Austral-Asia Geotechnical Pty Ltd

Rhys French-Engineering Geologist B.App.Sci.(Geol), Hons. RPEQ
Geotechnical Investigations - commercial and residential
Footing Assessments, Geotechnical Field Works
Quarry Source Assessments.- Materials Exploration
Slope Stability Analysis
Web: *austral-asiageotechnical.com*
ABN: 17131180071

All communications to:
57 Highland Crescent
Belmont 4153
Tel: 0400 371627
Fax: 07 38905916
Email: rhysfrench@hotmail.com

RECEIVED
29 MAY 2013
PaLM

Date: 6 MAY 2013

Project: Contaminated Land Site Investigation
50-52 Parramatta Road, Underwood,
Queensland.

Project No.: 404

Client: **Department of Environment and Heritage**
PO Box 2454,
Brisbane, Qld
Reference: 47280

Reported by: Austral-Asia Geotechnical Pty Ltd
57 Highland Crescent,
BELMONT 4153

RTI DL Release

Annexes

Annex A	Site Photos and Plan
Annex B	Borehole Logs
Annex C	Test Results

RTI DL Release

Contaminated Land Site Investigation for 50-52 Parramatta Road, Underwood, Queensland.

1.0 INTRODUCTION

At the request of sch4p4(6) Personal information, a contaminated soil investigation of the above site was conducted on 1/5/13. The site work was carried out in accordance with plans and reports supplied by the client.
It is our understanding that the information provided by Council is that a Dangerous Goods licence was issued to Hunters Chemicals in 1994 and current until June 2004. It was for 10 000L of Resin. The Dangerous Goods Storeroom is at the rear of the building and it is marked accordingly. The area around the storeroom is all concrete covered, as is the area around the western and northern extent of the building. If any leaks of contaminants did breach the concrete, they should be found in the ground on the eastern and southern side of the building. Hence, samples were taken at shallow depths around the building.
This report presents the results of the fieldwork together with comments and recommendations on subsurface conditions, including likely groundwater conditions and trace metal and hydrocarbon soils results.

2.0 FIELDWORK

The fieldwork was carried out on 1 May 2013 and comprised the hand auguring of 4 boreholes across the site and a site walk over. The boreholes were augured to 1m across the site and soil samples were taken every 0.25m. Samples were than selected to be analysed at the laboratory for hydrocarbons and toxic trace metals.

The locations of the boreholes and are shown approximately in Annex A-Site Plan attached to this report and were obtained by pace measurements from surface features shown on supplied drawings. The engineering logs of the boreholes are presented in Annex B.

The subsurface conditions were logged by a Senior Engineering Geologist.

RTI Release

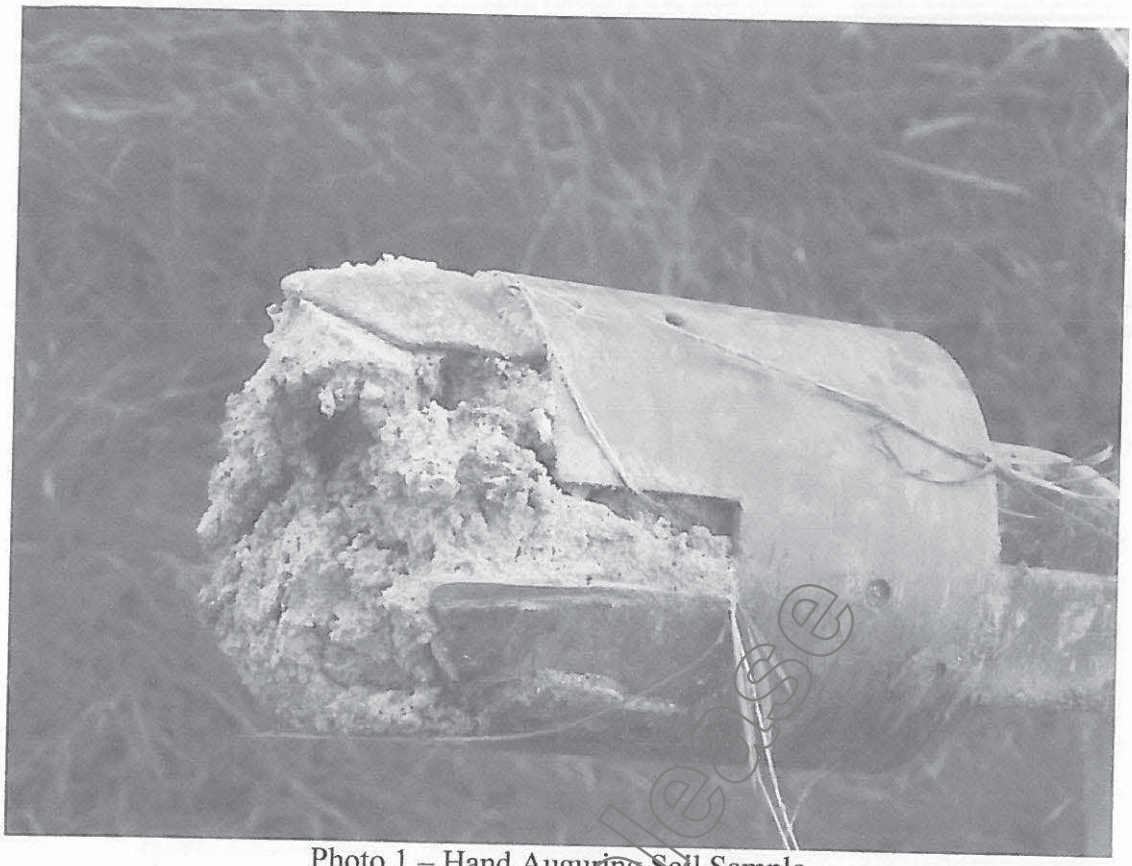

Photo 1 – Hand Auguring Soil Sample

RTIL Release

3.0 SITE CONDITIONS

3.1 Surface Conditions

The site is located just to the north of Parramatta Road. The site dips to the north at approximately -5°. The site is adjacent to and just to the south of drainage canal which is also concrete lined, as found in many industrial precincts. The site, at the time of fieldwork, was a large industrial shed about 30 years old with a storage shed at the northern end near the canal. Apart from a grassed strip along the south and eastern perimeter the area outside the shed is sealed in a concrete driveway and hardstand area.

3.2 Subsurface Conditions

The subsurface conditions encountered in the boreholes may be summarised as a residual dark brown sandy clay/clayey sand (with roots) Topsoil overlying mottle brown yellow and orange sandy clay/silty clay of high plasticity (residual). Annex B to this report contains borehole logs.
Groundwater seepages were not observed in the boreholes at the time of the fieldwork over the depth of auguring or anywhere else.

4.0 CONTAMINATED SOIL RESULTS

The test results are attached in Annex C to this report.
Trace metal analyses showed no level of contamination. Total hydrocarbon analyses showed no level of contamination.

5.0 DRAINAGE

The site drains across concrete into the Canal to the north. No groundwater was observed in the boreholes during the sampling process.

Photo 2 – Drainage Canal adjacent to north end of site

RTI DL Redacted

6.0 DISCUSSION

The site walkover revealed no evidence of spills or contamination. It is anticipated that historically any spills near the shed would have been rapidly washed into the drainage channel just to the north if not properly contained. If there were any spills or seepages into the ground it may have been detected in our testing. However, nothing was detected. It is recommended that once the site is clear of all chemicals in containers, which is probably the case now, it be taken off the list of possible contaminated sites.

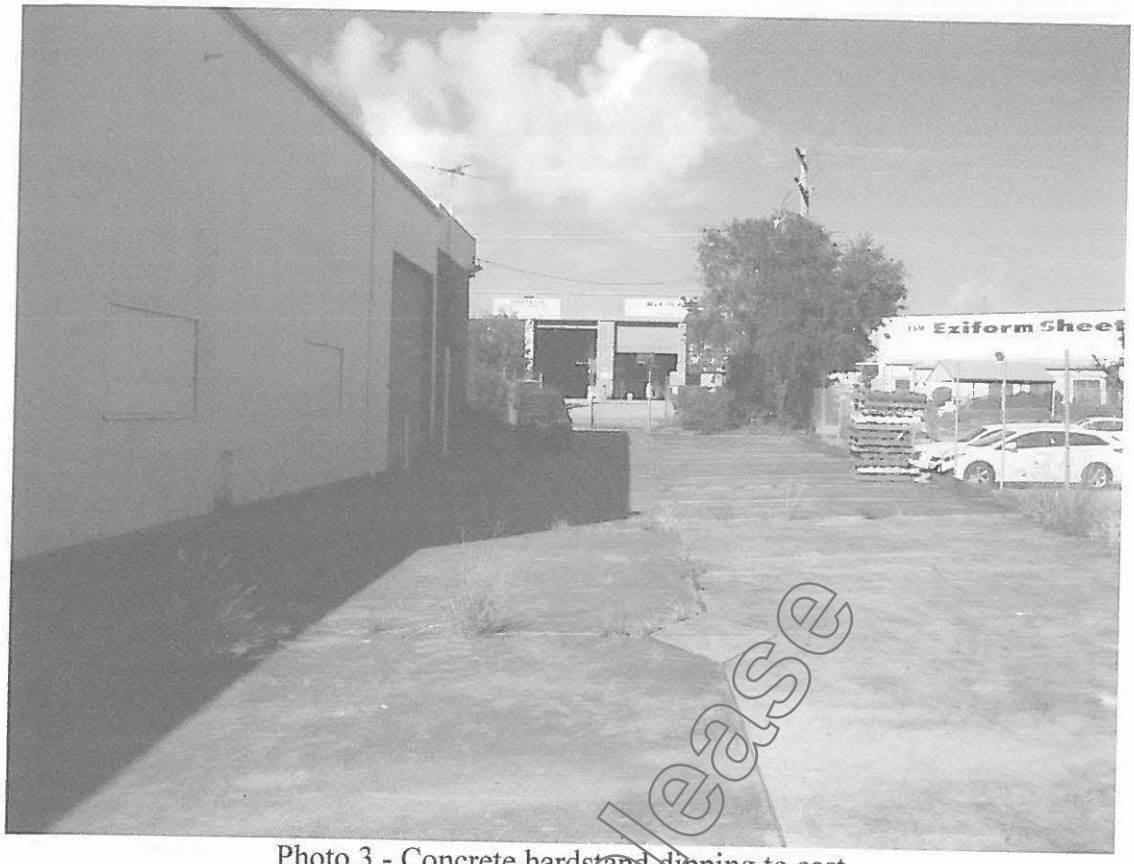

Photo 3 - Concrete hardstand dipping to east

sch4p4(6) Personal information

Rhys French
Principal Engineering Geologist RPEQ

RTI DL Release

ANNEX A – PLAN

RTI DL Release

RTI 13-004

RTI Released

Collection 1

ANNEX B –BOREHOLE LOGS

RTI DL Release

AUSTRAL-ASIA GEOTECHNICAL

Field Log - Borehole

Borehole No.1

Sheet: 1 of 1

Client:	sch4p4(6) Personal information	Job No.	404
Project:	50-52 Parramatta Road Underwood	Date started:	1/05/2013
Borehole Location:	See Site Plan	Date completed:	1/05/2013
Drill model: Hand Auger	Drill mounting:	Logged by:	RF
Inclination:	Bearing: RL. Surface:	Datum:	

Penetration Depth 1 2 3	notes samples, tests, etc	depth (m)	USC	Material Description (Soil name, plasticity/grain size characteristics, colour, descption of secondary component. Minor components, ie. Some/trace.....other soil substance observations)	moisture condition	consist. density	PP kPa depth	PP kPa value	structure and additional observations
	0.25	0.1		Topsoil Sandy Clay High Plasticity dark brown	D				roots
	0.5	0.2		Sandy Clay High Plasticity mottle brown orange yellow	M				Residual
	0.75	1.1		Sandy Clay/Clayey Sand Brown Orange Red	M				Residual
	1.0			Borehole Terminated at 1.1m BSL					

RTI DL Release

Drill Methods: to to

Casing to: m

Groundwater inflows at: Partial water loss at: Complete water loss at:

Daily water levels:

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw
B blank bit
V.T V bit, TC bit
NMLC NMLC core
NQ,HQ,PQ Wireline core
HA Hand auger

support
C casing M mud

penetration

notes samples, tests
U50 undist, sample
D distrubed sample
N SPT
N* SPT - sample recov.
E Environ, sample
V vane shear (kPa)
P pressure metre
Bs bulk sample
R refusal

plasticity/grainsize
LP low plasticity
MP medium plasticity
HP high plasticity
LL liquid limit
F fine
M medium
C coarse

colour
R red
B brown
G grey
Bl black
O orange
Y yellow
W white
Gr green
Bu blue
P pale
D dark

moisture
D dry
M moist
W wet
Wp plastic 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 med. density
D dense
VD very dense

AUSTRAL-ASIA GEOTECHNICAL

Field Log - Borehole

Borehole No.2

Sheet: 1 of 1

Client: sch4p4(6) Personal information

Job No. 404

Project: 50-52 Parramatta Road Underwood

Date started: 1/05/2013

Borehole Location: See Site Plan

Date completed: 1/05/2013

Drill model: Hand Auger Drill mounting:

Logged by: RF

Inclination: Bearing: RL. Surface:

Datum:

Penetration Depth 1 2 3	notes samples, tests, etc	depth (m)	USC	Material Description Soil name, plasticity/grain size characteristics, colour, descption of secondary component. Minor components, ie. Some/trace.....other soil substance observations	moisture condition	consist. density	PP kPa depth	PP kPa value	structure and additional observations
	0.25	0.1		Topsoil Sandy Clay High Plasticity dark brown	D				roots
	0.5	0.2		Sandy Clay High Plasticity mottle brown orange yellow	M				Residual
	0.75	1.1		Sandy Clay/Clayey Sand Brown Orange Red	M				Residual
	1.0			Borehole Terminated at 1.1m BSL					

RTI DL Release

Drill Methods: to to

Groundwater inflows at: Partial water loss at:

Casing to: m

Complete water loss at:

Daily water levels:

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw
B blank bit
V.T V bit, TC bit
NMLC NMLC core
NQ.HQ.PQ Wireline core
HA Hand auger

support
C casing M mud

penetration

notes samples, tests
U50 undist, sample
D distrubed sample
N SPT
N* SPT - sample recov.
E Environ, sample
V vane shear (kPa)
P pressure metre
Bs bulk sample
R refusal

plasticity/grainsize
LP low plasticity
MP medium plasticity
HP high plasticity
LL liquid limit
F fine
M medium
C coarse

colour
R red
B brown
G grey
Bl black
O orange
Y yellow
W white
Gr green
Bu blue
P pale
D dark

moisture
D dry
M moist
W wet
Wp plastic 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 med. density
D dense
VD very dense

AUSTRAL-ASIA GEOTECHNICAL

Field Log - Borehole

Borehole No.3

Sheet: 1 of 1

Client: sch4p4(6) Personal information

Job No. 404

Project: 50-52 Parramatta Road Underwood

Date started: 1/05/2013

Borehole Location: See Site Plan

Date completed: 1/05/2013

Drill model: Hand Auger Drill mounting:

Logged by: RF

Inclination: Bearing: RL. Surface:

Datum:

Penetration Depth 1 2 3	notes samples, tests, etc	depth (m)	USC	Material Description Soil name, plasticity/grain size characteristics, colour, descption of secondary component. Minor components, ie. Some/trace.....other soil substance observations	moisture condition	consist. density	PP kPa depth	PP kPa value	structure and additional observations
	0.25	0.1		Topsoil Sandy Clay High Plasticity dark brown	D				roots
	0.5	0.3		Clayey Gravel brown with fine to medium sand	M				Fill
	0.75	1.1		Sandy Clay/Clayey Sand Brown Orange Red	M				Residual
	1.0			Borehole Terminated at 1.1m BSL					

RTI DL Release

Drill Methods: to to

Groundwater inflows at: Partial water loss at: Casing to: m

Daily water levels: Complete water loss at:

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw
B blank bit
V.T V bit, TC bit
NMLC NMLC core
NQ.HQ.PQ Wireline core
HA Hand auger

support
C casing M mud

penetration

notes samples, tests
U50 undist, sample
D distrubed sample
N SPT
N* SPT - sample recov.
E Environ, sample
V vane shear (kPa)
P pressure metre
Bs bulk sample
R refusal

plasticity/grainsize
LP low plasticity
MP medium plasticity
HP high plasticity
LL liquid limit
F fine
M medium
C coarse

colour
R red
B brown
G grey
Bl black
O orange
Y yellow
W white
Gr green
Bu blue
P pale
D dark

moisture
D dry
M moist
W wet
Wp plastic limit

consistency/density index
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VI very loose
L loose
MD med. density
D dense
VD very dense

AUSTRAL-ASIA GEOTECHNICAL

Field Log - Borehole

Borehole No.4

Sheet: 1 of 1

Client:	sch4p4(6) Personal information	Job No.	404
Project:	50-52 Parramatta Road Underwood	Date started:	1/05/2013
Borehole Location:	See Site Plan	Date completed:	1/05/2013
Drill model: Hand Auger	Drill mounting:	Logged by:	RF
Inclination:	Bearing: RL. Surface:	Datum:	

Penetration Depth 1 2 3	notes samples, tests, etc	depth (m)	USC	Material Description (Soil name, plasticity/grain size characteristics, colour, descption of secondary component. Minor components, ie. Some/trace.....other soil substance observations)	moisture condition	consist. density	PP kPa depth	PP kPa value	structure and additional observations
	0.25	0.1		Topsoil clayey Silty Sand High fine to medium dark brown	D				roots
	0.5	0.3		Silty Clay High Plasticity brown yellow orange	M				Residual
	0.75								
	1.0			Borehole Terminated at 1.0m BSL					

RTI DL Release

Drill Methods: to to

Casing to: m

Groundwater inflows at: Partial water loss at: Complete water loss at:

Daily water levels:

method
DT diatube
AS auger screwing
AD auger drilling
RR roller/tricone
CB claw
B blank bit
V.T V bit, TC bit
NMLC NMLC core
NQ.HQ.PQ Wireline core
HA Hand auger

support
C casing M mud

penetration

notes samples, tests
U50 undist, sample
D distrubed sample
N SPT
N* SPT - sample recov.
E Environ, sample
V vane shear (kPa)
P pressure metre
Bs bulk sample
R refusal

plasticity/grainsize
LP low plasticity
MP medium plasticity
HP high plasticity
LL liquid limit
F fine
M medium
C coarse

colour
R red
B brown
G grey
Bl black
O orange
Y yellow
W white
Gr green
Bu blue
P pale
D dark

moisture
D dry
M moist
W wet
Wp plastic 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 med. density
D dense
VD very dense

ANNEX C – TEST RESULT SHEETS

RTI DL Release

ALS Group

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: EB1310388	Page	: 1 of 5
Client	: AUSTRAL-ASIA GEOTECHNICAL PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MR RHYS FRENCH	Contact	: Customer Services
Address	: 57 HIGHLAND CRESCENT BELMONT HEIGHTS QLD, AUSTRALIA 4153	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: cash.sale@alsenviro.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: ----	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61 7 3243 7218
Project	: 50-52 UNDERWAY	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Sample Received	: 01-MAY-2013
Sampler	: RF	Issue Date	: 08-MAY-2013
Site	: ----		
Quote number	: ----	No. of samples received	: 8
		No. of samples analysed	: 8

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA

WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Matt Frost	Senior Organic Chemist	Brisbane Organics
Matt Frost	Senior Organic Chemist	Brisbane Organics

RTI DL Release

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EP071 (Semi-volatile TPH): Sample shows poor duplicate results due to sample heterogeneity. Confirmed by re-extraction and re-analysis.**

RTI DL Release

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH1 0.2m	BH1 0.5m	BH2 0.2m	BH2 0.5m	BH3 0.15m
				Client sampling date / time	01-MAY-2013 15:00	01-MAY-2013 15:00	01-MAY-2013 15:00	01-MAY-2013 15:00	01-MAY-2013 15:00
Compound	CAS Number	LOR	Unit		EB1310388-001	EB1310388-002	EB1310388-003	EB1310388-004	EB1310388-005
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		15.2	14.1	10.4	13.0	6.5
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		9	7	7	10	10
Copper	7440-50-8	5	mg/kg		<5	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg		5	7	5	7	<5
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg		<5	<5	<5	<5	<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
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft									
C6 - C10 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		104	111	111	102	132
Toluene-D8	2037-26-5	0.1	%		125	129	131	121	137
4-Bromofluorobenzene	460-00-4	0.1	%		115	118	119	112	140

RTI DL Release

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID	BH3 0.6m	BH4 0.2m	BH4 1.0m	----	----
				Client sampling date / time	01-MAY-2013 15:00	01-MAY-2013 15:00	01-MAY-2013 15:00	----	----
					EB1310388-006	EB1310388-007	EB1310388-008	----	----
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		11.5	10.7	13.1	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg		14	11	9	----	----
Copper	7440-50-8	5	mg/kg		<5	<5	<5	----	----
Lead	7439-92-1	5	mg/kg		6	5	<5	----	----
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	----	----
Zinc	7440-66-6	5	mg/kg		<5	<5	<5	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft									
C6 - C10 Fraction	----	10	mg/kg		<10	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		106	104	104	----	----
Toluene-D8	2037-26-5	0.1	%		124	118	122	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		116	111	115	----	----

RTI DL Release

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	52.7	133.7
Toluene-D8	2037-26-5	60.3	131.1
4-Bromofluorobenzene	460-00-4	59.2	126.6

RTI DL Release