazardous materials stored onsite. The facility was not reopened (the USCG relocated its facility) and the site has remained vacant since Hurricane Katrina.

The USCG contracted Aerostar Environmental Services, Inc. of Mobile, Alabama (Aerostar) to dispose of hazardous wastes at the site as well as to conduct soil sampling. In June 2006, Aerostar advanced 16 soil borings across the site. The seven samples with the highest field screening results (using an organic vapor analyzer) were sent to a laboratory for analysis for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons - diesel and oil ranges (TPH-D and TPH-O), and RCRA metals. The soil concentrations of TPH-D, TPH-O, PAHs, arsenic, chromium, and lead exceeded the RECAP screening standards for industrial site use in several samples, and five areas were delineated for soil excavation and removal.

Aerostar conducted the soil excavation activities between February and May 2007. The remedial activities consisted of excavating areas measuring four feet by four feet by three feet deep around soil borings B6, B8, B9, B12, and B15. Initial confirmatory sample results from February 2007 indicated that all elevated concentrations were removed from the areas around B6, B9, and B15. However, residual concentrations of TPH-D, TPH-O, and arsenic were elevated in two confirmatory sample locations in the B8 excavation area (west wall and under the AST), and likewise, residual concentrations of TPH-D and TPH-O were elevated in two confirmatory sample locations in the B12 excavation area (west wall and bottom). Furthermore, a release of hydraulic oil was observed seeping into the excavation pit at B8. The site layout and locations of B8 and B12 are depicted in Figure 2.

Subsequently, Aerostar conducted over-excavation at the B8 and B12 areas and additional confirmatory sampling in April and May 2007. Final confirmatory sampling indicated that TPH-D, TPH-O, and some PAHs (benz(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene at B8 and benzo(a)pyrene at B12) remained at elevated concentrations in both areas (including under a diesel aboveground storage tank (AST) in the B8 area). Further excavation was not possible due to the presence of the diesel AST and floodwall at the site. Aerostar also advanced additional borings around B8 in an attempt to delineate the extent of the hydraulic oil release. Additional soil borings could not be advanced around the B12 excavation due to the thickness of the concrete. Based on the confirmatory sample results, LDEQ has requested that further action be taken to address the elevated soil concentrations remaining onsite at B8 (designated as AOI 1) and B12 (designated as AOI 2).

A recent site walk conducted in December 2014 revealed that the diesel AST in the B8 area (AOI 1) is no longer present (see Appendix E, Photo 1). The AST must have been removed and disposed off-site by the USCG and/or Aerostar after the May 2007 removal action.

3.0 RECAP Assessment

In August 2014, BCE-MMG was contracted by the USACE New Orleans District (MVN) to conduct a risk re-evaluation, following appropriate and applicable RECAP guidelines, of the remaining soil concentrations onsite for AOI 1 and AOI 2 as listed in the USCG-Aerostar 2007 report (specifically, the concentrations summarized in the tables on pages 15 and 17 of the report). Currently, the former USCG Station at the IHNC Lock is zoned as an industrial area and was evaluated as such under RECAP. See Appendix C for the zoning map (see http://property.nola.gov; search by address).

3.1 Identification of Elevated Soil Concentrations

The residual concentrations remaining onsite, as evidenced by some confirmatory sample results, are summarized in Table 1. The analytical results from areas removed during the over-excavation (original side walls and bottom) as well as the concentrations that are below the RECAP screening standard are not included on Table 1, but are provided in Table 1a. Briefly, at AOI 1 (B8), TPH-D is elevated in the west wall and under the diesel AST, TPH-O is elevated in the west wall, and PAHs (benz(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene) are elevated in the south wall (see Figure 3). At AOI 2 (B12), TPH-D is elevated in the west wall and the bottom of the pit, and TPH-O is elevated in the west wall, and benzo(a)pyrene is elevated in the west and south walls (see Figure 4). Tables 1 and 1a also include the applicable RECAP screening standards (soil screening industrial exposure (SSi)).

3.2 RECAP Inputs

BCE-MMG conducted the re-evaluation using RECAP Management Option 1 (MO-1) (found at http://www.deq.louisiana.gov/portal/DIVISIONS/UndergroundStorageTankandRemediationDivision/RemediationServices/RECAP/RECAPDocument2003.aspx, Appendix H). The evaluation followed the procedures detailed in RECAP 2003. RECAP MO-1 was used since the soil concentrations exceed the RECAP screening standards under Screening Option (SO). MO-1 is the next step under the RECAP process. Sufficient data to conduct a Management Option 2 (MO-2) evaluation (including geotechnical analyses and full suites of potential contaminant groups, as well as sampling procedures in accordance with RECAP (also found in RECAP 2003, Appendix H)) were not available. MO-2 evaluation was not conducted.

The soil concentration used for evaluating each constituent of concern (COC) was the highest detected concentration for the COC based on the results of the five confirmatory sample locations in each AOI (four sidewalls and the bottom of the excavation); this is the source concentration. Therefore, the source concentrations are as follows:

B8
TPH-D: 1940 mg/kg
TPH-O: 5250 mg/kg
Benz(a)anthracene: 4.78 mg/kg
Benzo(a)pyrene: 5.03 mg/kg
Indeno(1,2,3-cd)pyrene: 3.05 mg/kg

B12
TPH-D: 2720 mg/kg
TPH-O: 2650 mg/kg
Benzo(a)pyrene: 0.716 mg/kg

In order to include the soil protective of groundwater RECAP standards (required under MO-1 evaluation), BCE-MMG used a known groundwater classification from another site located within one mile of the subject site and on the same side of the Mississippi River as approved by LDEQ. The groundwater classification used is Groundwater 3 drinking water (GW3DW) or groundwater 3A, based on a site located on Chartres St, 1.00 miles from the USCG site (see Figure 1 for reference). The water well can also be referenced using the GIS tool for searching Louisiana Department of Transportation and Development (LDOTD) water well registrations through the Louisiana Department of Natural Resources Strategic Online Natural Resources Information System at http://www.sonris.com. The Chartres St geographic coordinates are N 29º 57'43.6", W 90º 02'38.4". The Chartres St water well used for reference was a monitoring well that was installed as part of a site investigation for groundwater classification and evaluation purposes only; this well has been plugged and abandoned. It was not a public-use water well. The groundwater classification is based on a well yield of 84.8 gallons per day (gpd), and a total dissolved solids (TDS) concentration of 676 mg/l (meeting the RECAP criteria of well yield less than 800 gpd, and TDS concentration less than 10,000 mg/l). In addition, the dilution factor used for adjustment of the soil protective of groundwater standard (where applicable) was 2.6 (based on a distance of 100 feet from point of compliance to point of exposure (measured from B12 to the canal using Google Earth), and a source thickness (s_d) of less than five feet).

3.3 MO-1 RECAP Standards

The MO-1 RECAP standards (MO-1 RS) are summarized in Table 2, along with the source concentration for each COC for each AOI. The MO-1 RS are Soili (soil industrial exposure), Soilgw3dw (soil protective of groundwater 3A), and soil saturation. The limiting RS is indicated for each COC. The Soili has been adjusted for additivity where applicable. This applies only to TPH-D and TPH-O, which were both adjusted based on liver as a common target organ. In addition, the dilution factor (DF) of 2.6 was applied where appropriate (TPH-D, benz(a)anthracene, and benzo(a)pyrene).

4.0 Current Structural and Sub-surface Geological Conditions

As indicated in Section 3.0, the former USCG Facility is located in an area classified as industrial (see Appendix C for the Zoning Map).

BCE-MMG has reviewed information from various studies of the area and of the site, including: the 2007 USCG-Aerostar Report; USACE-MVN-supplied maps, engineering drawings, and subsurface information (including a cross-section from a 2002 Design Documentation Report (DDR) for the IHNC Lock project – see Appendix F) to assist in illustrating existing structural or physical conditions and sub-surface geological

conditions at the site (see Appendix D for report references); as well as information from site visits conducted in February and December 2014. Current structural and sub-surface geological conditions are briefly described below.

A. Floodwall/Sheet Pile Barrier to Migration

As depicted on Figure 2, the site is bounded on the west by a floodwall constructed approximately 12 feet in elevation from ground surface of 1-2 feet NGVD. The floodwall is about 15 feet east of the railroad tracks in this industrial corridor of the IHNC. Below the concrete floodwall is sheet piling that is driven to approximately 15 feet below ground surface. This concrete floodwall-sheet pile structure operates as a barrier against potential westward migration of residual COCs remaining in groundwater, if applicable.

B. Geological Subsurface Condition

East of the Carpentry Building is a concrete wharf, approximately 50 feet in length, with piling support deep and structurally-strong enough to support vehicular traffic on the USCG wharf. A recent soil boring from the IHNC Lock area, IHNC-07-29PU (see Appendix B), as well as the cross-section from the 2002 USACE DDR (see Appendix F), show very thick layers of clays (CL and CH) of more than 60 feet across the IHNC. As shown, there are no listed robust groundwater aquifers in the area of the site. The permeability of clays (CL and CH) (which range from $5x10^{-6}$ to $1X10^{-5}$ cm/sec) indicate that the risk for any residual contaminant migrating via groundwater to any aquifer or to the IHNC Canal is negligible. Additionally, considering a distance of approximately 100-200 feet from the Point of Compliance (Source) to the Point of Exposure (Receptor) (depending on the AOI), the rate of potential migration for a contaminant from AOI-1 or AOI-2 to reach the IHNC Canal to the east is slow enough that ending concentrations would be reduced from natural attenuation prior to reaching the canal.

C. Depth to Groundwater /Aquifer Use

Groundwater aquifers in the area of the site are located at the 1200 feet, 700 feet, 400 feet and 200 feet horizons below ground surface (see Appendix F). These aquifers are not used for drinking water in the New Orleans area.

D. In-Place Containment of Residual COCs

The ASTs identified in the 2007 Aerostar Report in the areas of B-8 (AOI 1) and B-12 (AOI 2) have been removed (see Appendix E, Photos 1 and 2. The concrete block foundations from the former secondary containment areas associated with the ASTs serve as the remaining footprint of these former storage container structures, as well as

a barrier to residual concentrations detected under the AST(s). In addition, soil in these two areas were excavated to a depth of greater than 4 feet and backfilled with clean soil. Considering the concrete foundations and clean backfill in place covering the residual concentrations in the soil, the potential migration of and/or exposure to contaminants from AOI 1 and AOI 2 via ingestion as well as dust particulates by workers in this industrial area is negligible. The placement of clean backfill in the excavations and the remaining secondary containment concrete foundations in the former AST areas support the argument that the residual concentrations at AOI 1 and AOI 2 can be managed in-place.

E. Natural Attenuation

Natural attenuation (bioremediation) of fuel hydrocarbon contamination (including diesel and oil) is recognized as an acceptable means of management of contaminated sites. Both the EPA and ASTM have developed guidance documents for using monitored natural attenuation at contaminated sites, including those in the Superfund, RCRA Corrective Action, and UST programs (EPA Office of Solid Waste and Emergency Response Policy Directive, No. 9200.4-17, 1997 and ASTM 1943-98). In the case of petroleum hydrocarbons, bacteria and other microorganisms present in the environment break down the hydrocarbons by using the carbon molecules as a food source. While an evaluation of the microbiological environment at AOI 1 and AOI 2 sites has not been conducted, it is very likely that some level of natural attenuation is occurring at the site.

5.0 Conclusions

Under the preliminary RECAP MO-1 evaluation, as indicated on Table 2, the source concentrations at AOI 1 (B8) all exceed the limiting MO-1 RS. At AOI 2 (B12), both TPH-D and benzo(a)pyrene exceed the limiting MO-1 RS, while TPH-O does not. This evaluation is also presented on RECAP Form 11, included in Appendix A.

Using RECAP MO-1 requires consideration of the soil protective of groundwater standards, which are the limiting RS in some cases. However, as described in Section 4.0 B, it should be noted that it is extremely unlikely that groundwater has or will be impacted at this site. Appendix B includes a soil boring log for a soil boring advanced to 60 feet below ground surface (bgs) on the west bank of the IHNC, in the vicinity of the site, and Appendix F includes a cross-section of the IHNC Lock area. The soil boring and cross-section indicate very thick clay in the subsurface in the area. The combination of the very low permeability of the clay and the groundwater classification of GW3 suggests that exposure via groundwater is unlikely. Additionally, the current structural condition of the site includes barriers to shallow groundwater movement, further limiting the potential to exposure to residual concentrations via groundwater. Removing consideration of the soil protective of groundwater RECAP standards results

in elimination of the TPH-D concentrations at AOI 1 and likewise for the TPH-O concentration and the TPH-D concentration in the excavation pit bottom at AOI 2.

The presence of very thick clay layers and sub-surface structural barriers, as well as the absence of (groundwater and surface water) drinking water receptors within the vicinity of the former USCG Station, along with the consideration of clean backfill in place over the excavated areas support the decision to manage residual contamination in-place.

6.0 Recommendations

Based on BCE-MMG's initial re-evaluation of the existing data for the site (collected by Aerostar) using RECAP Management Option 1, some of the elevated soil concentrations onsite could not be managed using risk assessment and left in place (with the existing data). However, with further examination of the groundwater classification and local groundwater use, soil lithology in the area and qualitative evaluation of groundwater migration (and subsequent qualitative elimination of the soil to groundwater pathway), and current structural conditions at the site, with the exception of the PAH concentrations at AOI 1, the majority of the elevated concentrations can be eliminated from concern under the RECAP standards for industrial exposure (Soili), and the concentrations remaining only slightly exceed the RECAP standards (TPH-O in AOI 1: 5250 mg/kg (Soili = 5000 mg/kg); TPH-D in AOI 2: 2720 mg/kg (Soili = 2550 mg/kg); benzo(a)pyrene in AOI 2: 0.716 mg/kg and 0.501mg/kg (Soili = 0.33 mg/kg). In addition, it is likely that natural attenuation of the hydrocarbon concentrations is occurring in the soil.

Furthermore, the excavations were backfilled with clean soil, the ASTs have been removed from the site, and the concrete foundations of the AST secondary containment structures remain in place, eliminating the potential for direct exposure to residual concentrations of contaminants. There are no immediate plans for excavation or digging at the site, which further limits the potential for exposure.

The proximity of AOI 1 and AOI 2 to the floodwall along the western boundary of the former USCG facility suggests that further excavation in these areas would pose both structural and safety issues for the floodwall in this section of the Hurricane Protection System that the Levee Board as well the USACE-MVN recently completed and inspected. It should be noted that any excavation in areas adjacent to the Hurricane Protection System would require permits from the appropriate Levee Board (Orleans or Jefferson Parish) as well the Geotechnical and Structural engineers of the USACE-MVN.

In summary, although some residual soil in the excavated areas comprising AOI 1 and AOI 2 are above the MO-1 limiting RECAP standards, several factors, including: (1)

industrial zoning; (2) structural barriers at the site (floodwall and sheet pile); (3) site geology - very low permeability of thick clay layers in the subsurface; (4)local groundwater use and absence of drinking water and surface water receptors; (5) placement of clean backfill over the soil with residual contamination; and (6) the likelihood of natural attenuation; all support the argument to manage residual contamination in-place.

Based on the determination that the soil to groundwater pathway (and associated limiting RECAP standards) can be eliminated from concern due to the very low permeability of clay materials, the presence of significantly thick clay layers in the subsurface and surrounding the excavation areas, the presence of structural barriers at the site, as well as the effect of natural attenuation and the factor of excavations being filled with clean soil, BCE-MMG recommends requesting a No Further Interest (NFI) determination for the site from LDEQ, with the understanding that such a determination does not provide site closure.

Tables

Table 1: Summary of Elevated Soil Concentrations at B8 and B12

Parameter	RECAP SSi (mg/kg)	Analytical Result (mg/kg)					
		B8 - West Wall (2)	B8 - under AST	B8 - South Wall (3)	B12 - West Wall (2)	B12 – South Wall (2)	B12 - Bottom (2)
TPH-D	510	1940	993	Did not exceed	2720	Did not exceed	1930
TPH-O	2500	5250	Did not exceed	Did not exceed	2650	Did not exceed	Did not exceed
Benz(a)anthracene	2.9	Did not exceed	Did not exceed	4.78	Did not exceed	Did not exceed	Did not exceed
Benzo(a)pyrene	0.33	Did not exceed	Did not exceed	5.03	0.716	0.501	Did not exceed
Indeno(1,2,3-cd)pyrene	2.9	Did not exceed	Did not exceed	3.05	Did not exceed	Did not exceed	Did not exceed

Table 1a: Summary of Excavated Soil Concentrations and Non-Elevated Soil Concentrations at B8 and B12

Location	Analytical Result (mg/kg)					
	TPH-D	TPH-O	Arsenic	Benz(a)anthracene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene
RECAP SSi (mg/kg)	510	2500	12	2.9	0.33	2.9
B8						
East Wall	70.8*	284*	9.2*	Not analyzed	Not analyzed	Not analyzed
North Wall	298*	Not analyzed	2.3*	Not analyzed	Not analyzed	Not analyzed
South Wall	1690*	Not analyzed	12.9*	Not analyzed	Not analyzed	Not analyzed
West Wall	3150*	1480*	4.8*	Not analyzed	Not analyzed	Not analyzed
Bottom	438*	Not analyzed	2.55*	Not analyzed	Not analyzed	Not analyzed
West Wall (2)	Exceeds	Exceeds	Not analyzed	<0.00582	0.039J	0.177J
East Wall (2)	45.1	67.3J	Not analyzed	0.048J	0.070J	0.221J
South Wall (2)	374*	721*	Not analyzed	<0.0058*	0.134J*	0.248J*
South Wall (3)	212	816	Not analyzed	Exceeds	Exceeds	Exceeds
Under AST	Exceeds	338	Not analyzed	<0.0058	0.0746J	0.180J
B12						
North Wall	144*	32.5*	Not analyzed	Not analyzed	Not analyzed	Not analyzed
South Wall	192*	12.6*	Not analyzed	Not analyzed	Not analyzed	Not analyzed
East Wall	134*	13.6*	Not analyzed	Not analyzed	Not analyzed	Not analyzed
West Wall	194*	103*	Not analyzed	Not analyzed	Not analyzed	Not analyzed
Bottom	530*	53.6*	Not analyzed	Not analyzed	Not analyzed	Not analyzed
North Wall (2)	324	69.4J	Not analyzed	0.211J	0.179J	0.278J
South Wall (2)	248	147	Not analyzed	0.822	Exceeds	0.463
East Wall (2)	136	54.8J	Not analyzed	<0.00576	0.234J	0.34
West Wall (2)	Exceeds	Exceeds	Not analyzed	0.792	Exceeds	0.394
Bottom (2)	Exceeds	<160	Not analyzed	<0.00574	<0.00772	<0.022

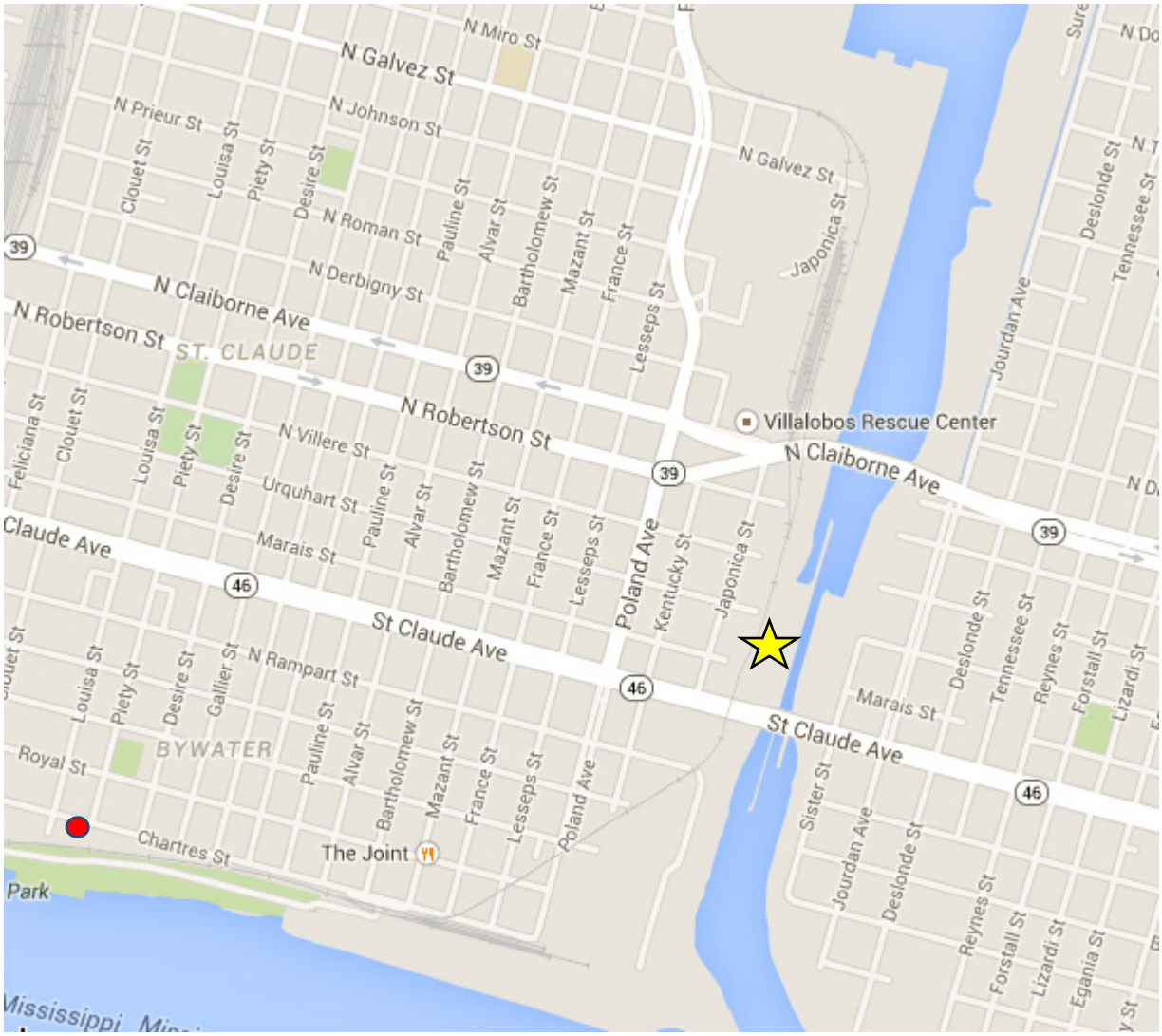
*Excavated

Table 2: Summary of MO-1 RECAP Standards

COC	MO-1 RS (mg/kg)			Limiting MO-1 RS (mg/kg)	AOI 1 (B8) Source Concentration (mg/kg)	AOI 2 (B12) Source Concentration (mg/kg)
	Soili	Soilgw3dw	Soilsat			
TPH-D	2550*	676**	NA	676	1940	2720
TPH-O	5000*	10000	NA	5000	5250	2650
Benz(a)anthracene	2.9	0.042**	NA	0.042	4.78	NA
Benzo(a)pyrene	0.33	59.8**	NA	0.33	5.03	0.716
Indeno(1,2,3-cd)pyrene	2.9	9.2	NA	2.9	3.05	NA

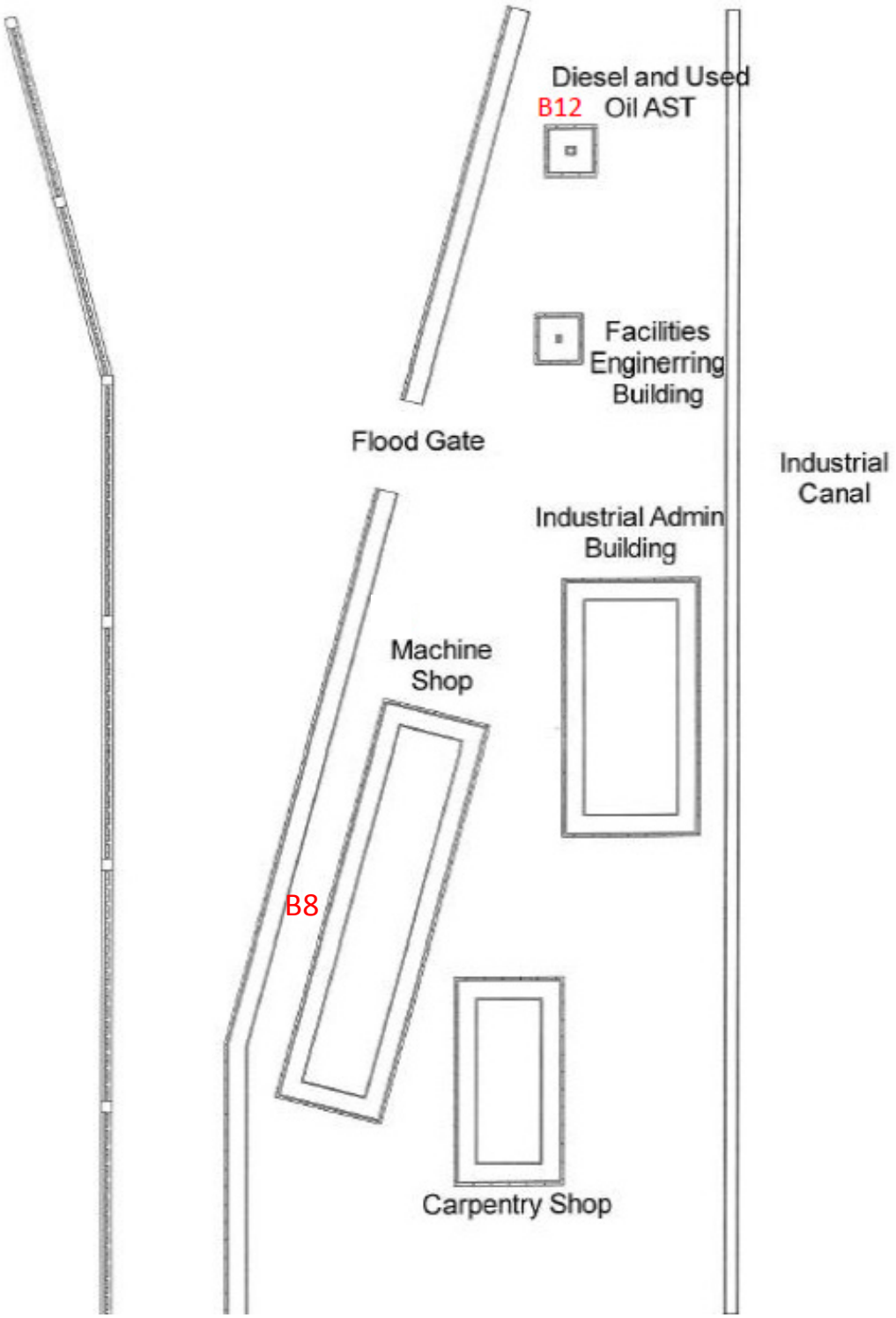
*RECAP Standard is adjusted for additivity based on liver as the target organ.
**Dilution factor of 2.6 applied.

Figures



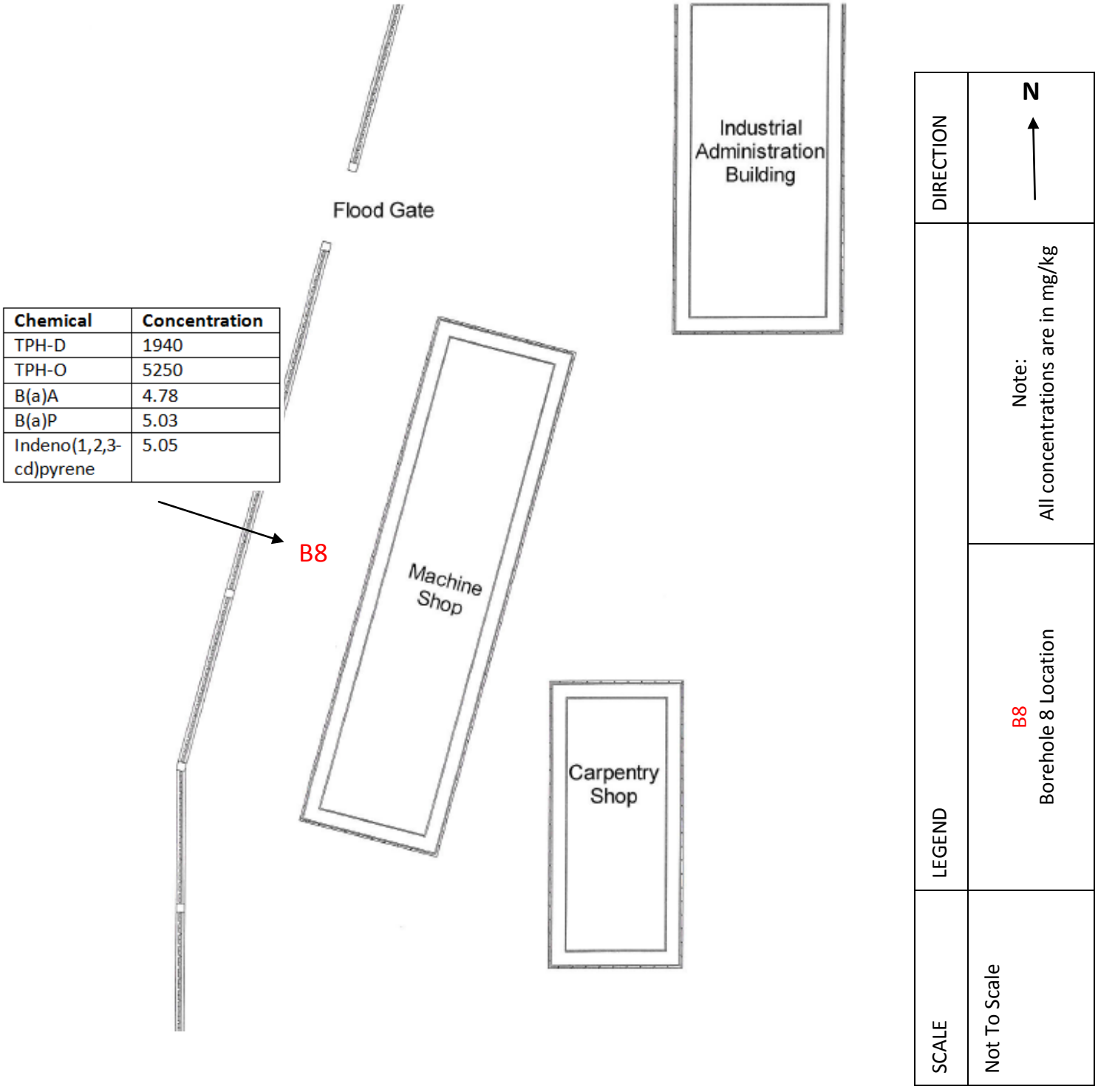
DIRECTION	N
LEGEND	Ground Water Classification Reference Location ISC Location
SCALE	Not To Scale

DRAWN BY C.B.	Date: 1/8/2015	FILE: 4013 ACE	**SITE DIAGRAM** ISC New Orleans 4640 Urquhart St., New Orleans, Louisiana	**MATERIALS MANAGEMENT GROUP, INC.**
			Figure 1 Site Location	3520 GENERAL DEGAULLE DR., SUITE 3010 NEW ORLEANS, LOUISIANA 70114 PHONE: 504-368-0568 FAX: 504-368-8403

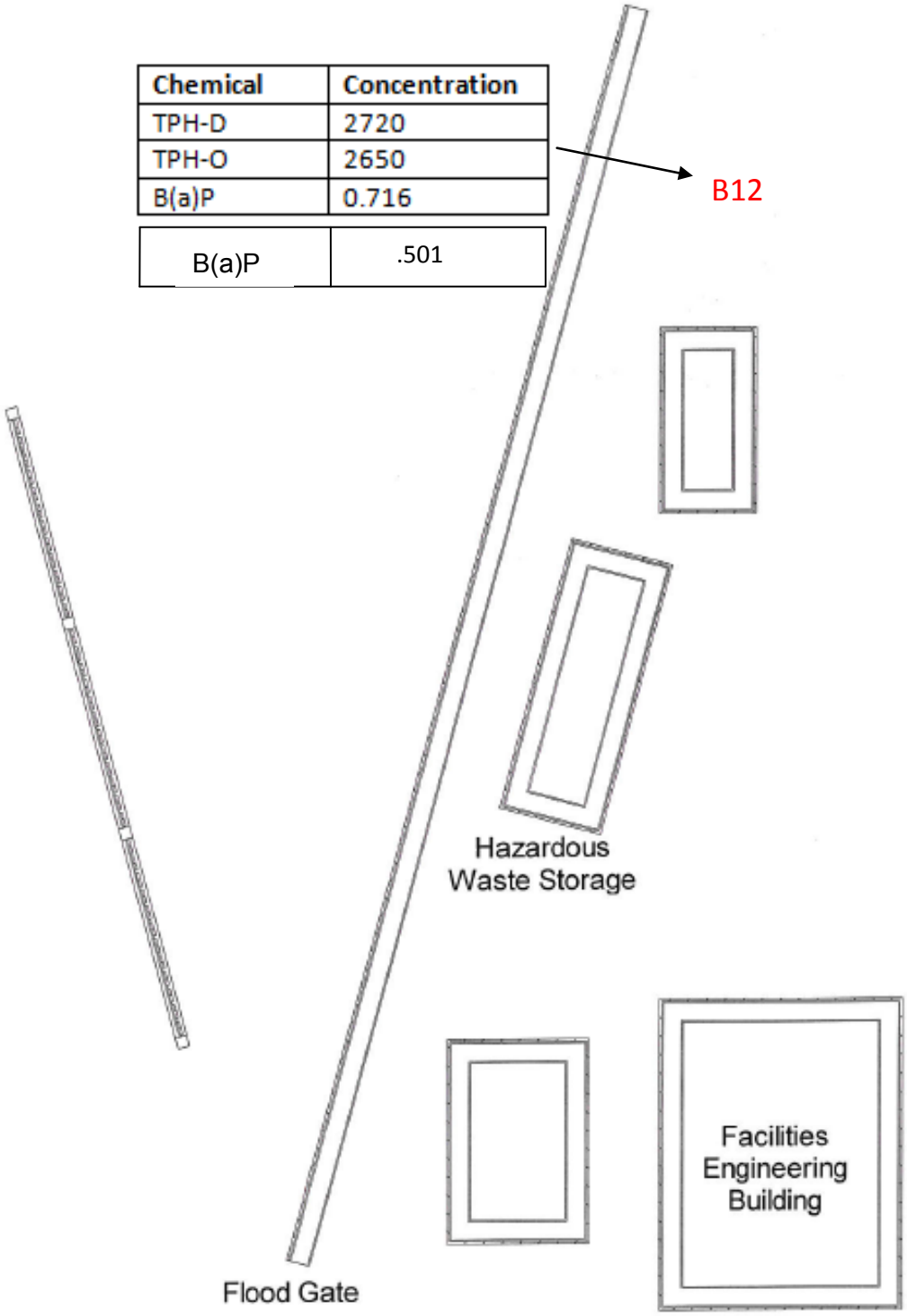


DIRECTION	N
LEGEND	B8 Borehole 8 Location
	B12 Borehole 12 Location
SCALE	Not To Scale

DRAWN BY C.B.	Date: 1/8/2015	FILE: 4013 ACE	**SITE DIAGRAM** ISC New Orleans 4640 Urquhart St., New Orleans, Louisiana	**MATERIALS MANAGEMENT GROUP, INC.**
			Figure 2 Borehole 8 and 12 Locations	3520 GENERAL DEGAULLE DR., SUITE 3010 NEW ORLEANS, LOUISIANA 70114 PHONE: 504-368-0568 FAX: 504-368-8403



DRAWN BY C.B.	Date: 1/8/2015	FILE: 4013 ACE	**SITE DIAGRAM** ISC New Orleans 4640 Urquhart St., New Orleans, Louisiana	**MATERIALS MANAGEMENT GROUP, INC.**
			Figure 3 Elevated Concentrations at AOI 1 (B8)	3520 GENERAL DEGAULLE DR., SUITE 3010 NEW ORLEANS, LOUISIANA 70114 PHONE: 504-368-0568 FAX: 504-368-8403



DIRECTION	N
LEGEND	Note: All concentrations are in mg/kg B12 Borehole 8 Location
SCALE	Not To Scale

DRAWN BY C.B.	Date: 11/11/14	FILE: 4013 ACE	**SITE DIAGRAM** ISC New Orleans 4640 Urquhart St., New Orleans, Louisiana	**MATERIALS MANAGEMENT GROUP, INC.**
			Figure 4 Elevated Concentrations at AOI 2 (B12)	3520 GENERAL DEGAULLE DR., SUITE 3010 NEW ORLEANS, LOUISIANA 70114 PHONE: 504-368-0568 FAX: 504-368-8403

Appendix A: RECAP Form 11

4640 URQUHART ST, LA AI# 9009
RECAP FORM 11
MANAGEMENT OPTION 1 SUBMITTAL FOR SOIL 0-15 FT BGS

SOIL 0-15 ft bgs - Identification of the Limiting MO-1 RS:

COC	X $Soil_i$ o $Soil_{ni}$	Additivity Divisor	Final X $Soil_i$ o $Soil_{ni}$	o $Soil_{GW1}$ o $Soil_{GW2}$ X $Soil_{GW3DW}$ o $Soil_{GW3NDW}$	oNO DF o DF2 X DF3 o DF3	Final $Soil_{GW}$	o $Soil_{es*}$	$Soil_{sat}$	Limiting MO-1 RS
TPH-D	5100	2	2550	260	1.5	390	----	NA	390
TPH-O	10000	2	5000	10000	NA	10000	----	NA	5000
Benz(a)anthracene	2.9	NA	2.9	0.016	1.5	0.024	----	NA	0.024
Benzo(a)pyrene	0.33	NA	0.33	23	1.5	34.5	----	NA	0.33
Indeno(1,2,3-cd)pyrene	2.9	NA	2.9	9.2	NA	9.2	----	NA	2.9

*Enclosed space exposure scenario not included at this time.

SOIL 0-15 ft bgs – Identification of the AOIC:

COC	Maximum Concentration	95%UCL-AM Concentration	AOI Concentration
AOI 1 (B8)			
TPH-D	1940	NA	1940
TPH-O	5250	NA	5250
Benz(a)anthracene	4.78	NA	4.78
Benzo(a)pyrene	5.03	NA	5.03
Indeno(1,2,3-cd)pyrene	3.05	NA	3.05
AOI 2 (B12)			
TPH-D	2720	NA	2720
TPH-O	2650	NA	2650
Benzo(a)pyrene	0.716	NA	0.716

4640 URQUHART ST, LA AI# 9009
RECAP FORM 11
MANAGEMENT OPTION 1 SUBMITTAL FOR SOIL 0-15 FT BGS

MO-1 SOIL 0-15 ft bgs RECAP ASSESSMENT:

COC	Limiting MO-1 RS	AOI Concentration	AOIC Exceeds MO-1 LRS?
AOI 1 (B8)			
TPH-D	390	1940	**Yes**
TPH-O	5000	5250	**Yes**
Benz(a)anthracene	0.024	4.78	**Yes**
Benzo(a)pyrene	0.33	5.03	**Yes**
Indeno(1,2,3-cd)pyrene	2.9	3.05	**Yes**
AOI 2 (B12)			
TPH-D	390	2720	**Yes**
TPH-O	5000	2650	**No**
Benzo(a)pyrene	0.33	0.716	**Yes**

Appendix B: USACE Boring Log Addressing Soil Permeability

US Army Corps of Engineers
New Orleans District

Boring Log Data Management System

GENERATE BORING LOG TEXT FILE

Boring Log HOME

Save Boring Log File **IHNC-07-29PU.txt**

IHNC-07-29PU - IHNC AND VICINITY FFEBJV

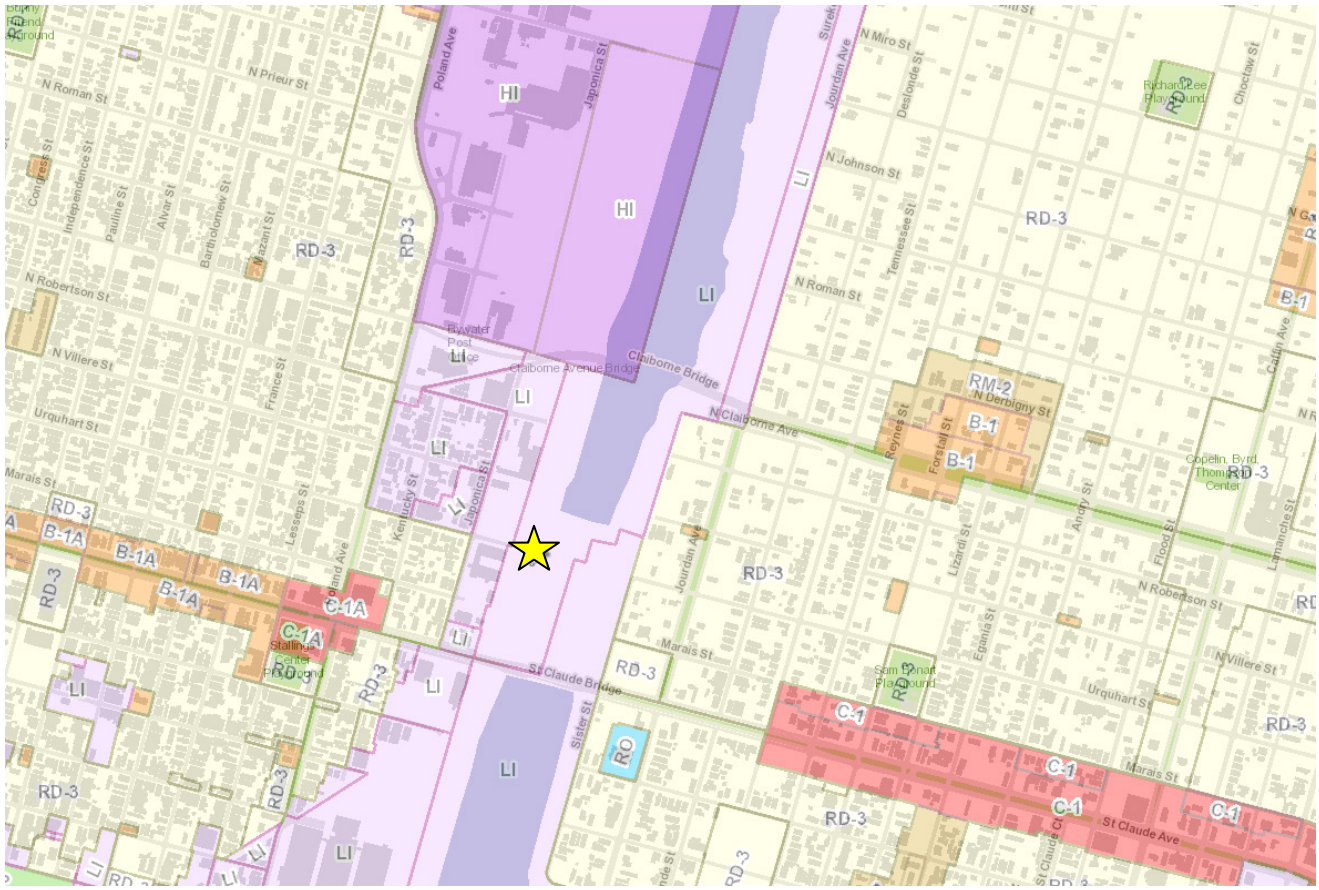
```
ZZ 29^57'58.9"    90^1'38.629" (U)
BOR. IHNC-07-29PU (07-02241)
STA. LAT  N 29^57'58.90"
LONG W 90^01'38.63"
35 FT SOUTH C/L
Date: 1/17/2008

GROUND EL. 2.2
  0.0  0.8 20     SM        GR       CS SIF
  0.8  1.7 25  1.7SM        GR LGR   CS
  1.7  3.0 43  3.0CL     SO DGR      WD
  3.0  3.8 12  3.8SI        GR       CS
  3.8  4.7 20     ML        GR       SIFRT  G
  4.7  5.0 40  5.0ML        GR       CS  O WD SIF
  5.0  6.0     6.0NS
  6.0  6.8 42     CH  SIS M GR
  6.8  7.7 36     CH  SIS M GR
  7.7 10.0 39     CH  SIS M GR       WD
 10.0 10.8 49     CH  SIS M GR       WD
 10.8 11.7 52 11.7CH  SISSO GR       WD                352100102 27      63 111
 11.7 14.0    14.0NS
 14.0 14.8 72 14.8CH  SISSO GR       WD
 14.8 15.7 69 15.7CH   O SO GR       WD RT
 15.7 18.0  0 18.0WD        BR
 18.0 18.8163     CH   O  M DGR      WD
 18.8 19.7116     CH   O SO GR       WD
 19.7 20.6 87     CH   O SO GR       WD
 20.6 22.0 82 22.0CH   O SO GR       SISWD             322 94114 37      82 209
 22.0 22.8 36     CL     SO GR
 22.8 23.7 40     CL     SO GR       CS
 23.7 24.6 32     CL     SO GR
 24.6 26.0 40     CL     SO GR       CS
 26.0 26.8 37 26.8CL     SO GR       CS
 26.8 27.7 37 27.7CL  SISSO GR       CS
 27.7 28.6 52 28.6CH  SISSO GR                         468104 71 25      55 280
 28.6 30.0 36 30.0CL     SO GR
 30.0 30.8 31 30.8ML        GR       CS
 30.8 31.7 37     CL     SO GR       CS
 31.7 32.6 33     CL     SO GR       CS
 32.6 34.0 35     CL     SO GR       CS
 34.0 34.8 40     CL     SO GR       CS
 34.8 35.7 41 35.7CL      M GR       CS                538114 36 23      36 351
 35.7 36.6 43     CH  SIS M GR
 36.6 38.0 52     CH  SIS M GR
 38.0 38.8 55     CH  SIS M GR
 38.8 39.7 61 39.7CH  SIS M GR
 39.7 40.6 57     CH      M GR
 40.6 42.0 55     CH      M GR
```

```
 42.0 42.8 58      CH       M GR
 42.8 43.7 55      CH       M GR                                710105 87 23       55 431
 43.7 44.6 58 44.6CH        M GR
 44.6 46.0 57      CH  SIS  M GR
 46.0 46.8 53      CH  SIS  M GR
 46.8 47.7 57      CH  SIS  M GR
 47.7 48.6 62      CH  SIS  M GR
 48.6 50.0 54 50.0CH  SIS  M GR
 50.0 50.8 62 50.8CH  SS   M GR
 50.8 51.7 26      SM       GR        SIF S                                .0757
 51.7 52.6 25 52.6SM        GR         S
 52.6 54.0 26 54.0CL      SO GR        SIF S
 54.0 54.8 44 54.8CH      SO GR         S SIF
 54.8 55.7 28      CL     SO GR        SIF S
 55.7 56.6 28 56.6CL      SO GR        SIFCS  S
 56.6 58.0 34 58.0CH  SS   M GR        SIF
 58.0 58.8 45 58.8CH       M GR         S
 58.8 60.0 41 60.0CH  SS   M GR
999.9
*************************************************************************
SHEAR STRENGTH DESIGN VALUES
Test Type:(Q)                    Classif  : CH
Depth/Ele:  7.10/-4.90           Water Con: 36.00
LL,PL,PI :   68, 27, 41          Dry Dens : 83.00
Cohesion :  0.358                Saturat  : 94.00
Shear Str:                       Frict Ang: 00.00
Toggles  :(     )(     )(     )(     )
*************************************************************************
SHEAR STRENGTH DESIGN VALUES
Test Type:(Q)                    Classif  : CHO
Depth/Ele:  20.0/-17.8           Water Con: 86.00
LL,PL,PI :  113, 34, 79          Dry Dens : 50.00
Cohesion :  0.145                Saturat  : 99.00
Shear Str:                       Frict Ang: 00.00
Toggles  :(     )(     )(     )(     )
*************************************************************************
SHEAR STRENGTH DESIGN VALUES
Test Type:(Q)                    Classif  : CL
Depth/Ele:  31.1/-28.9           Water Con: 38.00
LL,PL,PI :   39, 26, 13          Dry Dens : 82.00
Cohesion :  0.288                Saturat  : 98.00
Shear Str:                       Frict Ang: 00.00
Toggles  :(     )(     )(     )(     )
*************************************************************************
SHEAR STRENGTH DESIGN VALUES
Test Type:(Q)                    Classif  : CH
Depth/Ele:  40.0/-37.8           Water Con: 56.00
LL,PL,PI :   82, 27, 55          Dry Dens : 67.00
Cohesion :  0.344                Saturat  :100.00
Shear Str:                       Frict Ang: 00.00
Toggles  :(     )(     )(     )(     )
*************************************************************************
SHEAR STRENGTH DESIGN VALUES
Test Type:(Q)                    Classif  : CH
Depth/Ele:  47.1/-44.9           Water Con: 63.00
LL,PL,PI :   97, 28, 69          Dry Dens : 63.00
Cohesion :  0.311                Saturat  :100.00
Shear Str:                       Frict Ang: 00.00
Toggles  :(     )(     )(     )(     )
*************************************************************************
SHEAR STRENGTH DESIGN VALUES
Test Type:(Q)                    Classif  : CL
Depth/Ele:  55.1/-52.9           Water Con: 32.00
```

Appendix C: Zoning Map

(http://property.nola.gov)

Appendix C: Zoning Map



ISC New Orleans Location

- **All areas in purple are zoned as Industrial Use**

Appendix D: References

References

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Appendix E: Photographs

Photograph 1: Former AST Area
Camera facing south

Photograph 2: Former AST Area
Camera facing north

Appendix F: Cross-Section – IHNC Lock Area

Schematic Cross Section of the Former US Coast Guard Facility