TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Houston
6310 Rothway Street
Houston, TX 77040
Tel: (713)690-4444

TestAmerica Job ID: 600-153670-2
Client Project/Site: State Marine of Port Arthur

For:
CH2M Hill Constructors, Inc.
14701 St. Mary's Lane
Suite 300
Houston, Texas 77079-2923

Attn: Mr. John Ynfante

Authorized for release by:
9/15/2017 8:21:16 PM

Cathy Upton, Project Manager I
(713)690-4444
cathy.upton@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 600-153670-2

Laboratory: TestAmerica Houston

Narrative

Job Narrative
600-153670-2

Comments
No additional comments.

Receipt
The samples were received on 9/12/2017 6:48 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.3º C.

GC/MS Semi VOA
Method(s) 8270C LL: The following samples was diluted due to the nature of the sample matrix: SMS-SS-001 (600-153670-5) and SMS-SS-002 (600-153670-6). Elevated reporting limits (RLs) are provided.

Method(s) 8270C LL: The following sample required a dilution due to the nature of the sample matrix: SMS-SS-001 (600-153670-5). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
Method(s) 6020: The method blank for preparation batch 560-143152 and analytical batch 560-143178 contained Selenium above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: State Marine of Port Arthur

TestAmerica Job ID: 600-153670-2

Method	Method Description	Protocol	Laboratory
8270C LL	Semivolatile Organic Compounds by GCMS - Low Levels	SW846	TAL HOU
6020	Metals (ICP/MS)	SW846	TAL CC
7471A	Mercury (CVAA)	SW846	TAL CC
2540B	Percent Moisture	SM20	TAL HOU

Protocol References:

SM20 = "Standard Methods For The Examination Of Water And Wastewater", 20th Edition."

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: State Marine of Port Arthur

TestAmerica Job ID: 600-153670-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
600-153670-5	SMS-SS-001	Solid	09/11/17 08:30	09/12/17 00:04
600-153670-6	SMS-SS-002	Solid	09/11/17 08:40	09/12/17 00:04

Client Sample Results

Client: CH2M Hill Constructors, Inc.
Project/Site: State Marine of Port Arthur

TestAmerica Job ID: 600-153670-2

Client Sample ID: SMS-SS-001
Date Collected: 09/11/17 08:30
Date Received: 09/12/17 00:04

Lab Sample ID: 600-153670-5
Matrix: Solid
Percent Solids: 80.3

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	100	U	830	100	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
1,2,4,5-Tetrachlorobenzene	170	U	830	170	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2,3,4,6-Tetrachlorophenol	410	U	830	410	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2,4,5-Trichlorophenol	250	U	830	250	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2,4,6-Trichlorophenol	67	U	830	67	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2,4-Dichlorophenol	96	U	830	96	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2,4-Dimethylphenol	210	U	830	210	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2,4-Dinitrophenol	120	U	2500	120	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2,4-Dinitrotoluene	90	U	830	90	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2,6-Dinitrotoluene	73	U	830	73	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2-Chloronaphthalene	30	U	830	30	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2-Chlorophenol	49	U	830	49	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2-Methylnaphthalene	**400**	**J**	830	68	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2-Methylphenol	80	U	830	80	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2-Nitroaniline	120	U	830	120	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
2-Nitrophenol	97	U	830	97	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
3 & 4 Methylphenol	69	U	830	69	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
3,3'-Dichlorobenzidine	250	U	830	250	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
3-Nitroaniline	180	U	830	180	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
4,6-Dinitro-2-methylphenol	120	U	4200	120	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
4-Bromophenyl phenyl ether	71	U	830	71	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
4-Chloro-3-methylphenol	390	U	830	390	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
4-Chloroaniline	140	U	830	140	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
4-Chlorophenyl phenyl ether	45	U	830	45	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
4-Nitroaniline	280	U	830	280	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
4-Nitrophenol	130	U	5000	130	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Acenaphthene	36	U	830	36	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Acenaphthylene	**530**	**J**	830	25	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Acetophenone	**720**	**J**	830	82	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Anthracene	**270**	**J**	830	32	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Atrazine	120	U	830	120	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Benzaldehyde	410	U	830	410	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Benzo[a]anthracene	34	U	830	34	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Benzo[a]pyrene	**740**	**J**	830	40	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Benzo[b]fluoranthene	**740**	**J**	830	43	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Benzo[g,h,i]perylene	**430**	**J**	830	130	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Benzo[k]fluoranthene	**250**	**J**	830	37	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
bis (2-Chloroisopropyl) ether	220	U	830	220	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Bis(2-chloroethoxy)methane	35	U	830	35	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Bis(2-chloroethyl)ether	41	U	830	41	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Bis(2-ethylhexyl) phthalate	130	U	830	130	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Butyl benzyl phthalate	150	U	1700	150	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Caprolactam	410	U	830	410	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Carbazole	78	U	830	78	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Chrysene	25	U	830	25	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Dibenz(a,h)anthracene	**150**	**J**	830	90	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Dibenzofuran	44	U	830	44	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Diethyl phthalate	210	U	1700	210	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Dimethyl phthalate	120	U	1700	120	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20

Client Sample Results

Client: CH2M Hill Constructors, Inc.
Project/Site: State Marine of Port Arthur

TestAmerica Job ID: 600-153670-2

Client Sample ID: SMS-SS-001

Date Collected: 09/11/17 08:30
Date Received: 09/12/17 00:04

Lab Sample ID: 600-153670-5

Matrix: Solid
Percent Solids: 80.3

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Di-n-butyl phthalate	64	U	1700	64	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Di-n-octyl phthalate	47	U	1700	47	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Fluoranthene	**430**	**J**	830	77	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Fluorene	**110**	**J**	830	59	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Hexachlorobenzene	38	U	830	38	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Hexachlorobutadiene	48	U	830	48	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Hexachlorocyclopentadiene	110	U	830	110	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Hexachloroethane	57	U	830	57	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Indeno[1,2,3-cd]pyrene	**260**	**J**	830	87	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Isophorone	25	U	830	25	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Naphthalene	**800**	**J**	830	34	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Nitrobenzene	74	U	830	74	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
N-Nitrosodi-n-propylamine	55	U	830	55	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
N-Nitrosodiphenylamine	47	U	830	47	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Pentachlorophenol	100	U	4200	100	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Phenanthrene	**420**	**J**	830	120	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Phenol	110	U	830	110	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20
Pyrene	**560**	**J**	830	46	ug/Kg	☼	09/12/17 14:34	09/13/17 15:38	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*0*	*X*	*10 - 148*	*09/12/17 14:34*	*09/13/17 15:38*	*20*
2-Fluorobiphenyl	*0*	*X*	*38 - 130*	*09/12/17 14:34*	*09/13/17 15:38*	*20*
2-Fluorophenol	*0*	*X*	*25 - 132*	*09/12/17 14:34*	*09/13/17 15:38*	*20*
Nitrobenzene-d5	*0*	*X*	*10 - 155*	*09/12/17 14:34*	*09/13/17 15:38*	*20*
Phenol-d5 (Surr)	*0*	*X*	*27 - 130*	*09/12/17 14:34*	*09/13/17 15:38*	*20*
Terphenyl-d14	*0*	*X*	*53 - 134*	*09/12/17 14:34*	*09/13/17 15:38*	*20*

Method: 6020 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2800**		28	14	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Antimony	**4.5**		1.4	0.55	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Arsenic	**5.1**		1.4	0.28	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Barium	**86**		1.4	0.62	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Beryllium	0.50	U	1.4	0.50	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Cadmium	**1.6**		1.4	0.41	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Calcium	**9500**		140	79	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Chromium	**14**		1.4	0.64	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Cobalt	**4.2**		1.4	0.30	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Copper	**37**		2.8	1.0	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Iron	**15000**		140	32	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Lead	**75**		2.8	1.2	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Magnesium	**1000**		140	31	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Manganese	**190**		14	3.4	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Nickel	**12**		1.4	0.76	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Potassium	**570**		280	140	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Selenium	**0.86**	**J B**	1.4	0.25	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Silver	0.39	U	1.4	0.39	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Sodium	**260**	**J**	280	160	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Thallium	0.39	U	1.4	0.39	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5
Vanadium	**9.4**		1.4	0.33	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5

Client Sample Results

Client: CH2M Hill Constructors, Inc.
Project/Site: State Marine of Port Arthur

TestAmerica Job ID: 600-153670-2

Client Sample ID: SMS-SS-001

Lab Sample ID: 600-153670-5
Date Collected: 09/11/17 08:30
Matrix: Solid
Date Received: 09/12/17 00:04
Percent Solids: 80.3

Method: 6020 - Metals (ICP/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	190		7.1	4.4	mg/Kg	☼	09/13/17 11:45	09/13/17 16:03	5

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.49		0.12	0.011	mg/Kg	☼	09/13/17 11:15	09/13/17 16:41	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	19.7		1.0	1.0	%			09/12/17 14:12	1
Percent Solids	80.3		1.0	1.0	%			09/12/17 14:12	1

Client Sample ID: SMS-SS-002

Lab Sample ID: 600-153670-6
Date Collected: 09/11/17 08:40
Matrix: Solid
Date Received: 09/12/17 00:04
Percent Solids: 90.3

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	22	U	180	22	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
1,2,4,5-Tetrachlorobenzene	37	U	180	37	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2,3,4,6-Tetrachlorophenol	92	U	180	92	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2,4,5-Trichlorophenol	55	U	180	55	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2,4,6-Trichlorophenol	15	U	180	15	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2,4-Dichlorophenol	21	U	180	21	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2,4-Dimethylphenol	47	U	180	47	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2,4-Dinitrophenol	26	U	550	26	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2,4-Dinitrotoluene	20	U	180	20	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2,6-Dinitrotoluene	16	U	180	16	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2-Chloronaphthalene	6.7	U	180	6.7	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2-Chlorophenol	11	U	180	11	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2-Methylnaphthalene	15	U	180	15	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2-Methylphenol	18	U	180	18	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2-Nitroaniline	27	U	180	27	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
2-Nitrophenol	21	U	180	21	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
3 & 4 Methylphenol	15	U	180	15	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
3,3'-Dichlorobenzidine	56	U	180	56	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
3-Nitroaniline	39	U	180	39	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
4,6-Dinitro-2-methylphenol	27	U	940	27	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
4-Bromophenyl phenyl ether	16	U	180	16	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
4-Chloro-3-methylphenol	86	U	180	86	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
4-Chloroaniline	32	U	180	32	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
4-Chlorophenyl phenyl ether	9.9	U	180	9.9	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
4-Nitroaniline	61	U	180	61	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
4-Nitrophenol	28	U	1100	28	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Acenaphthene	7.9	U	180	7.9	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Acenaphthylene	5.5	U	180	5.5	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Acetophenone	18	U	180	18	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Anthracene	55	J	180	7.1	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Atrazine	28	U	180	28	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Benzaldehyde	92	U	180	92	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Benzo[a]anthracene	190		180	7.6	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5

Client Sample Results

Client: CH2M Hill Constructors, Inc.
Project/Site: State Marine of Port Arthur

TestAmerica Job ID: 600-153670-2

Client Sample ID: SMS-SS-002

Date Collected: 09/11/17 08:40
Date Received: 09/12/17 00:04

Lab Sample ID: 600-153670-6

Matrix: Solid
Percent Solids: 90.3

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]pyrene	**220**		180	8.9	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Benzo[b]fluoranthene	**380**		180	9.5	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Benzo[g,h,i]perylene	**91**	**J**	180	28	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Benzo[k]fluoranthene	**130**	**J**	180	8.2	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
bis (2-Chloroisopropyl) ether	49	U	180	49	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Bis(2-chloroethoxy)methane	7.8	U	180	7.8	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Bis(2-chloroethyl)ether	9.1	U	180	9.1	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Bis(2-ethylhexyl) phthalate	**650**		180	30	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Butyl benzyl phthalate	34	U	370	34	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Caprolactam	92	U	180	92	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Carbazole	17	U	180	17	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Chrysene	**230**		180	5.6	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Dibenz(a,h)anthracene	20	U	180	20	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Dibenzofuran	9.8	U	180	9.8	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Diethyl phthalate	46	U	370	46	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Dimethyl phthalate	27	U	370	27	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Di-n-butyl phthalate	14	U	370	14	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Di-n-octyl phthalate	**32**	**J**	370	10	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Fluoranthene	**380**		180	17	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Fluorene	**14**	**J**	180	13	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Hexachlorobenzene	8.4	U	180	8.4	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Hexachlorobutadiene	11	U	180	11	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Hexachlorocyclopentadiene	25	U	180	25	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Hexachloroethane	13	U	180	13	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Indeno[1,2,3-cd]pyrene	**79**	**J**	180	19	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Isophorone	5.5	U	180	5.5	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Naphthalene	7.4	U	180	7.4	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Nitrobenzene	16	U	180	16	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
N-Nitrosodi-n-propylamine	12	U	180	12	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
N-Nitrosodiphenylamine	10	U	180	10	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Pentachlorophenol	22	U	920	22	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Phenanthrene	**170**	**J**	180	27	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Phenol	**23**	**J**	180	23	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5
Pyrene	**290**		180	10	ug/Kg	☼	09/12/17 14:34	09/13/17 16:02	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*64*		*10 - 148*	*09/12/17 14:34*	*09/13/17 16:02*	*5*
2-Fluorobiphenyl	*52*		*38 - 130*	*09/12/17 14:34*	*09/13/17 16:02*	*5*
2-Fluorophenol	*52*		*25 - 132*	*09/12/17 14:34*	*09/13/17 16:02*	*5*
Nitrobenzene-d5	*44*		*10 - 155*	*09/12/17 14:34*	*09/13/17 16:02*	*5*
Phenol-d5 (Surr)	*45*		*27 - 130*	*09/12/17 14:34*	*09/13/17 16:02*	*5*
Terphenyl-d14	*71*		*53 - 134*	*09/12/17 14:34*	*09/13/17 16:02*	*5*

Method: 6020 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**3000**		26	13	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Antimony	**9.7**		1.3	0.50	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Arsenic	**59**		1.3	0.26	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Barium	**110**		1.3	0.57	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Beryllium	0.46	U	1.3	0.46	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5

Client Sample Results

Client: CH2M Hill Constructors, Inc.
Project/Site: State Marine of Port Arthur

TestAmerica Job ID: 600-153670-2

Client Sample ID: SMS-SS-002

Date Collected: 09/11/17 08:40
Date Received: 09/12/17 00:04

Lab Sample ID: 600-153670-6

Matrix: Solid
Percent Solids: 90.3

Method: 6020 - Metals (ICP/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	1.9		1.3	0.37	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Calcium	21000		130	72	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Chromium	72		1.3	0.58	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Cobalt	14		1.3	0.27	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Copper	470		2.6	0.92	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Iron	28000		130	29	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Lead	110		2.6	1.1	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Magnesium	2600		130	28	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Manganese	440		13	3.1	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Nickel	17		1.3	0.69	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Potassium	690		260	130	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Selenium	0.47	J B	1.3	0.23	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Silver	0.36	U	1.3	0.36	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Sodium	650		260	150	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Thallium	0.36	U	1.3	0.36	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Vanadium	12		1.3	0.30	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5
Zinc	810		6.5	4.0	mg/Kg	☼	09/13/17 11:45	09/13/17 16:08	5

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.064	J	0.12	0.011	mg/Kg	☼	09/13/17 11:15	09/13/17 16:44	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	9.7		1.0	1.0	%			09/12/17 16:28	1
Percent Solids	90.3		1.0	1.0	%			09/12/17 16:28	1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
X	Surrogate is outside control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Surrogate Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: State Marine of Port Arthur

TestAmerica Job ID: 600-153670-2

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	PHL	TPH
Lab Sample ID	Client Sample ID	(10-148)	(38-130)	(25-132)	(10-155)	(27-130)	(53-134)
600-153670-5	SMS-SS-001	0 X	0 X	0 X	0 X	0 X	0 X
600-153670-6	SMS-SS-002	64	52	52	44	45	71
LCS 600-221113/2-A	Lab Control Sample	86	78	78	71	75	85
MB 600-221113/1-A	Method Blank	77	66	74	69	67	84

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
PHL = Phenol-d5 (Surr)
TPH = Terphenyl-d14

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Lab Sample ID: MB 600-221113/1-A
Matrix: Solid
Analysis Batch: 221104

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 221113

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	4.0	U	33	4.0	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
1,2,4,5-Tetrachlorobenzene	6.8	U	33	6.8	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2,3,4,6-Tetrachlorophenol	17	U	33	17	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2,4,5-Trichlorophenol	10	U	33	10	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2,4,6-Trichlorophenol	2.7	U	33	2.7	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2,4-Dichlorophenol	3.9	U	33	3.9	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2,4-Dimethylphenol	8.6	U	33	8.6	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2,4-Dinitrophenol	4.7	U	100	4.7	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2,4-Dinitrotoluene	3.6	U	33	3.6	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2,6-Dinitrotoluene	3.0	U	33	3.0	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2-Chloronaphthalene	1.2	U	33	1.2	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2-Chlorophenol	2.0	U	33	2.0	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2-Methylnaphthalene	2.7	U	33	2.7	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2-Methylphenol	3.2	U	33	3.2	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2-Nitroaniline	4.9	U	33	4.9	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
2-Nitrophenol	3.9	U	33	3.9	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
3 & 4 Methylphenol	2.8	U	33	2.8	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
3,3'-Dichlorobenzidine	10	U	33	10	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
3-Nitroaniline	7.2	U	33	7.2	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
4,6-Dinitro-2-methylphenol	5.0	U	170	5.0	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
4-Bromophenyl phenyl ether	2.8	U	33	2.8	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
4-Chloro-3-methylphenol	16	U	33	16	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
4-Chloroaniline	5.8	U	33	5.8	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
4-Chlorophenyl phenyl ether	1.8	U	33	1.8	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
4-Nitroaniline	11	U	33	11	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
4-Nitrophenol	5.1	U	200	5.1	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Acenaphthene	1.4	U	33	1.4	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Acenaphthylene	1.0	U	33	1.0	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Acetophenone	3.3	U	33	3.3	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Anthracene	1.3	U	33	1.3	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Atrazine	5.0	U	33	5.0	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Benzaldehyde	17	U	33	17	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Benzo[a]anthracene	1.4	U	33	1.4	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Benzo[a]pyrene	1.6	U	33	1.6	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Benzo[b]fluoranthene	1.7	U	33	1.7	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Benzo[g,h,i]perylene	5.1	U	33	5.1	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Benzo[k]fluoranthene	1.5	U	33	1.5	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
bis (2-Chloroisopropyl) ether	8.8	U	33	8.8	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Bis(2-chloroethoxy)methane	1.4	U	33	1.4	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Bis(2-chloroethyl)ether	1.7	U	33	1.7	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Bis(2-ethylhexyl) phthalate	5.4	U	33	5.4	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Butyl benzyl phthalate	6.2	U	67	6.2	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Caprolactam	17	U	33	17	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Carbazole	3.1	U	33	3.1	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Chrysene	1.0	U	33	1.0	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Dibenz(a,h)anthracene	3.6	U	33	3.6	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Dibenzofuran	1.8	U	33	1.8	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Diethyl phthalate	8.4	U	67	8.4	ug/Kg		09/12/17 09:54	09/12/17 11:51	1

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels (Continued)

Lab Sample ID: MB 600-221113/1-A
Matrix: Solid
Analysis Batch: 221104

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 221113

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dimethyl phthalate	4.9	U	67	4.9	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Di-n-butyl phthalate	2.6	U	67	2.6	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Di-n-octyl phthalate	1.9	U	67	1.9	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Fluoranthene	3.1	U	33	3.1	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Fluorene	2.4	U	33	2.4	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Hexachlorobenzene	1.5	U	33	1.5	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Hexachlorobutadiene	1.9	U	33	1.9	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Hexachlorocyclopentadiene	4.6	U	33	4.6	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Hexachloroethane	2.3	U	33	2.3	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Indeno[1,2,3-cd]pyrene	3.5	U	33	3.5	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Isophorone	1.0	U	33	1.0	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Naphthalene	1.4	U	33	1.4	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Nitrobenzene	3.0	U	33	3.0	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
N-Nitrosodi-n-propylamine	2.2	U	33	2.2	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
N-Nitrosodiphenylamine	1.9	U	33	1.9	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Pentachlorophenol	4.0	U	170	4.0	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Phenanthrene	5.0	U	33	5.0	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Phenol	4.2	U	33	4.2	ug/Kg		09/12/17 09:54	09/12/17 11:51	1
Pyrene	1.8	U	33	1.8	ug/Kg		09/12/17 09:54	09/12/17 11:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*77*		*10 - 148*	*09/12/17 09:54*	*09/12/17 11:51*	*1*
2-Fluorobiphenyl	*66*		*38 - 130*	*09/12/17 09:54*	*09/12/17 11:51*	*1*
2-Fluorophenol	*74*		*25 - 132*	*09/12/17 09:54*	*09/12/17 11:51*	*1*
Nitrobenzene-d5	*69*		*10 - 155*	*09/12/17 09:54*	*09/12/17 11:51*	*1*
Phenol-d5 (Surr)	*67*		*27 - 130*	*09/12/17 09:54*	*09/12/17 11:51*	*1*
Terphenyl-d14	*84*		*53 - 134*	*09/12/17 09:54*	*09/12/17 11:51*	*1*

Lab Sample ID: LCS 600-221113/2-A
Matrix: Solid
Analysis Batch: 221104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 221113

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1'-Biphenyl	667	498		ug/Kg		75	40 - 130
1,2,4,5-Tetrachlorobenzene	667	534		ug/Kg		80	37 - 130
2,3,4,6-Tetrachlorophenol	667	506		ug/Kg		76	44 - 130
2,4,5-Trichlorophenol	667	576		ug/Kg		86	41 - 130
2,4,6-Trichlorophenol	667	530		ug/Kg		80	39 - 130
2,4-Dichlorophenol	667	512		ug/Kg		77	38 - 130
2,4-Dimethylphenol	667	457		ug/Kg		69	32 - 139
2,4-Dinitrophenol	1330	928		ug/Kg		70	15 - 130
2,4-Dinitrotoluene	667	525		ug/Kg		79	45 - 130
2,6-Dinitrotoluene	667	520		ug/Kg		78	44 - 130
2-Chloronaphthalene	667	508		ug/Kg		76	41 - 130
2-Chlorophenol	667	498		ug/Kg		75	37 - 130
2-Methylnaphthalene	667	475		ug/Kg		71	43 - 130
2-Methylphenol	667	548		ug/Kg		82	30 - 130
2-Nitroaniline	667	404		ug/Kg		61	42 - 130

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels (Continued)

Lab Sample ID: LCS 600-221113/2-A
Matrix: Solid
Analysis Batch: 221104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 221113

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Nitrophenol	667	535		ug/Kg		80	38 - 130
3 & 4 Methylphenol	667	470		ug/Kg		70	28 - 133
3,3'-Dichlorobenzidine	667	542		ug/Kg		81	13 - 146
3-Nitroaniline	667	585		ug/Kg		88	41 - 130
4,6-Dinitro-2-methylphenol	1330	985		ug/Kg		74	38 - 130
4-Bromophenyl phenyl ether	667	568		ug/Kg		85	46 - 130
4-Chloro-3-methylphenol	667	499		ug/Kg		75	43 - 130
4-Chloroaniline	667	550		ug/Kg		83	32 - 130
4-Chlorophenyl phenyl ether	667	554		ug/Kg		83	44 - 130
4-Nitroaniline	667	742		ug/Kg		111	46 - 130
4-Nitrophenol	1330	793		ug/Kg		60	42 - 130
Acenaphthene	667	508		ug/Kg		76	42 - 130
Acenaphthylene	667	496		ug/Kg		74	39 - 130
Acetophenone	667	372		ug/Kg		56	36 - 130
Anthracene	667	515		ug/Kg		77	51 - 130
Atrazine	667	199		ug/Kg		30	10 - 140
Benzaldehyde	667	139		ug/Kg		21	10 - 130
Benzo[a]anthracene	667	532		ug/Kg		80	54 - 130
Benzo[a]pyrene	667	568		ug/Kg		85	44 - 131
Benzo[b]fluoranthene	667	581		ug/Kg		87	41 - 139
Benzo[g,h,i]perylene	667	506		ug/Kg		76	38 - 142
Benzo[k]fluoranthene	667	528		ug/Kg		79	42 - 134
bis (2-Chloroisopropyl) ether	667	366		ug/Kg		55	38 - 130
Bis(2-chloroethoxy)methane	667	452		ug/Kg		68	39 - 130
Bis(2-chloroethyl)ether	667	442		ug/Kg		66	40 - 130
Bis(2-ethylhexyl) phthalate	667	462		ug/Kg		69	41 - 145
Butyl benzyl phthalate	667	453		ug/Kg		68	48 - 141
Caprolactam	667	283		ug/Kg		42	41 - 130
Carbazole	667	713		ug/Kg		107	49 - 131
Chrysene	667	507		ug/Kg		76	52 - 130
Dibenz(a,h)anthracene	667	510		ug/Kg		76	40 - 137
Dibenzofuran	667	529		ug/Kg		79	43 - 130
Diethyl phthalate	667	506		ug/Kg		76	50 - 130
Dimethyl phthalate	667	525		ug/Kg		79	40 - 130
Di-n-butyl phthalate	667	504		ug/Kg		76	51 - 135
Di-n-octyl phthalate	667	487		ug/Kg		73	38 - 153
Fluoranthene	667	567		ug/Kg		85	53 - 130
Fluorene	667	526		ug/Kg		79	46 - 130
Hexachlorobenzene	667	552		ug/Kg		83	44 - 130
Hexachlorobutadiene	667	560		ug/Kg		84	36 - 130
Hexachlorocyclopentadiene	667	167		ug/Kg		25	10 - 130
Hexachloroethane	667	465		ug/Kg		70	37 - 130
Indeno[1,2,3-cd]pyrene	667	502		ug/Kg		75	35 - 146
Isophorone	667	365		ug/Kg		55	39 - 130
Naphthalene	667	503		ug/Kg		75	40 - 130
Nitrobenzene	667	450		ug/Kg		68	42 - 130
N-Nitrosodi-n-propylamine	667	423		ug/Kg		64	36 - 130
N-Nitrosodiphenylamine	667	530		ug/Kg		79	48 - 130

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels (Continued)

Lab Sample ID: LCS 600-221113/2-A
Matrix: Solid
Analysis Batch: 221104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 221113

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	1330	939		ug/Kg		70	40 - 130
Phenanthrene	667	528		ug/Kg		79	51 - 130
Phenol	667	475		ug/Kg		71	30 - 130
Pyrene	667	508		ug/Kg		76	53 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*86*		*10 - 148*
2-Fluorobiphenyl	*78*		*38 - 130*
2-Fluorophenol	*78*		*25 - 132*
Nitrobenzene-d5	*71*		*10 - 155*
Phenol-d5 (Surr)	*75*		*27 - 130*
Terphenyl-d14	*85*		*53 - 134*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 560-143152/1-A
Matrix: Solid
Analysis Batch: 143178

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 143152

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2.5	U	5.0	2.5	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Antimony	0.096	U	0.25	0.096	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Arsenic	0.050	U	0.25	0.050	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Barium	0.11	U	0.25	0.11	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Beryllium	0.088	U	0.25	0.088	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Cadmium	0.072	U	0.25	0.072	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Calcium	14	U	25	14	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Chromium	0.11	U	0.25	0.11	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Cobalt	0.053	U	0.25	0.053	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Copper	0.18	U	0.50	0.18	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Iron	5.5	U	25	5.5	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Lead	0.21	U	0.50	0.21	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Magnesium	5.5	U	25	5.5	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Manganese	0.60	U	2.5	0.60	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Nickel	0.13	U	0.25	0.13	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Potassium	25	U	50	25	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Selenium	0.0667	J	0.25	0.044	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Silver	0.069	U	0.25	0.069	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Sodium	28	U	50	28	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Thallium	0.069	U	0.25	0.069	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Vanadium	0.057	U	0.25	0.057	mg/Kg		09/13/17 11:45	09/13/17 14:20	1
Zinc	0.77	U	1.3	0.77	mg/Kg		09/13/17 11:45	09/13/17 14:20	1

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 560-143152/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 143178 — **Prep Batch: 143152**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	1250	1120		mg/Kg		89	80 - 120
Antimony	12.5	11.4		mg/Kg		91	80 - 120
Arsenic	12.5	11.5		mg/Kg		92	80 - 120
Barium	12.5	11.5		mg/Kg		92	80 - 120
Beryllium	12.5	11.0		mg/Kg		88	80 - 120
Cadmium	12.5	11.3		mg/Kg		90	80 - 120
Calcium	1250	1160		mg/Kg		93	80 - 120
Chromium	12.5	11.0		mg/Kg		88	80 - 120
Cobalt	12.5	11.1		mg/Kg		89	80 - 120
Copper	12.5	10.8		mg/Kg		87	80 - 120
Iron	1250	1050		mg/Kg		84	80 - 120
Lead	12.5	10.4		mg/Kg		83	80 - 120
Magnesium	1250	1110		mg/Kg		89	80 - 120
Manganese	125	110		mg/Kg		88	80 - 120
Nickel	12.5	10.8		mg/Kg		86	80 - 120
Potassium	1250	1210		mg/Kg		97	80 - 120
Selenium	12.5	11.0		mg/Kg		88	80 - 120
Silver	12.5	11.3		mg/Kg		91	80 - 120
Sodium	1250	1090		mg/Kg		87	80 - 120
Thallium	5.00	4.33		mg/Kg		87	80 - 120
Vanadium	12.5	11.1		mg/Kg		89	80 - 120
Zinc	12.5	10.5		mg/Kg		84	80 - 120

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 560-143149/4-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 143177 — **Prep Batch: 143149**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.011	U	0.12	0.011	mg/Kg		09/13/17 11:15	09/13/17 16:14	1

Lab Sample ID: LCS 560-143149/5-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 143177 — **Prep Batch: 143149**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.250	0.277		mg/Kg		111	80 - 120

QC Association Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: State Marine of Port Arthur

TestAmerica Job ID: 600-153670-2

GC/MS Semi VOA

Analysis Batch: 221104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 600-221113/1-A	Method Blank	Total/NA	Solid	8270C LL	221113
LCS 600-221113/2-A	Lab Control Sample	Total/NA	Solid	8270C LL	221113

Prep Batch: 221113

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-153670-5	SMS-SS-001	Total/NA	Solid	3546	
600-153670-6	SMS-SS-002	Total/NA	Solid	3546	
MB 600-221113/1-A	Method Blank	Total/NA	Solid	3546	
LCS 600-221113/2-A	Lab Control Sample	Total/NA	Solid	3546	

Analysis Batch: 221228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-153670-5	SMS-SS-001	Total/NA	Solid	8270C LL	221113
600-153670-6	SMS-SS-002	Total/NA	Solid	8270C LL	221113

Metals

Prep Batch: 143149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-153670-5	SMS-SS-001	Total/NA	Solid	7471A	
600-153670-6	SMS-SS-002	Total/NA	Solid	7471A	
MB 560-143149/4-A	Method Blank	Total/NA	Solid	7471A	
LCS 560-143149/5-A	Lab Control Sample	Total/NA	Solid	7471A	

Prep Batch: 143152

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-153670-5	SMS-SS-001	Total/NA	Solid	3050B	
600-153670-6	SMS-SS-002	Total/NA	Solid	3050B	
MB 560-143152/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 560-143152/2-A	Lab Control Sample	Total/NA	Solid	3050B	

Analysis Batch: 143177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-153670-5	SMS-SS-001	Total/NA	Solid	7471A	143149
600-153670-6	SMS-SS-002	Total/NA	Solid	7471A	143149
MB 560-143149/4-A	Method Blank	Total/NA	Solid	7471A	143149
LCS 560-143149/5-A	Lab Control Sample	Total/NA	Solid	7471A	143149

Analysis Batch: 143178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-153670-5	SMS-SS-001	Total/NA	Solid	6020	143152
600-153670-6	SMS-SS-002	Total/NA	Solid	6020	143152
MB 560-143152/1-A	Method Blank	Total/NA	Solid	6020	143152
LCS 560-143152/2-A	Lab Control Sample	Total/NA	Solid	6020	143152

General Chemistry

Analysis Batch: 221154

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-153670-5	SMS-SS-001	Total/NA	Solid	2540B	

General Chemistry (Continued)

Analysis Batch: 221154 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-153670-6	SMS-SS-002	Total/NA	Solid	2540B	

Lab Chronicle

Client: CH2M Hill Constructors, Inc.
Project/Site: State Marine of Port Arthur

TestAmerica Job ID: 600-153670-2

Client Sample ID: SMS-SS-001 — Lab Sample ID: 600-153670-5

Date Collected: 09/11/17 08:30
Date Received: 09/12/17 00:04
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540B		1			221154	09/12/17 14:12	B1K	TAL HOU

Client Sample ID: SMS-SS-001 — Lab Sample ID: 600-153670-5

Date Collected: 09/11/17 08:30
Date Received: 09/12/17 00:04
Matrix: Solid
Percent Solids: 80.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			15.02 g	1.0 mL	221113	09/12/17 14:34	RLK	TAL HOU
Total/NA	Analysis	8270C LL		20			221228	09/13/17 15:38	TTD	TAL HOU
Total/NA	Prep	3050B			1.093 g	50 mL	143152	09/13/17 11:45	AKM	TAL CC
Total/NA	Analysis	6020		5			143178	09/13/17 16:03	JEM	TAL CC
Total/NA	Prep	7471A			1.226 g	50 mL	143149	09/13/17 11:15	HHB	TAL CC
Total/NA	Analysis	7471A		1			143177	09/13/17 16:41	JEM	TAL CC

Client Sample ID: SMS-SS-002 — Lab Sample ID: 600-153670-6

Date Collected: 09/11/17 08:40
Date Received: 09/12/17 00:04
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540B		1			221154	09/12/17 16:28	B1K	TAL HOU

Client Sample ID: SMS-SS-002 — Lab Sample ID: 600-153670-6

Date Collected: 09/11/17 08:40
Date Received: 09/12/17 00:04
Matrix: Solid
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			15.06 g	1.0 mL	221113	09/12/17 14:34	RLK	TAL HOU
Total/NA	Analysis	8270C LL		5			221228	09/13/17 16:02	TTD	TAL HOU
Total/NA	Prep	3050B			1.065 g	50 mL	143152	09/13/17 11:45	AKM	TAL CC
Total/NA	Analysis	6020		5			143178	09/13/17 16:08	JEM	TAL CC
Total/NA	Prep	7471A			1.120 g	50 mL	143149	09/13/17 11:15	HHB	TAL CC
Total/NA	Analysis	7471A		1			143177	09/13/17 16:44	JEM	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Accreditation/Certification Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: State Marine of Port Arthur

TestAmerica Job ID: 600-153670-2

Laboratory: TestAmerica Houston

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Texas	NELAP	6	T104704223-17-21	10-31-17

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
2540B		Solid	Percent Moisture
2540B		Solid	Percent Solids
8270C LL	3546	Solid	Atrazine
8270C LL	3546	Solid	Benzaldehyde

Laboratory: TestAmerica Corpus Christi

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Texas	NELAP	6	T104704210-17-20	03-31-18

Analysis Method	Prep Method	Matrix	Analyte

TestAmerica Houston
6310 Rothway Street
Houston, TX 77040
Phone (713) 690-4444 Fax (713) 690-5646

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Mahofer	Lab PM: Upton, Cathy L	Carrier Tracking No(s):	COC No: 600-54931-16099.14
Client Contact: Mr. John Ynfante	Phone:	E-Mail: cathy.upton@testamericainc.com		Page: Page 14 of 32
Company: CH2M Hill Constructors, Inc.				Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77079-2923				
Phone: 281-721-8546(Tel)	PO #: Purchase Order not required			
Email: john.ynfante@ch2m.com	WO #:			
Project Name: Hurricane Harvey Environmental Response	Project #: 60008995			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, EDTA, EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020, 7471A	8260B - TCL Volatiles TX - default	8270C_LL - TCL 4.2 Default List	8082 - PCBs	300_ORGFM_28D, 9045C	6020, 7470A	8260B_LL - TCL Volatiles TX - default	9040B - pH	300_ORGFM_28D, SM2310B	Special Instructions/Note:
				Preservation Code:			N	N	N	N	N	D	A	N	N	
BWD-SS-001	9/11/17	1230	C	Solid			X	X	X							
BWD-SS-002	9/11/17	1300	C	Solid			X	X	X							
BWD-SS-003	9/11/17	1330	C	Solid			X	X	X							
BWD-SS-004	9/11/17	1345	C	Solid			X	X	X							
SMS-SS-001	9/11/17	0830	C	Solid			X		X							
SMS-SS-002	9/11/17	0840	C	Solid			X		X							
PBL-SS-001	9/11/17	0855	C	Solid			X		X							
PBL-SS-002	9/11/17	0905	C	Solid			X		X							
TB-002	9/8/17	1830	G	Solid				X								Trip Blank
				Solid												
				Solid												

600-153670 Chain of Custody

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date: 1843	Time:	Method of Shipment:		
Relinquished by: CH2M	Date/Time: 9/11/17 1832	Company	Received by:	Date/Time: 9/11/17 1848	Company TAH
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Loc: 600
153670

TestAmerica Houston

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Receipt Checklist

Date/Time Received: '17 SEP 11 18:48

JOB NUMBER: _____

CLIENT: CH2M H.

UNPACKED BY: [signature]

CARRIER/DRIVER: Client

Custody Seal Present: ☐ YES ☐ NO

Number of Coolers Received: _____

Cooler ID	Temp Blank	Trip Blank	Observed Temp (℃)	Therm ID	Them CF	Corrected Temp (℃)
KW	Y / N	Y / N	2.6	549	0.3	2.3
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				

CF = correction factor

cwk 9/11/17

Samples received on ice? ☑ YES ☐ NO

LABORATORY PRESERVATION OF SAMPLES REQUIRED: ☑ NO ☐ YES

Base samples are>pH 12: ☐ YES ☐ NO Acid preserved are<pH 2: ☐ YES ☐ NO

pH paper Lot #_____

VOA headspace acceptable (5-6mm): ☐ YES ☐ NO ☐ NA

	YES	NO
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?		

COMMENTS:

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 600-153670-2

Login Number: 153670
List Number: 1
Creator: Kovitch, Christina M

List Source: TestAmerica Houston

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.3°c ir549
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 600-153670-2

Login Number: 153670
List Number: 2
Creator: Escalona-Garcia, Jose A

List Source: TestAmerica Corpus Christi
List Creation: 09/13/17 10:01 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	