

Engineering Log - Borehole

Client: **GREATER TAREE CITY COUNCIL**

Principal:

Project: **PITT ST MARINA PRECINCT, TAREE**

Borehole Location: **SEE FIGURE 9**

Borehole No. **BH 20**

Sheet 1 of 1

Project No: **GEOTTUNC01736AA**

Date started: **14.9.2007**

Date completed: **14.9.2007**

Logged by: **PE**

Checked by:

drill model and mounting: HAND AUGER		Easting:		slope: -90°		R.L. Surface: 2.54						
hole diameter: 75 mm		Northing		bearing:		datum:						
drilling information				material substance								
method	penetration 1 2 3	support water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro- meter kPa	structure and additional observations
HA		N	E		2		ML	TOPSOIL Clayey SILT, low plasticity, brown, some organics (roots), trace fine sand	M>Wp	St/VSt		TOPSOIL
			E		1		ML	Clayey SILT low plasticity, brown, trace fine sand		VSt		ALLUVIAL
			E		1							
			E		2							
			E		0		ML	Sandy SILT low plasticity, grey and brown mottled		St/VSt		
			E		3		SP	Silty SAND fine to medium, blue/grey	W	L/MD		
			E		3							
					4			Terminated @ 3.5m due to collapse Borehole BH 20 terminated at 3.5m				
					5							
					6							
					7							
method AS auger screwing* AD auger drilling* RR roller/tricone W washbore CT cable tool HA hand auger DT diatube B blank bit V V bit T TC bit *bit shown by suffix e.g. ADT				support M mud N nil C casing penetration 1 2 3 4 no resistance ranging to refusal water 10/1/98 water level on date shown water inflow water outflow		notes, samples, tests U ₅₀ undisturbed sample 50mm diameter U ₆₃ undisturbed sample 63mm diameter D disturbed sample N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone V vane shear (kPa) P pressuremeter Bs bulk sample E environmental sample R refusal		classification symbols and soil description based on unified classification system moisture D dry M moist W wet Wp plastic limit W _L liquid limit		consistency/density index VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense		

Appendix B

Results of laboratory testing for contamination



ALS Environmental

CERTIFICATE OF ANALYSIS

<i>Client</i>	: COFFEY GEOTECHNICS	<i>Laboratory</i>	: Environmental Division Sydney	<i>Page</i>	: 1 of 11
<i>Contact</i>	: MR STEVE MORTON	<i>Contact</i>	: Victor Kedicioglu	<i>Work Order</i>	: ES0712012
<i>Address</i>	: UNIT 1/4 DOUGLAS AVENUE TUNCURRY NSW AUSTRALIA 2428	<i>Address</i>	: 277-289 Woodpark Road Smithfield NSW Australia 2164		
<i>E-mail</i>	: steve_morton@coffey.com	<i>E-mail</i>	: Victor.Kedicioglu@alsenviro.com		
<i>Telephone</i>	: 6555 8554	<i>Telephone</i>	: +61-2-8784 8555		
<i>Facsimile</i>	: - Not provided -	<i>Facsimile</i>	: +61-2-8784 8500		
<i>Project</i>	: TUNCD1736AA	<i>Quote number</i>	: EN/007/07	<i>Date received</i>	: 30 Aug 2007
<i>Order number</i>	: - Not provided -			<i>Date issued</i>	: 6 Sep 2007
<i>C-O-C number</i>	: 14507			<i>No. of samples</i>	- Received : 12
<i>Site</i>	: - Not provided -				Analysed : 12

ALSE - Excellence in Analytical Testing



NATA Accredited Laboratory
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This document is issued in
accordance with NATA's
accreditation requirements.

Accredited for compliance with
ISO/IEC 17025.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatory</i>	<i>Position</i>	<i>Department</i>
Ankit Joshi		Inorganics - NATA 825 (10911 - Sydney)
Celine Conceicao	Spectroscopist	Inorganics - NATA 825 (10911 - Sydney)
EDWANDY FADJAR	Senior Organic Chemist	Organics - NATA 825 (10911 - Sydney)
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Pabi Subba		Organics - NATA 825 (10911 - Sydney)
PHALAK INTAKESONE	Organics Co-ordinator	Inorganics - NATA 825 (10911 - Sydney)
PHALAK INTAKESONE	Organics Co-ordinator	Organics - NATA 825 (10911 - Sydney)

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Client : COFFEY GEOTECHNICS
Work Order : ES0712012



Comments

This report for the ALSE reference ES0712012 supersedes any previous reports with this reference. Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- **Analytical Results for Samples Submitted**
- **Surrogate Recovery Data**

The analytical procedures used by ALS Environmental have been developed from established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported herein. Reference methods from which ALSE methods are based are provided in parenthesis.

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insufficient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits). Where LOR of reported result differ from standard LOR, this may be due to high moisture, reduced sample amount or matrix interference. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number, LOR = Limit of Reporting. * Indicates failed Surrogate Recoveries.

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 Client : COFFEY GEOTECHNICS
 Work Order : ES0712012



Analytical Results

Client Sample ID : Sample Matrix Type / Description : Sample Date / Time : Laboratory Sample ID :				CS6 SOIL 29 Aug 2007 15:00 ES0712012-003	CS7 SOIL 29 Aug 2007 15:00 ES0712012-004	CS8 SOIL 29 Aug 2007 15:00 ES0712012-005	CS9 SOIL 29 Aug 2007 15:00 ES0712012-006	CS10 SOIL 29 Aug 2007 15:00 ES0712012-007
Analyte	CAS number	LOR	Units					
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	26.0	17.9	15.3	30.9	20.3
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	9	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	1	<1	1
Chromium	7440-47-3	2	mg/kg	14	30	10	5	17
Copper	7440-50-8	5	mg/kg	43	24	39	34	47
Lead	7439-92-1	5	mg/kg	14	105	17	35	109
Nickel	7440-02-0	2	mg/kg	66	14	11	40	18
Zinc	7440-66-6	5	mg/kg	45	45	133	54	274
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.6	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	0.08
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.06	<0.05	0.52
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	0.23
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2

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Analytical Results

Client Sample ID : Sample Matrix Type / Description : Sample Date / Time : Laboratory Sample ID :				CS6 SOIL 29 Aug 2007 15:00 ES0712012-003	CS7 SOIL 29 Aug 2007 15:00 ES0712012-004	CS8 SOIL 29 Aug 2007 15:00 ES0712012-005	CS9 SOIL 29 Aug 2007 15:00 ES0712012-006	CS10 SOIL 29 Aug 2007 15:00 ES0712012-007
Analyte	CAS number	LOR	Units					
EP068B: Organophosphorus Pesticides (OP)								
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	0.6	<0.5	<0.5	1.8	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	0.8	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	0.6	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100

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Analytical Results

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Analyte	CAS number	LOR	Units					
EP080/071: Total Petroleum Hydrocarbons								
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	106-42-3							
	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	80.3	98.8	108	107	99.1
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	92.6	116	125	125	118
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	88.1	93.6	93.8	87.6	77.6
2-Chlorophenol-D4	93951-73-6	0.1	%	76.9	98.7	85.3	85.9	78.8
2,4,6-Tribromophenol	118-79-6	0.1	%	65.2	93.9	67.8	61.7	73.6
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	94.0	104	90.6	96.4	69.6
Anthracene-d10	1719-06-8	0.1	%	82.6	107	97.0	86.5	75.3
4-Terphenyl-d14	1718-51-0	0.1	%	98.1	105	102	97.5	68.2
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	90.4	103	104	97.9	109
Toluene-D8	2037-26-5	0.1	%	81.2	81.0	103	100	108
4-Bromofluorobenzene	460-00-4	0.1	%	88.9	87.0	109	96.8	94.7

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Analytical Results

Client Sample ID : Sample Matrix Type / Description : Sample Date / Time : Laboratory Sample ID :				CS11 SOIL 29 Aug 2007 15:00 ES0712012-008	CS12 SOIL 29 Aug 2007 15:00 ES0712012-009	CS13 SOIL 29 Aug 2007 15:00 ES0712012-010	CS14 SOIL 29 Aug 2007 15:00 ES0712012-011	CS15 SOIL 29 Aug 2007 15:00 ES0712012-012
Analyte	CAS number	LOR	Units					
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	19.8	18.0	22.5	17.4	12.2
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	8	7	5	<5	<5
Cadmium	7440-43-9	1	mg/kg	1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	16	23	35	7	10
Copper	7440-50-8	5	mg/kg	55	16	43	23	26
Lead	7439-92-1	5	mg/kg	80	29	48	<5	77
Nickel	7440-02-0	2	mg/kg	29	10	37	3	8
Zinc	7440-66-6	5	mg/kg	475	66	111	29	114
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	0.4	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2

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Analytical Results

Client Sample ID : Sample Matrix Type / Description : Sample Date / Time : Laboratory Sample ID :				CS11 SOIL 29 Aug 2007 15:00 ES0712012-008	CS12 SOIL 29 Aug 2007 15:00 ES0712012-009	CS13 SOIL 29 Aug 2007 15:00 ES0712012-010	CS14 SOIL 29 Aug 2007 15:00 ES0712012-011	CS15 SOIL 29 Aug 2007 15:00 ES0712012-012
Analyte	CAS number	LOR	Units					
EP068B: Organophosphorus Pesticides (OP)								
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	1.0	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	1.0	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	0.7	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100

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 Client : COFFEY GEOTECHNICS
 Work Order : ES0712012



Analytical Results

Client Sample ID : Sample Matrix Type / Description : Sample Date / Time : Laboratory Sample ID :				CS11 SOIL 29 Aug 2007 15:00 ES0712012-008	CS12 SOIL 29 Aug 2007 15:00 ES0712012-009	CS13 SOIL 29 Aug 2007 15:00 ES0712012-010	CS14 SOIL 29 Aug 2007 15:00 ES0712012-011	CS15 SOIL 29 Aug 2007 15:00 ES0712012-012
Analyte	CAS number	LOR	Units					
EP080/071: Total Petroleum Hydrocarbons								
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
	106-42-3							
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	87.8	94.7	60.8	56.4	75.7
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	110	111	67.5	58.6	87.6
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	83.2	93.2	87.8	97.7	84.7
2-Chlorophenol-D4	93951-73-6	0.1	%	94.4	91.5	98.8	86.2	85.5
2,4,6-Tribromophenol	118-79-6	0.1	%	71.6	87.0	88.3	74.2	71.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	97.0	86.8	94.8	86.0	73.4
Anthracene-d10	1719-06-8	0.1	%	87.5	89.8	99.1	84.2	75.8
4-Terphenyl-d14	1718-51-0	0.1	%	103	91.0	105	89.9	71.3
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	104	99.3	101	102	113
Toluene-D8	2037-26-5	0.1	%	94.7	106	106	102	114
4-Bromofluorobenzene	460-00-4	0.1	%	71.5	96.2	93.0	93.0	96.5

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 Client : COFFEY GEOTECHNICS
 Work Order : ES0712012



Analytical Results

Client Sample ID : Sample Matrix Type / Description : Sample Date / Time : Laboratory Sample ID :				BH1 WATER 29 Aug 2007 15:00 ES0712012-001	BH2A WATER 29 Aug 2007 15:00 ES0712012-002			
Analyte	CAS number	LOR	Units					
EA005: pH								
pH Value		0.01	pH Unit	6.65	6.89			
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C		1	µS/cm	1090	1630			
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001			
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0001			
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001			
Copper	7440-50-8	0.001	mg/L	0.002	0.002			
Lead	7439-92-1	0.001	mg/L	<0.001	0.016			
Nickel	7440-02-0	0.001	mg/L	0.002	0.002			
Zinc	7440-66-6	0.005	mg/L	0.011	0.017			
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001			
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0			
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0			
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0			
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0			
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0			
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0			
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0			
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0			
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0			
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0			
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0			
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0			
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5			
Indeno(1,2,3-cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0			
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0			
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0			
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		20	µg/L	<20	<20			
C10 - C14 Fraction		50	µg/L	<50	60			
C15 - C28 Fraction		100	µg/L	<100	500			
C29 - C36 Fraction		50	µg/L	<50	130			
EP080: BTEX								
Benzene	71-43-2	1	µg/L	<1	<1			

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 Client : COFFEY GEOTECHNICS
 Work Order : ES0712012



Analytical Results

				Client Sample ID :	BH1	BH2A			
				Sample Matrix Type / Description :	WATER	WATER			
				Sample Date / Time :	29 Aug 2007 15:00	29 Aug 2007 15:00			
				Laboratory Sample ID :	ES0712012-001	ES0712012-002			
Analyte	CAS number	LOR	Units						
EP080: BTEX									
Toluene	108-88-3	2	µg/L		<2	<2			
Ethylbenzene	100-41-4	2	µg/L		<2	<2			
meta- & para-Xylene	108-38-3	2	µg/L		<2	<2			
	106-42-3								
ortho-Xylene	95-47-6	2	µg/L		<2	<2			
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		29.5	26.7			
2-Chlorophenol-D4	93951-73-6	0.1	%		53.7	60.0			
2,4,6-Tribromophenol	118-79-6	0.1	%		57.7	74.1			
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		63.4	68.0			
Anthracene-d10	1719-06-8	0.1	%		61.2	69.3			
4-Terphenyl-d14	1718-51-0	0.1	%		66.9	72.1			
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		117	118			
Toluene-D8	2037-26-5	0.1	%		120	114			
4-Bromofluorobenzene	460-00-4	0.1	%		116	112			

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 Client : COFFEY GEOTECHNICS
 Work Order : ES0712012



Surrogate Control Limits

Matrix Type: WATER - Surrogate Control Limits		Surrogate Control Limits	
Method name	Analyte name	Lower Limit	Upper Limit
EP075(SIM): PAH/Phenols (GC/MS - SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	10	94
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	10	123
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	43	116
	Anthracene-d10	27	133
	4-Terphenyl-d14	33	141
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	88	110
	4-Bromofluorobenzene	86	115

Matrix Type: SOIL - Surrogate Control Limits		Surrogate Control Limits	
Method name	Analyte name	Lower Limit	Upper Limit
EP068: Pesticides by GCMS			
EP068S: Organochlorine Pesticide Surrogate	Dibromo-DDE	10	136
EP068T: Organophosphorus Pesticide Surrogate	DEF	10	136
EP075(SIM): PAH/Phenols (SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	24	113
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	19	122
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	30	115
	Anthracene-d10	27	133
	4-Terphenyl-d14	18	137
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	81	117
	4-Bromofluorobenzene	74	121