

**Port of Gladstone
Gatcombe and Golding Cutting
Channel Duplication Project**

Environmental Impact Statement



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**Appendix E6
Sampling and
Analysis Plan
Implementation Report
– Barge access channel**

Port of Gladstone Gatcombe and Golding Cutting Channel Duplication Project

Sampling and Analysis Plan
Implementation Report – Barge
access channel

Gladstone Ports Corporation

Reference: 237374

Revision: 2

28 February 2019

Document control record

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Document control					aurecon	
Report title		Sampling and Analysis Plan Implementation Report – Barge access channel				
Document code			Project number		237374	
File path		http://cs.au.aurecongroup.com/cs/cs.exe/open/183953639				
Client		Gladstone Ports Corporation				
Client contact		Anil Bhakta	Client reference			
Rev	Date	Revision details/status	Author	Reviewer	Verifier (if required)	Approver
0	23 March 2018	Draft for client review	GK	AA	SAC	SAC
1	1 May 2018	Final	GK	AA	SAC	SAC
2	28 February 2019	Revised final	GK	AA	SAC	SAC
Current revision		2				

Approval			
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Acronyms

Acronym	Definition
AASS	actual acid sulfate soils
ANC	acid neutralising capacity
ANC _E	excess acid neutralising capacity
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resources Management Council of Australia and New Zealand
ASS	acid sulfate soils
AusIMM	Australasian Institute of Mining and Metallurgy
BTEX	Benzene, toluene, ethylbenzene, xylene, naphthalene
BUF	Barge unloading facility
Ca _A	acid reacted calcium
Ca _{KCl}	KCl extractable calcium
Ca _P	Peroxide calcium
CCME	Canadian Council of Ministers of the Environment
CG	Coordinator-General
CoC	chain of custody
CSD	cutter suction dredger
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DMPA	dredged material placement area
DoEE	Department of the Environment and Energy (Cth)
DQI	data quality indicator
DQO	data quality objective
EH	PCIMP ecosystem health
EHP	Department of Environment and Heritage Protection (Qld) (former)
EIL	Environmental Investigation Level
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
GBRMP	Great Barrier Reef Marine Park
GBRMP Reg	<i>Great Barrier Reef Marine Park Regulations 1983</i>
GIS	Global Information System
GPC	Gladstone Ports Corporation
GPS	Global Positioning System
ISQG	interim sediment quality guidelines
LAT	lowest astronomical tide
LNG	liquefied natural gas
LOR	limit of reporting
Mg _A	acid reacted magnesium
Mg _{KCl}	KCl extractable magnesium
Mg _P	Peroxide magnesium

Acronym	Definition
Mm ³	Million cubic metres
MSQ	Maritime Safety Queensland
NAGD	National Assessment Guidelines for Dredging
NATA	National Association of Testing Authorities
OCP	Organochlorine pesticide
OPP	Organophosphate pesticide
PAH	polycyclic aromatic hydrocarbon
PASS	potential acid sulfate soils
PCB	Polychlorinated biphenyl
PCIMP	Port Curtis Integrated Monitoring Program
PEL	probably effect level
PQL	Practical quantification limit
PSD	Particle size distribution
QA	Quality assurance
QC	Quality control
RL	Relative level
RPD	Relative percent deviation
RSD	Relative standard deviation
SAP	Sampling and Analysis Plan
SDPWO Act	<i>State Development and Public Works Organisation Act 1971</i>
S _{KCl}	Potassium chloride extractable sulfur
S _P	Peroxide sulfur
SPL	Strategic Port Land
SPOCAS	Suspension Peroxide Oxidation Combined Acidity and Sulfur
S _{POS}	Peroxide oxidisable sulfur
SQG	Sediment Quality Guidelines
TAA	Titrateable actual acidity
TCDD	2,3,7,8 tetrachlorodibenzo-p-dioxin
TEF	Toxic equivalency factor
TEQ	TCDD equivalent concentration
TOC	Total organic carbon
TPA	Titrateable peroxide acidity
TPH	Total petroleum hydrocarbon
TRH	Total recoverable hydrocarbon
TSA	Titrateable sulfidic acidity
TSHD	trailing suction hopper dredger
UCL	upper confidence limit
WB	Western Basin
WBDDP	Western Basin Dredging and Disposal Project
WBE	Western Basin Expansion
WCS	PCIMP worst case scenario

1 Introduction

1.1 Background

The Port of Gladstone is located along the Capricorn Coast of Central Queensland, approximately 525km north of Brisbane. The outer Port limits extend east of Port Curtis, past the adjoining Curtis and Facing Islands. The southern Port limits extend to the northern tip of Hummock Hill Island, near Tannum Sands, and the northern Port limit is located within the upper sections of an estuarine passage known as The Narrows. The main shipping entrance to the Port is at the southern boundary, through the Boyne River estuary, and onto Fisherman's Landing.

Gladstone Ports Corporation (GPC) is responsible for the control and management of port infrastructure and cargo handling operations for coal and other products at the Port of Gladstone, Port of Rockhampton and Port of Bundaberg. The Port of Gladstone is Queensland's largest multi-commodity port, and RG Tanna Coal Terminal is the world's fourth largest coal export terminal (by throughput). Cumulatively, the three ports handle the export of mineral resources from Central Queensland and products (such as sugar, grain and tallow) from local industries, and the import of raw materials from national and international sources.

The Port of Gladstone is also one of the busiest ports in Australia, vital to the local, state and national economies. Major exports from the Port include coal, alumina, cement, petroleum, aluminium and agricultural resources.

GPC provides and maintains vital shipping channels within the Port and is responsible for the development, management and leasing of Strategic Port Land (SPL). GPC is also directly responsible for road infrastructure, pilotage services, towage services (through an exclusive licence), property services on SPL, community parklands, quarantine and waste disposal services and the Gladstone Marina.

1.2 Environmental impact statement

The proposed Gatcombe and Golding Cutting Channel Duplication Project (herein referred to as 'the Project') was declared a 'coordinated project' by the Queensland Coordinator-General (CG) under the *State Development and Public Works Organisation Act 1971* (SDPWO Act) on 25 September 2012. The Project was also determined to be a 'controlled action' requiring an Environmental Impact Statement (EIS) by the Commonwealth Minister for the Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 23 October 2012.

GPC is currently proceeding with the EIS phase of the Project. The EIS will be submitted for assessment to both the Queensland State Government under the SDPWO Act and the Commonwealth Department of the Environment and Energy (DoEE) under the EPBC Act. The Project originally had the potential to undertake activities (e.g. placement of dredged material) within the Great Barrier Reef Marine Park (GBRMP), which are assessable under the *Great Barrier Reef Marine Park Regulations 1983* (GBRMP Reg).

1.3 Dredging and dredged material placement

1.3.1 Dredging requirements

The dredging component of the Project involves the duplication of the existing Gatcombe and Golding Cutting shipping channels that will provide a duplicate channel parallel to the main shipping channel, facilitating two-way passage. Initial dredging is required to establish an access channel to allow barges to transport dredged material from the Gatcombe and Golding Cutting shipping channels to the Western Basin Expansion (WBE) reclamation area.

The location of the barge access channel (the investigation area) is shown in Figure 1.1. It is noted that the volume and area to be dredged has been revised since this investigation was undertaken. A comparison of the original and revised barge access channel is provided in Figure 1.1.

The barge access channel requires a design depth of -7.0m lowest astronomical tide (LAT). Initial dredging involves 0.25 million cubic metres (Mm³) (including dredging tolerance).

The likely volumes and timing of the dredging activities for the barge access channel during the Project are outlined in Table 1.1. Dredging and sediment properties for the Gatcombe and Golding Cutting Channels is discussed in the Sampling and Analysis Plan Implementation Report (area to be dredged) (Aurecon 2015).

Table 1.1 Dredging campaign and staging options, location and volumes

Stage	Location	Timeframe – likely start date or later (duration)	Design depth (m LAT)	Volume (in situ) (Mm ³) *	Disturbance area to be dredged (ha)
Initial dredging works					
-	Barge access channel	2023 (6.5 weeks)	-7.0	0.25	19.03

Table notes:

* Includes 0.3m (depth) allowance for average dredging tolerance

1.3.2 Dredging methodology

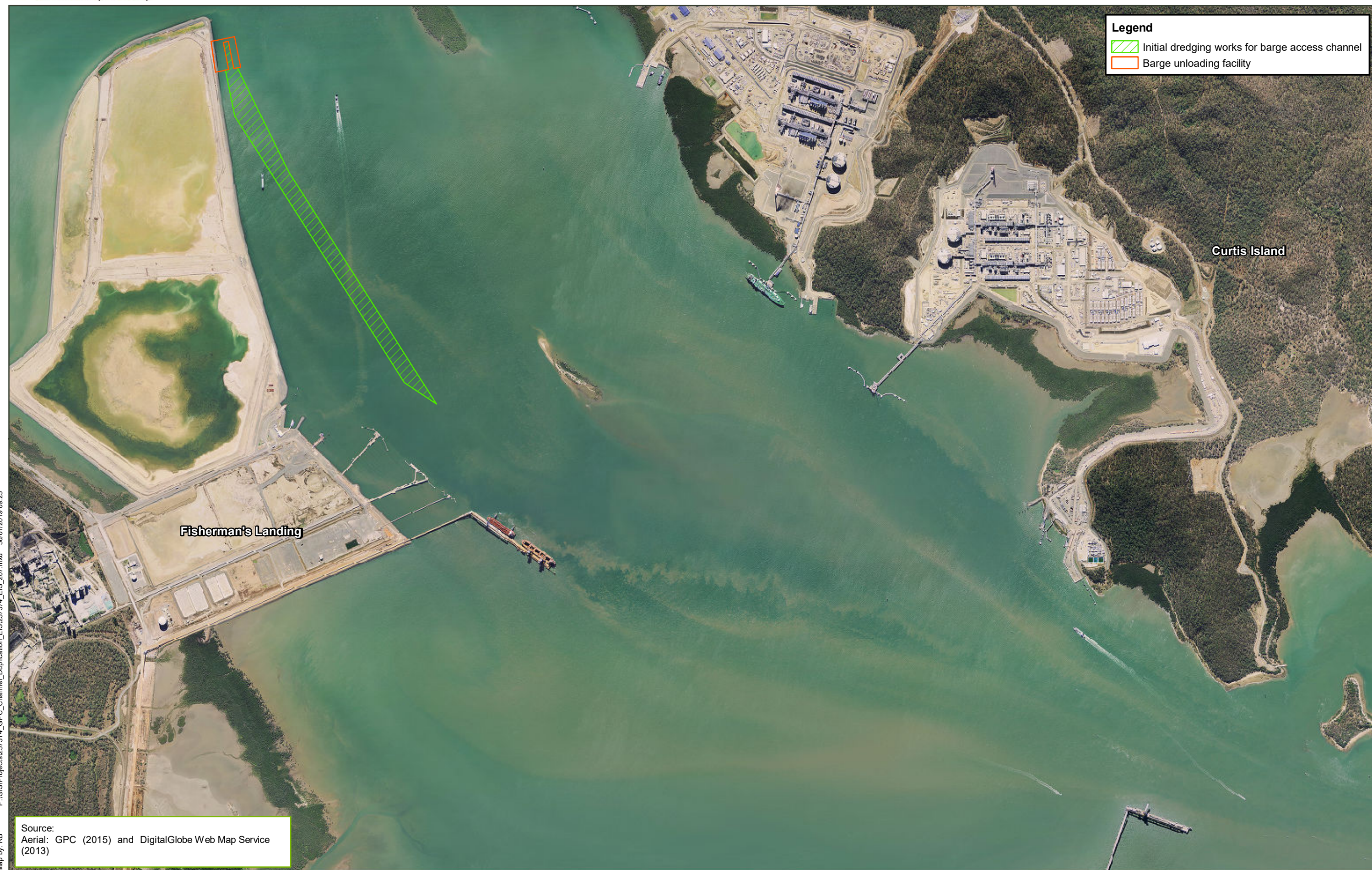
The dredging methodology adopted for the Project will be subject to the Maritime Safety Queensland (MSQ) Regional Harbour Master acceptance of the successful dredging contractor's detailed execution plan. The dredging contractor will also comply with MSQ's Standard for Marine Construction Activities within Gladstone Harbour (DTMR 2012).

A combination of different dredging vessels is likely to be used for the Project, including:

- Trailing suction hopper dredger (TSHD)
- Cutter suction dredger (CSD).

The preferred method of dredging and size/capacity of the dredger equipment are dependent on a number of factors, which will have implications on how the material can be dredged, transported and placed at the preferred dredged material placement location, including:

- Design of the area to be dredged
- Nature of dredged material (e.g. the stiffness of material)
- Quantities of materials to be dredged
- Depth of water (i.e. to maintain the vessel's required underkeel clearance)
- Sea conditions (e.g. wind, waves, currents)
- Environmental considerations
- Distance, availability and accessibility of dredged material placement location



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Map by RB



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Date: 30/01/2019 Version: 2 Job No: 237374
Coordinate system: GDA_1994_MGA_Zone_56

- Maintaining navigability of existing shipping channels
- Required schedule
- Equipment availability.

1.4 Purpose of this report

A Sampling and Analysis Plan (SAP) for the investigation area has been prepared and is provided in Appendix A.

The purpose of this report is to detail the implementation of the SAP and characterise the contamination status of the sediments within the barge access channel (the investigation area). The objectives of the sediment investigation are to:

- Undertake sediment sampling, analysis and reporting in accordance with the approved SAP
- Provide a statistically valid assessment of the dredged material to meet the minimum sampling requirements for the investigation area and estimated volume to be dredged under the National Assessment Guidelines for Dredging (NAGD) (2009)
- Analysis of the sediments within the investigation area for a range of physical and chemical parameters and comparison of contaminant concentrations against the NAGD (2009) and other relevant guideline criteria
- Determine the suitability of the dredged material for reclamation at the existing Western Basin (WB) reclamation area
- Support the EIS.

This SAP Implementation Report addresses Phase II – sampling and analysis of sediments as detailed in NAGD (2009).

A separate implementation report has been prepared for the Gatcombe and Golding Cutting Channel Duplication dredging as well as the WBE reclamation area.

1.5 Sediment investigation framework

1.5.1 Summary

The assessment of Project data has been undertaken in a staged process. This is to comply with NAGD (2009) where a contaminant does not have a screening level and to account for placement of dredged material in a reclamation area. The sediment investigation framework staged process included:

- A compliance assessment undertaken for potential contaminants of concern, where guideline values exist under NAGD (2009)
- Where no guideline values exist under NAGD (e.g. iron), a comparison against locally derived reference values and other locally derived reference data was undertaken. This is in compliance with the NAGD (2009) requirement that where contaminants are identified for which there are no screening levels, these contaminant concentrations should be compared against regional ambient baseline levels.
- A comparison against terrestrial background values, such as Queensland Draft Guidelines for the Assessment & Management of Contaminated Land in Queensland (both background and Environmental Investigation Levels (EILs)), Australasian Institute of Mining & Metallurgy (background range) and the Dutch Intervention Levels was undertaken.

Further detail is provided in the sections below.

1.5.2 Guidelines

Where guidelines values exist, such as NAGD (2009), a compliance assessment against these guideline values was undertaken.

1.5.2.1 National Assessment Guidelines for Dredging

The objective of the NAGD (2009) is to apply a regulatory framework to ensure the impacts of dredged material loading and dredged material placement are adequately assessed and, when offshore dredged material placement is permitted, that impacts are managed responsibly and effectively.

Where NAGD (2009) provides guideline values for potential contaminants of concern, an assessment of the data has been undertaken against these values.

NAGD (2009) provides screening levels for a range of contaminants, based on the interim sediment quality guidelines (ISQGs) developed by ANZECC/ARMCANZ (2000) and updated by Simpson et al. (2008; 2013). If the 95% upper confidence limit (UCL) of a contaminant exceeds the specified screening level, it is considered a contaminant of potential concern and requires further investigation.

Where contaminants exceed the Sediment Quality Guidelines – High (SQG – High), the sediment is considered to be significantly contaminated with a consequent risk of bioaccumulation in invertebrates. In this instance, bioaccumulation testing will be required.

A chemical analysis of the sediments within the investigation area compared against NAGD (2009) is provided in Section 3.

1.5.3 Locally derived reference values

NAGD (2009) states that where contaminants are found for which there are no screening levels, these contaminant concentrations should be compared against regional ambient baseline levels. The sections below summarise existing locally derived reference values for Port Curtis, which are consistent with NAGD (2009) defined regional ambient baseline levels.

1.5.3.1 Port Curtis Integrated Monitoring Program

The Port Curtis Integrated Monitoring Program (PCIMP) was established in 2001 as a consortium of members from 16 bodies representing industry, government (both local and state), research institutions and other stakeholders to develop a cooperative monitoring program for assessing the ecosystem health of Port Curtis, and to ensure the environmental sustainability of the Port of Gladstone.

To help assess the ecosystem health of Port Curtis, sediments were sampled every three years by PCIMP (2011). Water quality was assessed more frequently as contaminants in sediment are less dynamic than those in water and are therefore unlikely to change in the short term. Samples were analysed for metals and nutrients with results used as a background measurement for ecosystem health within Port Curtis.

The ecosystem health (EH) values for sediment were derived from the 95th percentile of background data collected during the PCIMP monitoring and the worst case scenario (WCS) values are 10 times the EH values (PCIMP 2011). The PCIMP EH values have been adopted by this investigation as locally derived reference values where no NAGD (2009) screening levels are provided.

1.5.3.2 Metal concentrations in the waters and sediments of Port Curtis, Queensland

Angel et al. (2012) conducted an investigation of water and sediment quality within Port Curtis on behalf of the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Results were collected from 6 to 8 December 2011 from 21 sites within the general area of Port Curtis, the southern Narrows and Rodds Bay, with more detailed sampling in the vicinity of Western Basin and the liquefied natural gas (LNG) facilities (Angel et al. 2012). Samples were collected from the surface sediments using a stainless steel Van Veen grab sampler.

Results from this investigation have been adopted as locally derived reference values where no NAGD (2009) screening levels are provided, including aluminium, iron, cobalt, manganese, selenium and vanadium.

1.5.3.3 Report for Western Basin Dredging and Disposal Project – Sediment Quality Assessment

GHD (2009a) conducted the sediment quality assessment for the Western Basin Dredging and Disposal Project (WBDDP). Sampling was conducted within the Western Basin area between 16 November 2008 and 17 June 2009 using a combination of vibrocoring, push tubes, standard penetration tests and rotary drilling methods. Boreholes were drilled to various depths, ranging from 5.3 to -22.4m LAT, and over 1,000 sediment samples were collected (GHD 2009a).

Results from this investigation have been adopted as locally derived reference values where no NAGD (2009) screening levels are provided, including aluminium, iron, cobalt, manganese, selenium and vanadium.

1.5.3.4 National Dioxins Program

There are no guideline values for dioxins or dioxin-like chemicals in sediments in Australia. However, under the National Dioxins Program (Müller et al. 2004), 75 sediment samples collected from 62 locations across Australia were analysed for dioxins and dioxin-like chemicals. These sediment samples were distributed within different aquatic environments (i.e. fresh, estuarine and marine), various States and Territories, and different land uses (i.e. urban/industrial, agricultural and remote).

The National Dioxins Program reported concentrations of dioxins and dioxin-like chemicals as the sum of tetra- to octachlorinated PCDD/PCDF concentrations (Müller et al. 2004).

The National Dioxins Program provides a national baseline for dioxins and dioxin-like chemicals in sediments against which results from this investigation can be compared.

1.5.3.5 Terrestrial background values

A comparison against terrestrial background values was also undertaken for manganese and dioxins. Manganese is a naturally occurring metal in Port Curtis, which means it is not of anthropogenic origin in Port Curtis, and the source of the manganese is from geologic formations (i.e. Wandilla Formation) which occur in both upstream terrestrial and marine environments in Port Curtis. Terrestrial background values representative for Queensland and Australia are therefore considered acceptable for comparison against Project data as a regional ambient baseline level (as defined in NAGD (2009)).

There are no Australian guidelines for dioxins in soils/sediments and as such, the Dutch Intervention Levels have been used to determine potential dioxin contamination in the sediments and the risk to human health and the environment.

Terrestrial background values are also considered appropriate for this Project as dredged material will be placed in a reclamation area for this Project.

1.5.3.6 Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland

The Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (Environmental Protection Agency (EPA) 1998) were adopted for manganese as no NAGD screening level exists. While these guidelines were developed to provide best practice for managing land contamination, the EILs have been adopted for comparison with manganese concentrations in conjunction with ambient background levels from the Port of Gladstone. The EIL for manganese was also previously adopted by the WBDDP.

1.5.3.7 Field Geologists' Manual

The Australasian Institute of Mining & Metallurgy (AusIMM) (2011), *Field Geologist's Manual*, Fifth Edition, provides the average abundance of various metals and metalloids in Australian soils, based on geological parent material. These values have been adopted as a terrestrial background value where no NAGD (2009) screening levels are provided.

1.5.3.8 Dutch Intervention Levels

The Dutch Target and Intervention Values, produced by the Dutch Ministry of Housing, Spatial Planning and the Environment (2000), provide an indication of when the functional properties of the soil for humans, plant and animal life is seriously impaired or threatened. They are representative of the level of contamination above which there is a serious case of soil contamination.

The Dutch Target and Intervention Values provide the following concentrations for various contaminants:

- Background concentrations in soil and groundwater
- Target values for soil and groundwater to indicate the level at which there is a sustainable soil quality
- Intervention levels where there is a serious case of soil or groundwater contamination.

Given dredged material will be placed in a reclamation area for this Project, and an absence of locally derived reference values for dioxins, the Dutch Target and Intervention Values provide the most relevant guideline value for dioxin concentrations.

1.5.4 Adopted guidelines

Table 1.2 outlines the screening levels adopted for sediment quality during this investigation. Locally derived reference values and terrestrial background values are provided in Table 3.1.

Table 1.2 Sediment quality guidelines

Chemical ³	Units	NAGD (2009) screening level ¹	NAGD (2009) high level ¹
Aluminium	mg/kg	-	-
Iron	mg/kg	-	-
Antimony	mg/kg	2	25
Arsenic	mg/kg	20	70
Cadmium	mg/kg	1.5	10
Chromium	mg/kg	80	370
Cobalt	mg/kg	-	-
Copper	mg/kg	65	270
Lead	mg/kg	50	220
Mercury	mg/kg	0.15	1

Chemical ³	Units	NAGD (2009) screening level ¹	NAGD (2009) high level ¹
Manganese	mg/kg	-	-
Nickel	mg/kg	21	52
Selenium	mg/kg	-	-
Silver	mg/kg	1.0	3.7 (4.0)
Vanadium	mg/kg	-	-
Zinc	mg/kg	200	410
Tributyltin ²	µg Sn/kg	9	70
TRH C ₆ -C ₁₀ ²	mg/kg	-	-
TRH >C ₁₀ -C ₁₆ ²	mg/kg	-	-
TRH >C ₁₆ -C ₃₄ ²	mg/kg	-	-
TRH >C ₃₄ -C ₄₀ ²	mg/kg	-	-
Total TRH ²	mg/kg	550 (280)	- (550)
Total PCB ²	µg/kg	23 (34)	- (280)
Total PAH ²	µg/kg	10,000	45,000-50,000 (50,000)
DDD ²	µg/kg	2 (3.5)	20 (9.0)
DDE ²	µg/kg	2.2 (1.4)	27 (7.0)
Total DDT ²	µg/kg	1.6 (1.2)	46 (5.0)
Dieldrin ²	µg/kg	280 (2.8)	270 e/ 620 (7.0)
Chlordane ²	µg/kg	0.5 (4.5)	6 (9.0)
Lindane ²	µg/kg	0.32 (0.9)	1.0 (1.4)
Endrin ²	µg/kg	10 (2.7)	120 e/ 220 (60)
Dioxins ²	µg/kg	-	-
Ammonia as N	mg/kg	- (4)	- (4.5)
Total phosphorus	mg/kg	-	-
Total nitrogen	mg/kg	-	-
Benzene	µg/kg	-	-
Toluene	µg/kg	-	-
Ethylbenzene	µg/kg	-	-
Xylene	µg/kg	-	-

Table notes:

TRH = Total recoverable hydrocarbons

PCB = polychlorinated biphenyls

PAH = polycyclic aromatic hydrocarbons

¹ Values provided in brackets represent revised sediment quality values as provided in Simpson et al. (2013) (unpublished)

² For comparison to revised sediment quality values (Simpson et al. 2013), concentrations were normalised to 1.0% total organic carbon

1.5.5 Acid sulfate soils

The Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998 (Ahern et al. 1998) outlines action criteria at which there is a significant environmental risk from ASS. Table 1.3 details the action criteria, which is dependent on the clay content of the sediment and the volume of sediment disturbed. Given the quantity of dredged material, the most conservative action criteria was used during this assessment.

Table 1.3 Action criteria for acid sulfate soil analysis

Sediment type	Clay content (%)	Action criteria (1-1,000 tonnes disturbed)		Action criteria (>1,000 tonnes disturbed)	
		Sulfur trail (%S oxidisable)	Acid trail (mol H ⁺ /tonne)	Sulfur trail (%S oxidisable)	Acid trail (mol H ⁺ /tonne)
Coarse (sand – gravel)	≤ 5	0.03	18	0.03	18
Medium (sandy loam – light clay)	5-40	0.06	36	0.03	18
Fine (medium to heavy clay)	≥ 40	0.1	62	0.03	18

1.6 Data quality objectives and indicators

1.6.1 Data quality objectives

Data quality objectives (DQOs) are qualitative and quantitative statements derived from the outputs of the first six steps of the seven step DQO process that:

- Clarify the study objective
- Define the most appropriate type of data to collect
- Determine the most appropriate conditions from which to collect data
- Specify tolerable limits on decision errors which are used as the basis for establishing the quantity and quality of data needed to support the decision.

The DQO process (AS4482.1-2005) follows a systematic approach for defining the criteria that a data collection design should satisfy, including the number of samples and when, where and how to collect these samples. DQOs are employed to develop a scientific and resource-effective data collection design to assure decision makers that the type, quantity and quality of environmental data are appropriate for the intended application. In addition, decision makers guard against committing resources to data collection efforts that do not support defensible decisions.

The DQOs for the investigation have been developed to define the type and quality of data required to achieve the Project geochemical investigation objectives stated in Section 1.4. The DQOs were selected with reference to relevant guidelines published by the NAGD (2009) and the ANZECC/ARMCANZ (2000), which define minimum data requirements and quality control procedures.

These matters are addressed in the seven step DQO approach presented in Table 1.4.

Table 1.4 Data quality objectives

Process	Response
Step 1: State the problem	The contamination status of the dredged material is required to be assessed in accordance with the requirements outlined in the NAGD (2009)
Step 2: Identify the decision	The principle objectives of this report are as follows: ■ Undertake sediment sampling, analysis and reporting in accordance with the approved SAP ■ Provide a statistically valid assessment of the dredged material to meet the minimum sampling requirements for the investigation area and estimated volume to be dredged under NAGD (2009) ■ Analysis of the sediments within the investigation area for a range of physical and chemical parameters and comparison of contaminant concentrations against the NAGD (2009) and other relevant guideline criteria ■ Determine the suitability of the dredged material for placement at WB reclamation area ■ Support the EIS.

Process	Response
Step 3: Identify the inputs to the decision	■ Dredging design depth and volume ■ Previous investigations within the Port of Gladstone ■ Industries and potential pollutant sources within the Port of Gladstone ■ History of dredging and the placement of dredged material at sea within the Port of Gladstone ■ Field data and laboratory analysis ■ Adopted guideline criteria for sediments.
Step 4: Define the boundaries of the study	The ultimate design depth of the barge access channel is -7.0m LAT, which defines the boundaries of the investigation (refer Figure 1.1)
Step 5: Develop a decision rule	The assessment program has been designed to characterise the sediments to be dredged using the sediment quality guideline criteria outlined in Section 1.5.3.
Step 6: Specify tolerable limits on decision errors	The data quality indicators (DQIs) have been established to set acceptance limits on field and laboratory data collected during the investigation.
Step 7: Optimise the design for obtaining data	The SAP was developed in accordance with the NAGD (2009). Nominated samples judged as being representative of sediment values were submitted for analysis. Samples were analysed by a National Association of Testing Authorities (NATA) accredited laboratory within approved sample withholding times.

1.6.2 Data quality indicators

The DQIs for the assessment are presented in Table 1.5.

Table 1.5 Data quality indicators

DQI	Field	Laboratory	Acceptability limits
Completeness	■ Sediment to be dredged may pose a potential risk to health, safety and the environment, and requires investigation to characterise and assess the suitability for dredged material placement ■ Appropriate sampling procedures to be used ■ Experienced field team to undertake sampling ■ Correct documentation to be completed	■ All required samples analysed ■ Appropriate methods ■ Appropriate limits of reporting (LORs) ■ Appropriate practical quantification limits (PQLs) ■ Sample documentation correct ■ Sample holding times in compliance	As per NAGD (2009) and Simpson et al. (2013) (unpublished)
Comparability	■ Correct sample procedures used at each location ■ Experienced field team ■ Same type (medium, volume and sampling technique) of samples collected	■ Same analytical methods used ■ Appropriate LORs ■ Samples submitted to the same NATA accredited laboratory ■ Analytical data is presented in the same unit	As per NAGD (2009)
Representativeness	■ Appropriate media sampled ■ All media identified (i.e. sediment)	■ All required samples analysed	As per NAGD (2009)

DQI	Field	Laboratory	Acceptability limits
Precision	- Correct sample procedures used at each location - Collection of appropriate quality assurance (QA) and quality control (QC) samples	Analysis of: - Duplicate samples - Laboratory duplicate samples	Relative percent deviation (RPD) or relative standard deviation (RSD) of 30 to 50%
Accuracy	- Sampling procedures appropriate and complied with - Collection of appropriate QA/QC samples	Analysis of: - Method blanks - Laboratory surrogate spikes - Laboratory control samples - Reference material	- Non-detect for contaminants of concern 70-130%

2 Methodology

2.1 Fieldwork program

The initial geochemical sediment investigation was undertaken between 12 February and 15 February 2018. A summary of the program of works is provided in Table 2.1.

Table 2.1 Program of works

Activity	Date
Mobilisation	12 February 2018
Inductions	12 February 2018 (and ongoing as required)
Drilling operations	12 to 15 February 2018
Demobilisation	15 February 2018

A geotechnical engineer from Aurecon provided site supervision, sample collection and processing. Seas Offshore was contracted to provide and manage the drilling component of the works and Fodico was subcontracted to provide and operate the vessel 'Shackleton'.

The field team was directly supported by ALS Environmental and onshore Aurecon staff specialising in marine investigations, data management, Global Information Systems (GIS) and project management.

2.2 Sample locations

The sampling locations provided in the SAP (refer Appendix A) were randomly selected using the methodology outlined in NAGD (2009). The actual sampling locations (with an accuracy of $\pm 10\text{m}$) are illustrated in Figure 2.1.

In accordance with the SAP, a total of 21 boreholes within the investigation area were assessed during the investigation.

These samples have been supplemented by an assessment of sediment samples collected from the barge access channel during previous investigations, as identified in Figure 2.2, and further discussed in Section 4.

2.3 Sample collection

A vibrocorer, operated by Seas Offshore aboard the vessel 'Shackleton', was used to collect the sediment cores at 13 sampling locations, while a grab sampler was used to collect sediment samples at 8 sampling locations. A hand-held GPS device was used to position the vessel within 10m of each sample location.

The SAP required sediment samples to be collected to comply with one of the following:

- Below the depth of dredging; or
- Until vibrocore drilling refusal (due to encountering consolidated natural geological materials (e.g. rock, dense sands/gravels or stiff to very stiff clays)).

Core barrels were capped at each end following core retrieval and a vibrocore frame was used to ensure the barrel remained vertical. Multiple cores were collected where additional volume of sediment was required for QA/QC purposes.



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Map by RB



0 255 510 Metres

Date: 30/01/2019 Version: 2 Job No: 237374
Coordinate system: GDA_1994_MGA_Zone_56



Gatcombe and Golding Cutting Channel Duplication Project

Figure 2.2: Sampling locations from previous studies

An Aurecon geotechnical engineer determined the suitability of each sediment core following collection, based on the following:

- No loss of surface sediments
- No major loss or disturbance of sediments at depth
- Target depth was achieved or refusal at rock, dense sands/gravels or stiff clay.

A summary of the number of samples collected during the investigation is provided in Table 2.2.

Table 2.2 Number of samples collected

Sample type	Number of primary samples	Number of QA/QC samples
Geochemical	63	8
Particle size distribution	41	-
Dioxins	11	-
Field pH	16	-
Suspension Peroxide Oxidation Combined Acidity and Sulfur (SPOCAS)	47	7

2.4 Sample processing

Sediment cores were cut into 1.0m lengths, split horizontally, photographed and logged prior to sampling. Each borehole log recorded the following information:

- Project name and number
- Name of sampler
- Date of sampling
- Type of sampler
- Sample location ID
- Easting and Northing of sample location
- Sediment colour, odour, texture (e.g. clay, silt, sand, gravel), plasticity and grain size
- Presence of organic matter, marine organisms, shells and anthropogenic material.

The sediment cores were split upon recovery and sub sampled along one split only (where sample quantity was sufficient). Following logging of each sediment core, each 0.5m length of core was homogenised in a stainless steel mixing bowl. The following intervals were used for collection of the sediment samples:

- 0.0m to 0.5m
- 0.5m to 1.0m or refusal (whichever occurred first)
- Every 1.0m length thereafter until below dredge depth or refusal (whichever occurred first).

2.5 Laboratory analysis

The analysis of sediment samples was conducted by ALS Environmental, a NATA accredited laboratory. Samples submitted to the laboratory were analysed for the contaminants listed in Table 2.3.

Table 2.3 Analyses conducted by the laboratory

Parameter	PQL
Metals and metalloids (Al, Sb, As, Cd, Cr, Cu, Co, Fe, Pb, Mn, Ni, Se, Ag, V, Hg and Zn)	0.1 to 2 mg/kg
Organotins	0.5 to 1 µg Sn/kg
Total recoverable hydrocarbon (TRH)	3 to 10 mg/kg
Benzene, toluene, ethylbenzene, xylene, naphthalene (BTEXN)	0.2 mg/kg
Polycyclic aromatic hydrocarbons (PAHs)	4 to 5 µg/kg
Polychlorinated biphenyls (PCB)	5 µg/kg
Organochlorine pesticide (OCP)/ Organophosphate pesticide (OPP)	0.25 to 10 µg/kg
Total organic carbon (TOC)	0.02%
Nitrogen (speciated)	0.1 to 20 mg/kg
Phosphorus	2 mg/kg
Dioxins and furans	0.25 to 5 pg/g
pH _F and pH _{FOX}	0.1 pH Unit
SPOCAS suite	2 mole H ⁺ /t

2.6 Quality assurance and quality control procedures

2.6.1 Laboratory procedures

The laboratory followed the laboratory QA/QC procedures outlined in Appendix F of NAGD, including analysis of laboratory blanks, laboratory controls, laboratory spiked samples and laboratory duplicates.

Validation of the laboratory QA/QC procedures is provided in Section 6 to determine the data quality to undertake an assessment of the geochemical characteristics of the material to be dredged.

Table 2.4 outlines the laboratory QA/QC procedures as required under NAGD (2009).

Table 2.4 Laboratory quality assurance/quality control procedure details

QA/QC procedure	Details
Laboratory blank	Laboratory blanks are submitted with each sample batch during analysis to determine the level (if any) of cross contamination that may occur during laboratory preparation, extraction and/or analysis. Analysis of the laboratory blanks should result in contaminant concentrations that do not exceed the LOR.
Laboratory control	Laboratory controls are submitted with each sample batch and contain known concentrations of a contaminant. Analysis of the laboratory controls should result in contaminant concentrations that do not deviate from the known concentration to determine the accuracy of the laboratory analysis.
Laboratory spike (surrogate and matrix)	A surrogate laboratory spike involves additions of a known concentration of compounds that are similar to those analysed, but are not likely to be present in the environment. The recovery of these compounds indicates the ability of the laboratory to extract the specified analyte. Surrogate spikes are generally performed on organic compounds. A matrix laboratory spike is performed by splitting a sample and spiking it with a known contaminant concentration. The recovery of the contaminant is calculated and used to determine interference from the sediment upon the level of recovery.
Laboratory duplicates	Laboratory duplicates use RPD of an intra-laboratory split sample material to analyse laboratory precision.

2.6.2 Field procedures

2.6.2.1 Sample processing

All staff collecting sediment samples wore disposable nitrile, powder free gloves, which were replaced for each sample to ensure no cross-contamination between sampling locations and sample depths occurred.

All sediment samples were collected in pre-labelled plastic bags or solvent-washed and acid rinsed glass jars with Teflon lined lids as appropriate. Sample containers were labelled with a unique sample number on the waterproof label with indelible ink.

Sample containers for volatile analytes were filled with zero headspace to prevent volatilisation. Field triplicates were given labels that did not relate to the sampling location. Once collected and labelled, samples were immediately stored in an esky with ice bricks and transported to the laboratory within the specified holding times (generally within 24 hours).

All samples were submitted under chain of custody (CoC) documentation to ensure the analytical requirements of each sample are undertaken.

2.6.2.2 Decontamination procedure

At the beginning of each sampling day, the vessel was thoroughly inspected and washed down to prevent sample contamination. An area for sample processing was cleared of any potential sources of contamination (i.e. copper, brass or galvanised or oily surfaces).

Stainless steel equipment was used for sample collection and was cleaned before use and in between samples. Prior to obtaining each sample, all equipment, including core barrels, core trays and sampling equipment was cleaned as follows:

- Initial rinse with seawater
- Scrub with detergent solution (Decon 90)
- Rinse with seawater
- Final rinse with distilled water.

2.6.2.3 Additional field QA/QC

A trip blank container filled with clean chromatographic sand (as provided by the laboratory) was transported with the samples each day and analysed for volatile contaminants. Trip blanks were used to identify contaminants that may have contaminated the sediment samples during transport or storage.

A rinsate sample was collected once per day from a trowel used during sampling, as this was where the risk of cross-contamination between samples was most likely. Rinsate sample were analysed for the same contaminants as the sediment (i.e. those provided in Table 2.3). Rinsate results should be below the LOR to validate the decontamination procedure.

Field triplicates were collected at approximately 10% of sampling locations to determine the small-scale spatial variability of the chemical characteristics of the sediment. This was undertaken by collecting two cores in addition to the primary core from the field triplicate location (i.e. three separate and adjacent cores were drilled) and collecting a sample from each core at the same depths.

With the ASS sampling, over 10% of samples undergoing SPOCAS analysis were submitted with a blind duplicate sample to assess the variability and precision of both the sampling procedure and the analytical laboratory.

2.7 Data analysis

Contaminant concentrations were assessed against the guideline values outlined in Table 1.2 using the 95% upper confidence level of the mean (95% UCL), calculated with ProUCL Version 5.0 (US EPA 2013). Where no analytical values of a contaminant were reported over the NAGD PQL, statistical calculations were not undertaken. In some cases where less than three values were above LOR for the respective contaminant, the maximum recorded value was used instead of the 95% UCL for a conservative comparison against NAGD screening levels. Analytical values reported below the detection limit were set to one-half of the laboratory LOR as per NAGD (2009).

Calculation of the 95% UCL assumes that the samples are statistically independent. As such, QA/QC samples were not included in the 95% UCL calculation.

2.8 Compliance with Sampling and Analysis Plan and National Assessment Guidelines for Dredging (2009)

Compliance of the Project geochemical investigation with the SAP and NAGD (2009) is demonstrated by:

- Drilling and sampling has been undertaken to full depth of sediment that has the potential to be contaminated. The vibrocorer achieved refusal in consolidated natural geological materials (i.e. rock, dense sands/gravels or stiff to very stiff clays).
- Sampling used a vibrocore and grab sampling process, NAGD recognised approved devices for undertaking geochemical sampling.

NAGD (2009) refers to requirements for capital dredging, with samples being required from the full depth of contaminated, as well as potentially contaminated sediment (sediment contiguous with areas of known sediment contamination, or sediment in areas of known contamination input (e.g. inner harbours, berth pockets, and other locations affected by solid, liquid or airborne waste inputs)). NAGD (2009) goes on to state the following:

'Full depth is taken to mean at least the top 1 metre of sediment, and more if contamination could be found deeper. It is not normally necessary to sample (for chemical analysis) consolidated natural geological materials underlying these surface sediments, although physical testing of such consolidated materials would still be required to assess turbidity movement and behaviours of the dredged material, post-disposal'.

Potentially contaminated material (i.e. from anthropogenic activities) is considered to be the depth of material overlying natural geologic material (NAGD 2009).

A review of the previous sediment investigation works undertaken for GPC indicate that approximately the top 0.3m of sediment within Port Curtis is likely to be post 1950s, with this sediment band being the most likely (if any) to contain contaminants from anthropogenic inputs. These previous sediment investigations include:

- Western Basin Dredging and Disposal Project (Western Basin Project) (GHD 2009a)
- GLNG Project (URS 2009)
- WICET Project (Connell Hatch 2006)
- Maintenance dredging of the shipping channels, swing basins and berths (GHD 2012; GHD 2006).

This is in agreement with Vicente-Beckett et al. (2006) who demonstrated that anthropogenic influenced sediments are likely to only occur in the top 0.28m. Below this depth, contaminants will not be encountered and elevated levels of metals and metalloids, if detected, are likely to be naturally occurring and related to geology within the area.

A summary of the sampling locations (as drilled), drilling depths and relative levels (RL) based on existing bathymetry data, is provided in Table 2.5.

Table 2.5 Sampling locations

Sampling location	Easting	Northing	Drilling depth (m)
BH01	313564.37	7369872.157	3.5
BH02	313436.73	7369808.337	1.4
BH03	313500.55	7369680.697	2.8
BH04	313564.37	7369553.057	3.7
BH05	313628.19	7369425.417	4.3
BH06	313755.83	7369297.777	3.9
BH07	313819.65	7369042.497	4.4
BH08	313947.29	7368851.037	3.7
BH09	314074.93	7368531.937	1.65
BH10	314330.21	7368404.297	1.45
BH11	314457.85	7368276.657	2.67
BH12	314713.13	7368149.017	2.0
BH13	314968.41	7368021.377	2.0
BH14	315542.79	7367766.097	Grab
BH15	315925.71	7367574.637	Grab
BH16	316372.45	7367446.997	Grab
BH17	316691.55	7367255.537	Grab
BH18	316819.19	7367191.717	Grab
BH19	317202.11	7367064.077	Grab
BH20	317393.57	7366936.437	Grab
BH21	317712.67	7366808.797	Grab

3 Results from Sampling and Analysis Plan implementation

3.1 General

Borehole logs for each of the sampling locations are presented in Appendix B and photographs of each of the cores collected are provided in Appendix C.

All laboratory results and laboratory QA/QC assessments are provided in Appendix D for the primary laboratory (ALS Environmental).

3.2 Geochemical

A statistical summary of the geochemical results, showing an assessment against relevant guideline values (identified in Section 1.5.3) is provided in Table 3.1 and Appendix E. Contaminant concentrations detected above the guideline values are highlighted in bold, along with the relevant assessment criteria.

The 95% UCL of all metals and metalloids for all horizon samples were below the NAGD (2009) screening levels (QLD Contaminated Land Guidelines for manganese). A small number of individual sample contained arsenic and nickel concentrations demonstrated values slightly above the NAGD screening levels; however, none of these exceedances were recorded at levels greater than their respective NAGD high levels (refer Table 1.2). While the sediments did report a 95% UCL for manganese that was higher than the 500mg/kg EIL, these concentrations are likely to be naturally occurring and are in line with levels reported within the Port Curtis area in previous studies. Anastasi and Wilson (2010) examined Port Curtis as a case study in reviewing manganese in subtropical estuaries and stated that recorded naturally occurring manganese concentrations have been recorded in marine sediments with values up to 9,000mg/kg. The average abundance of manganese in Australian soils is 850mg/kg (AusIMM 2011).

Where NAGD (2009) screening levels are not available, a comparison against locally derived reference values and terrestrial background values has been undertaken.

Further discussion on the results is provided in Section 5.

Table 3.1 Summary of geochemical results compared with guideline values

Analytes (mg/kg)		Aluminium	Iron	Arsenic	Cadmium	Chromium	Copper	Cobalt	Lead	Manganese	Nickel	Selenium	Silver	Vanadium	Zinc	Mercury	Ammonia as N
Guideline values	PQL	50	50	1.0	0.1	1.0	1.0	0.5	1.0	10	1.0	0.1	0.1	2.0	1.0	0.01	0.1
	NAGD (2009) – screening level	-	-	20	1.5	80	65	-	50	-	21	-	1.0	-	200	0.15	-
	NAGD (2009) – high level	-	-	70	10	370	270	-	220	-	52	-	3.7	-	410	1.0	-
	PCIMP EH value	15,000	21,000	-	-	-	-	6.9	-	260	-	1	-	40	-	-	15
	PCIMP WCS value	150,000	210,000	-	-	-	-	69	-	2,600	-	10	-	400	-	-	150
Terrestrial background values	EPA (1998) EIL	-	-	-	-	-	-	-	-	500	-	-	-	-	-	-	-
	EPA (1998) background levels	-	-	-	-	-	-	2-170	-	4-12,600	-	-	-	-	-	-	-
Samples collected		63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
Number of detects		63	63	63	0	63	63	63	63	63	63	63	2	63	63	46	63
Minimum		2,220	9,430	1.39	<0.1	4.9	4.9	4.7	2	36	3.7	<0.1	<0.1	25.1	13.4	<0.01	2.2
Maximum		21,600	98,600	23.1	<0.1	29.5	57.9	66.7	20.3	5,510	32.8	2	0.4	118	72.5	0.06	166
Mean		11,562	26,551	10.12	<0.1	18.78	21.25	15.10	7.45	538.60	11.99	0.38	0.11	51.27	37.94	0.019	28.37
Median		11,300	26,700	9.61	<0.1	20.6	21.70	12.8	8	383	11.5	0.3	0.1	51	37.9	0.02	13
Standard deviation		4,595	12,283	4.13	0	6.13	10.00	10.36	2.95	705.7	5.43	0.25	0	15.33	11.42	0.010	33.36
95% UCL		12,529	29,135	11	-	20.8	23.38	20.84	8.084	926.1	13.14	0.441	-	54.52	40.37	0.0218	46.85
Number of exceedances ¹		-	-	2	0	0	0	-	0	20	3	-	0	-	0	0	-

Table notes:

¹Refers to exceedances over the NAGD (2009) screening levels and the Queensland contaminated land guideline value (EPA 1998)

Orange and bold indicates an exceedance of the corresponding guideline value

3.3 Particle size distribution

This investigation undertook particle size distribution (PSD) sampling at each of the boreholes/grab samples within the investigation area from varying depths with a total of 41 samples collected. The majority of the samples collected were in the top 1.0m of sediment.

The sediment samples varied in texture with 66% of samples containing predominately fine material (clay and silt) and the remaining samples containing predominately coarse material (sand). The sediment samples contained a greater proportion of clays and silts within the northern portion of the investigation area, while samples from the southern extent contained more sands and gravels. The PSD results are displayed on Figure 3.1.

Table 3.2 summarises the PSD results, indicating that clay and sand are the major components of the sediment encountered with an average of 34.9% and 33.8%, respectively. Silt was the next major component of the sediment (26.0%), followed by gravel (9.9%).

Table 3.2 Summary of particle size distribution results

Statistics (%)	Clay (<2 µm)	Silt (2-60µm)	Sand (0.06-2mm)	Gravel (>2mm)	Cobbles (>6cm)
Minimum	2	2	3	<1	<1
Mean	34.9	26.0	33.8	9.9	<1
Maximum	60	42	88	37	<1

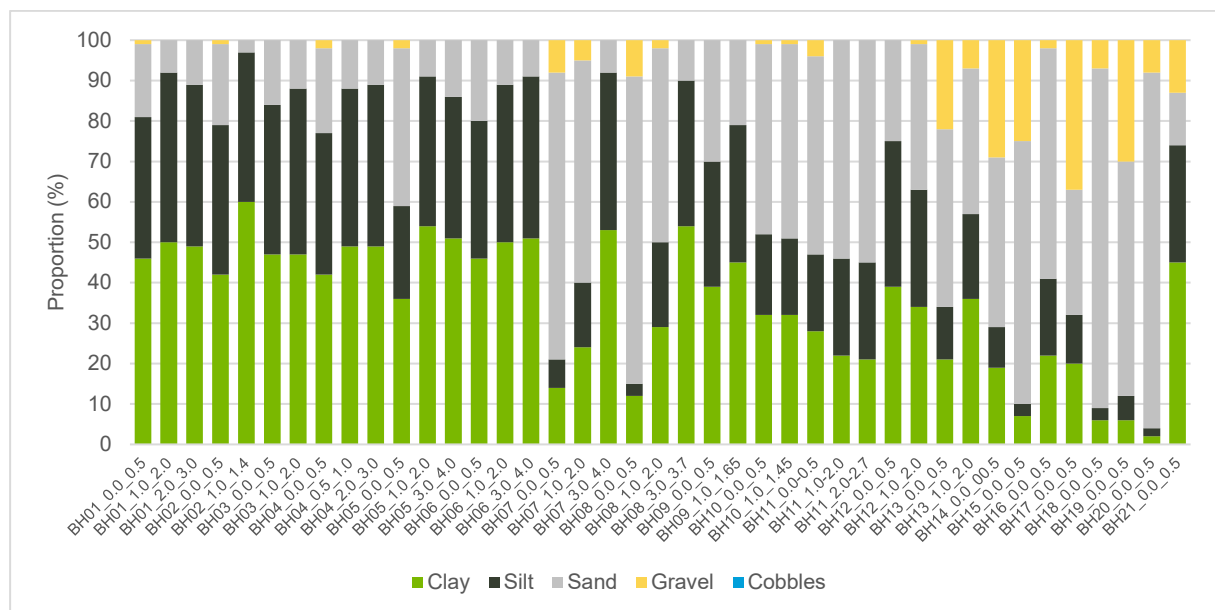


Figure 3.1 Particle size distribution in samples collected

A summary of the PSD laboratory results is included in Appendix F.

3.4 Acid sulfate soils

3.4.1 General

The full NATA certified laboratory report is provided in Appendix D while a summary of the results is provided in Appendix G.

The sections below discuss the ASS results and determine the likelihood of encountering actual acid sulfate soils (AASS) and potential acid sulfate soils (PASS) during dredging and dredged material placement.

The action criteria for ASS, as specified by Ahern et al. (1998) where more than 1,000 tonnes of sediment is to be disturbed, is as follows:

- Sulfur trail 0.03% S
- Acidity trail 18 mole H⁺/t.

3.4.2 Field testing

3.4.2.1 Screening criteria

For reasons of practicality and the avoidance of transporting and using oxidising chemicals on board the vessel, the pH tests were conducted by the primary laboratory. The primary laboratory utilised two different methods for obtaining pH measurements depending on if the pH tests were stand-alone or part of the SPOCAS suite. The same pH results are achieved, regardless of the method utilised.

A typical value that may indicate the presence of AASS includes:

- A pH_F/pH_{KCL} value of 4 or less.

Values that indicate the presence of PASS may include:

- A pH_{FOX}/pH_{OX} value of 4 or less
- A ΔpH greater than 2 (from pH_F to pH_{FOX} and pH_{OX} to pH_{KCL})
- To a much lesser extent, a 'vigorous' observed reaction rate.

3.4.2.2 Field and laboratory pH results

The pH test results provide an indication of the presence or absence of ASS in the sediment profile. The pH testing was conducted on each core, typically at 0.25m intervals along the core.

The pH tests were carried out on 70 sediment samples. These tests were used to indicate the likelihood of sediment being non-ASS, AASS or PASS. The results of the pH testing are summarised as follows:

- The pH_F/pH_{KCL} values for the majority of samples ranged from pH 6.6 to pH 9.5 indicating that AASS were not present in the sediments sampled within the investigation area
- The results of the pH_{FOX}/pH_{OX} tests for all samples ranged from pH 2.1 to pH 9.9. The potential for the presence of PASS was identified at the following locations:
 - BH01 3.0-3.5m: pH 3.6
 - BH02 0.5-1.0m: pH 3.9
 - BH03 1.0-2.0m: pH 2.6
 - BH03 1.0-2.0m: pH 3.6
 - BH04 2.0-3.0m: pH 3.4
 - BH04 3.0-3.7m: pH 2.1
 - BH05 1.0-2.0m: pH 3.7
 - BH05 3.0-4.0m: pH 3.0
 - BH05 4.0-4.3m: pH 2.3
 - BH06 0.5-1.0m: pH 2.4
 - BH06 1.0-2.0m: pH 3.0
 - BH06 2.0-3.0m: pH 2.9
 - BH06 3.0-4.0m: pH 3.4
 - BH07 2.0-3.0m: pH 3.4
 - BH07 3.0-4.0m: pH 3.0
 - BH07 4.0-4.4m: pH 2.8
 - BH08 2.0-3.0m: pH 3.2

- A drop in two or more pH units is considered potentially indicative of PASS presence in the sediment. This was observed in 20% of samples with a reduction of greater than 6.0 pH units at the following locations:
 - BH03 0.5-1.0m
 - BH04 3.0-3.7m
 - BH05 4.0-4.3m
 - BH06 0.5-1.0m
 - BH07 4.0-4.4m.

Interpretation of the pH results generally indicated an absence of ASS across the majority of the sediment sampled within the investigation area. AASS was not detected in any samples. Selected samples from discrete locations and sediment horizons did however indicate PASS presence at BH01, BH02, BH03, BH04, BH05, BH06, BH07 and BH08 at depths greater than 0.5m.

3.4.3 SPOCAS results

The results for each component of the SPOCAS analysis methods are utilised as input into the acid base accounting, which is used to calculate the net acidity. These results are then used to estimate the volume of fine agricultural lime (fine aglime) recommended per tonne of sediment as treatment for the neutralisation of the sediment to be disturbed.

The acid base accounting takes into consideration the acid generating/neutralising capacity of the sediment in both its existing and disturbed states. It also includes consideration of potential for the sulfur material present in the sediment matrix to exchange with ions such as calcium and magnesium.

SPOCAS analysis was carried out on 54 sediment samples taken from within the investigation area.

3.4.3.1 Acidity trail

The acidity trail component of the SPOCAS analysis is comprised of the following analytical methods:

- Titratable actual acidity (TAA) 23F (mole H⁺/t)
- Titratable peroxide acidity (TPA) 23G (mole H⁺/t)
- Titratable sulfidic acidity (TSA) 23H (mole H⁺/t).

These analytical methods assist in quantifying the level of acidity present within the sediment.

TAA quantifies the amount of existing acid in the sediment as measured in mole H⁺/t and is an indicator for actual ASS. The expression of existing acidity within the sediment is generally indicated by the measured pH. TAA was not detected (<2 mole H⁺/t) in any of the samples.

TPA quantifies the amount of acid that is likely to be generated in the sediment if oxidation were to occur (e.g. during or as a result of disturbance). TSA quantifies the amount of acid (existing or potential) within the sediment that is attributable to pyritic material, which indicates the presence/absence of ASS material. Both TPA and TSA ranged from not detected (<2 mole H⁺/t) in the majority of samples, with the exception of BH02 (0.5-1.0m), BH03 (1.0-2.0m), BH04 (2.0-3.0m), BH05 (1.0-2.0m and 3.0-4.0m), BH06 (1.0-2.0m and 3.0-4.0m), BH07 (3.0-4.0m) and BH08 (3.0-3.7m). The maximum TPA and TSA values were 208 mole H⁺/t from BH07 at a depth of 3.0-4.0m.

3.4.3.2 Sulfur trail

The sulfur trail component of the SPOCAS analysis is comprised of the following analysis methods:

- Potassium chloride extractable sulfur (S_{KCl}) 23C (%S)
- Peroxide sulfur (S_P) 23D (%S)

- Peroxide oxidisable sulfur (S_{POS}) 23E (%S)
- Acidity – peroxide oxidisable sulfur ($a-S_{POS}$) a-23E (mole H⁺/t).

These analytical methods assist in quantifying the level of extractable sulfidic material present within the sediment, which includes soluble and adsorbed sulfate as well as sulfate from gypsum. These results are utilised as input into the acid base accounting for calculating the net acidity within the sediment attributable to the sulfur content available through oxidation.

S_{POS} was detected (>0.02% S) in 77.8% of the samples. The maximum value for S_{POS} was 1.01% S, detected in BH06 at a depth of 1.0-2.0m. Approximately 72.2% of the samples were above the action criteria ($\geq 0.03\%$ S) and were observed in boreholes throughout the investigation area.

3.4.3.3 Calcium values analysis

The calcium values analysis is comprised of the following analysis methods:

- KCl extractable calcium (Ca_{KCl}) method 23Vh (%Ca)
- Peroxide calcium (Ca_P) method 23Wh (%Ca)
- Acid reacted calcium (Ca_A) method 23X (%Ca).

These analysis methods assist in quantifying the level of extractable calcium present within the sediment. These results are utilised as input into the calculation of the neutralising capacity within the sediment that is attributable to the presence of calcium.

Ca_{KCl} results give an indication of the calcium that is soluble and exchangeable within the sediment. Ca_P results are utilised to calculate the reacted calcium (Ca_A), which indicates the acid neutralising capacity within the sediment that is attributable to the presence of soluble and exchangeable calcium.

All samples submitted to the laboratory for SPOCAS analysis were analysed for the presence of soluble and exchangeable calcium to calculate the acid reacted calcium. Results for Ca_{KCL} ranged from 0.076% Ca to a maximum of 0.297% Ca in BH08 (1.0-2.0m).

3.4.3.4 Magnesium values analysis

The magnesium values analysis is comprised of the following analysis methods:

- KCl extractable magnesium (Mg_{KCl}) method 23Sm (%Mg)
- Peroxide magnesium (Mg_P) method 23Tm (%Mg)
- Acid reacted magnesium (Mg_A) method 23U (%Mg).

These analysis methods assist in quantifying the level of extractable magnesium present within the sediment. These results are utilised as input into the calculation of the neutralising capacity within the sediment that is attributable to the presence of magnesium.

Mg_{KCl} results give an indication of the magnesium that is soluble and exchangeable within the sediment. Mg_P results are utilised to calculate the reacted magnesium (Mg_A), which indicates the acid neutralising capacity within the sediment that is attributable to the presence of soluble and exchangeable magnesium.

All samples submitted to the laboratory for SPOCAS analysis were analysed for the presence of soluble and exchangeable magnesium in order to calculate the acid reacted magnesium. Results for Mg_{KCL} ranged between 0.04% Mg and 0.245% Mg in BH12 at a depth of 0.5-1.0m.

3.4.3.5 Excess acid neutralising capacity

All samples submitted to the laboratory for SPOCAS analysis were analysed for excess acid neutralising capacity (ANC_E). Results for ANC_E ranged from 0.420% CaCO₃ to 18.1% CaCO₃ in both BH19 (0.0-0.5m) and BH21 (0.0-0.5m), indicating that the sediment within the investigation area possesses sufficient acid neutralising capacity (i.e. there is sufficient natural capacity within the sediment to neutralise acid that may be generated).

3.4.3.6 Acid base accounting

The acid base accounting analysis component of the SPOCAS analysis is comprised of the following calculations:

- Acid neutralising capacity (ANC) fineness factor (1.5)
- Net acidity (sulfur units) (%S)
- Net acidity (acidity units) (mole H⁺/t)
- Liming rate (kg CaCO₃/t).

The results of these calculations provide the information required for the development of sediment management measures for sediments throughout the investigation area.

Net acidity (sulfur units) results for samples analysed ranged from below the LOR (<0.02% S) to 0.53% S, where 72.22% of samples were below LOR for these analytes.

Net Acidity (acidity units) results for samples analysed ranged from below the LOR (<10 mole H⁺/t) to 332 mole H⁺/t, where 72.22% of samples analysed were below LOR for these analytes.

Based on laboratory results for net acidity in sulfur units and acidity units, 15 sediment samples (27.8%) were above the action criteria and exhibited values indicative of the presence of PASS, requiring management.

3.4.3.7 Liming rates

Table 3.3 outlines the treatment levels based on the sediment sample liming rates. These treatment rates are based on the Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines (Dear et al. 2014) and relate to the amount of sediment that will be disturbed during dredging and reclamation activities.

Fourteen samples recorded the need for very high treatment levels, including BH01 to BH08 throughout the sediment profile. One sample from BH12 (0.5-1.0m) also required a high treatment level.

Table 3.3 Treatment levels and volumes of CaCO₃/t

Treatment level	kg CaCO ₃ /t	Number of samples
Low	<1.0	39
Medium	1.0	0
High	>1.0-5.0	1
Very high	<5.0-25	14
Extra high	>25	0

3.4.3.8 Summary

Table 3.4 summarises the reported net acidity exceedances and the corresponding calculated liming rates should these sediments be disturbed. Figure 3.2 illustrates the borehole locations in the investigation area where net acidity exceeded the action criteria of 18 mole H⁺/tonne.

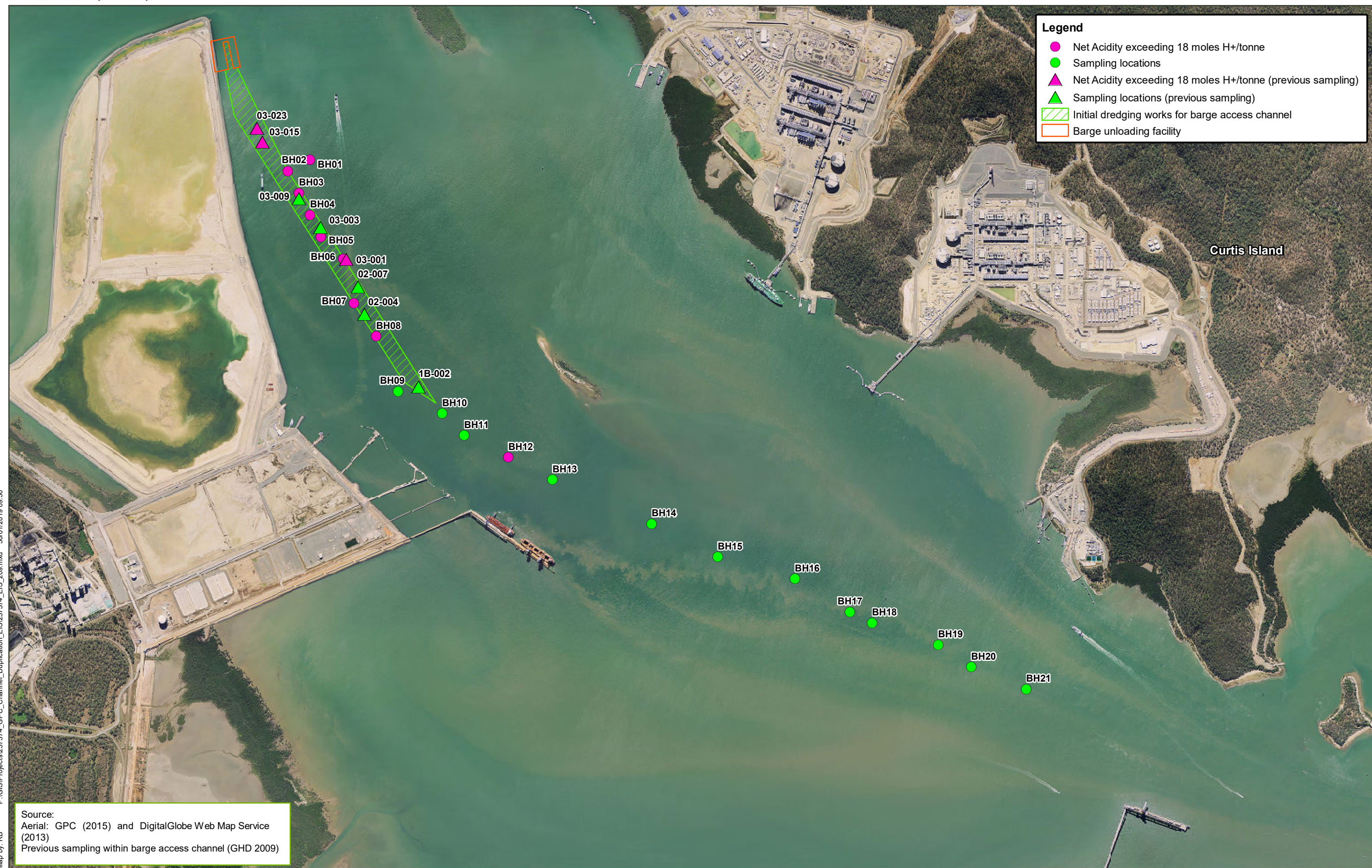


Table 3.4 Sediment samples exceeding net acidity action criteria

Sample location	Depth (m)	Net acidity (mol H ⁺ /tonne)	Liming rate (kg CaCO ₃ /t)
BH01	0.5-1.0	148	11
BH02	0.0-0.5	146	11
BH02	0.5-1.0	176	13
BH03	1.0-2.0	210	16
BH03	2.0-2.8	63	5
BH04	0.5-1.0	164	12
BH04	2.0-3.0	223	17
BH05	0.0-0.5	128	10
BH05	1.0-2.0	180	13
BH05	3.0-4.0	261	20
BH06	1.0-2.0	332	25
BH06	3.0-4.0	228	17
BH07	3.0-4.0	292	22
BH08	3.0-3.7	164	12
BH12	0.5-1.0	91	7

A comparison between the net acidity and excess acid neutralising capacity of the sediment within the investigation area was undertaken to determine the ability of the sediments to self-neutralise. The level of excess acid neutralising capacity was substantially higher than the net acidity in the sediments throughout the investigation area, likely due to the presence of shell material. The overall excess acid neutralising capacity within the sediment in the investigation area, will neutralise acid that may be generated as a result of disturbance of sediment from dredging and dredged material placement. ASS management measures will be detailed in a separate Project ASS Management Plan.

4 Results from previous sampling locations

4.1 General

Since the implementation of the SAP for the barge access channel, the initial proposed area to be dredged has been reduced, in length of channel and depth of dredging (refer Figure 1.1) due to Project dredging methodology changes to comply with the *Sustainable Ports Development Act 2015*. The original initial volume to be dredged was 0.69Mm³ to a depth of -11.0m LAT (as per the attached SAP), while the revised volume is 0.25Mm³ to a depth of -7.0m LAT.

As illustrated in Figure 2.1, BH01 to BH10 remain relevant to the revised barge access channel. However, to supplement these results, geochemical results from previous investigations were assessed, where samples were taken within the barge access channel. There were eight previous boreholes drilled within the barge access channel during the WBDDP (GHD 2009a), as detailed in Table 4.1 and illustrated in Figure 2.2.

Table 4.1 Sampling locations used from Western Basin Dredging and Disposal Project

Sampling location	Date sampled	Depth drilled (m)	Number of geochemical samples
Stage 1B Fisherman's Landing LNG:			
1B-002	23/03/2009	3.2	5
Stage 2 Laird Point LNG:			
02-004	01/03/2009	5.5	7
02-007	01/03/2009	5.5	7
Stage 3 Fisherman's Landing:			
03-001	12/03/2009	5.4	7
03-003	23/02/2009	5.5	7
03-009	23/02/2009	2.3	5
03-015	07/03/2009	1.4	3
03-023	16/12/2008	1.5	4

Source: GHD (2009a)

A summary of the geochemical and ASS results from the above sampling locations is provided in Appendix H.

This previous sampling used a combination of vibracoring, push tubes and rotary drilling methods, depending on the sediments encountered (GHD 2009a).

Despite these samples being collected in 2008 and 2009, they are considered to remain valid given the samples:

- Were collected directly within the area to be dredged
- Were collected in accordance with NAGD (2009)
- Have been used to supplement and compare against more recent geochemical data from 2018 (refer Section 3).

4.2 Geochemical

A statistical summary of the geochemical results detailed above, showing an assessment against relevant guideline values (identified in Section 1.5.3) is provided in Table 4.2 with further information available in GHD (2009a). Contaminant concentrations detected above the guideline values are highlighted in bold, along with the relevant assessment criteria.

Table 4.2 Summary of selected geochemical results from the Western Basin Dredging and Disposal Project compared with guideline values

Analytes (mg/kg)		Aluminium	Iron	Arsenic	Cadmium	Chromium	Copper	Cobalt	Lead	Manganese	Nickel	Selenium	Silver	Vanadium	Zinc	Mercury	Ammonia as N
Guideline values	PQL	50	50	1.0	0.1	1.0	1.0	0.5	1.0	10	1.0	0.1	0.1	2.0	1.0	0.01	0.1
	NAGD (2009) – screening level	-	-	20	1.5	80	65	-	50	-	21	-	1.0	-	200	0.15	-
	NAGD (2009) – high level	-	-	70	10	370	270	-	220	-	52	-	3.7	-	410	1.0	-
	PCIMP EH value	15,000	21,000	-	-	-	-	6.9	-	260	-	1	-	40	-	-	15
	PCIMP WCS value	150,000	210,000	-	-	-	-	69	-	2,600	-	10	-	400	-	-	150
Terrestrial background values	EPA (1998) EIL	-	-	-	-	-	-	-	-	500	-	-	-	-	-	-	-
	EPA (1998) background levels	-	-	-	-	-	-	2-170	-	4-12,600	-	-	-	-	-	-	-
Samples collected		45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
Number of detects		45	45	44	0	45	45	45	45	45	45	44	0	45	45	37	44
Minimum		4,950	2,190	2.0	<0.1	6.0	8.0	1.0	3.2	21	2.0	<0.1	<0.1	10	7.0	<0.01	<0.1
Maximum		19,000	39,500	21.4	<0.1	32	171	37	14	673	33	5.4	<0.1	109	65	0.06	42
Mean		13,200	24,593	11	<0.1	23	25	13	8.3	300	12	0.6	<0.1	52	36	0.02	11
Median		14,500	24,800	10	<0.1	24	24	13	8.9	302	12	0.5	<0.1	53	38	0.02	6.2
Standard deviation		3,718	4,955	3.4	<0.1	5.1	23.3	4.8	2.1	121.3	4.5	0.8	<0.1	11.4	10.4	0.01	11.0
95% UCL		14,122	25,834	11.4	-	24	31.3	16.3	8.8	330	13.1	1.1	-	55.3	38.8	0.02	16.1
Number of exceedances ¹		-	-	1	-	-	1	-	-	3	2	-	-	-	-	-	-

Source: Adapted from GHD (2009a)

Table notes:

¹Refers to exceedances over the NAGD (2009) screening levels and the Queensland contaminated land guideline value (EPA 1998)

Orange and bold indicates an exceedance of the corresponding guideline value

The 95% UCL of all metals and metalloids for all horizon samples were below the NAGD (2009) screening levels (and QLD Contaminated Land Guidelines for manganese). A small number of individual samples contained arsenic and nickel concentrations slightly above the NAGD screening levels; however, none of these exceedances were recorded at levels greater than their respective NAGD high levels (refer Table 1.2).

Where NAGD (2009) screening levels are not available, a comparison against locally derived reference values and terrestrial background values has been undertaken, as per Section 1.5.3.

Tributyltin was not detected in any of the samples analysed. PAHs were detected in approximately 58% of sediment samples in low concentrations, well below the NAGD screening levels and comprised perylene and benzo(a)pyrene. TPH was also detected in one-third of sediment samples in low concentrations, well below the NAGD screening levels and comprised predominately the heavier fractions of C₁₅-C₂₈ and C₂₉-C₃₆.

Further discussion on the results is provided in Section 5.

4.3 Particle size distribution

The samples assessed from the WBDDP (GHD 2009a) included PSD analysis for the top 0.5 m of sediment.

These sediment samples within the barge access channel comprised predominately fine material (clay and silt) within the northern portion of the barge access channel, with clay and silt comprising over 80% of the material. Samples collected from the southern portion of the barge access channel comprised more equal portions of fine material (clay and silt) and coarse material (sand), with some samples (1B-002 and 02-004) comprising up to approximately 70% sand.

These results are similar to findings from the recent sediment sampling during the SAP implementation (refer Section 3.3), where clay and sand were found to be the major components of the sediment, trending towards clay in the northern portion and sand in the southern portion.

4.4 Acid sulfate soils

4.4.1 General

Previous sediment sampling was conducted within the barge access channel by GHD (2009a) as part of the WBDDP analysed for ASS. These ASS results are discussed below to supplement the findings of the Project investigation (refer Section 3.4) and are summarised in Appendix H.

4.4.2 Field testing

4.4.2.1 Screening criteria

A typical value that may indicate the presence of AASS includes:

- A pH_F value of 4 or less.

Values that indicate the presence of PASS may include:

- A pH_{FOX} value of 4 or less
- A ΔpH greater than 2 (from pH_F to pH_{FOX})
- To a much lesser extent, a 'vigorous' observed reaction rate.

4.4.2.2 Field and laboratory pH results

The pH test results provide an indication of the presence or absence of ASS in the sediment profile. The pH testing was conducted on each core, typically at 0.25m intervals along the core. The pH tests were carried out on 115 sediment samples. The results of the pH testing are summarised as follows:

- The pH_F values ranged from pH 6.8 to pH 9.3, indicating that AASS were not present in the sediments sampled within the investigation area
- The results of the pH_{FOX} tests for all samples ranged from pH 1.2 to pH 8.6. The potential for the presence of PASS was identified in 34 of the 115 sediment samples, including the following boreholes and depths:
 - 1B-002: 1.75m
 - 02-004: 1.25m, 3.0m
 - 02-007: 2.0m, 2.25m, 2.5m, 2.75m, 4.5m, 4.75m, 5.25m
 - 03-003: 0.75m, 1.25m, 1.5m, 1.75m, 3.0m, 3.25m, 3.5m, 4.25m, 4.5m, 4.75m, 5.25m, 5.5m
 - 03-009: 0.1m, 1.0m, 1.25m, 1.5m, 1.75m
 - 03-015: 0.75m
 - 03-023: 0.25m, 0.5m, 0.75m
- A drop in two or more pH units is considered potentially indicative of PASS presence in the sediment. This was observed in approximately 78% of samples throughout the depth of the core.

Interpretation of the pH results generally indicated an absence of AASS within the sediments previously sampled within the barge access channel. However, the presence of PASS was evident within each of the previous sampling locations at a range of depths, generally greater 0.75m.

4.4.3 SPOCAS results

The results for each component of the SPOCAS analysis methods are utilised as input into the acid base accounting, which is used to calculate the net acidity. These results are then used to estimate the volume of fine agricultural lime (fine aglime) recommended per tonne of sediment as treatment for the neutralisation of the sediment to be disturbed.

SPOCAS analysis was carried out on 58 sediment samples previously collected from within the barge access channel (GHD 2009a).

4.4.3.1 Acid neutralising capacity

All samples submitted to the laboratory for SPOCAS analysis were analysed for acid neutralising capacity (ANC). Results for ANC ranged from not detected (<0.01% CaCO₃) to 18.8% CaCO₃ in 1B-002 (0.3-0.5m). The median ANC result in the previous sediment samples was 3.62% CaCO₃, which indicates that the sediment within the investigation area possesses sufficient acid neutralising capacity (i.e. there is sufficient natural capacity within the sediment to neutralise acid that may be generated, should full oxidation occur).

4.4.3.2 Acid base accounting

The acid base accounting analysis component of the SPOCAS analysis is comprised of the following calculations:

- Acid neutralising capacity (ANC) fineness factor (1.5)
- Net acidity (sulfur units) (%S)
- Net acidity (acidity units) (mole H⁺/t)
- Liming rate (kg CaCO₃/t).

Net acidity (sulfur units) results for samples analysed ranged from below the LOR (<0.02% S) to 0.7% S, where 15.5% of samples were above the action criteria of 0.03% S.

Net Acidity (acidity units) results for samples analysed ranged from below the LOR (<10 mole H⁺/t) to 436 mole H⁺/t, where 15.5% of samples were above the action criteria of 18 mole H⁺/t.

Based on laboratory results for net acidity in sulfur units and acidity units, nine sediment samples from previous sampling were above the action criteria and exhibited values indicative of the presence of PASS, requiring management.

4.4.3.3 Liming rates

Table 4.3 outlines the treatment levels based on the sediment sample liming rates. These treatment rates are based on the Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines (Dear et al. 2014) and relate to the amount of sediment that will be disturbed during dredging and reclamation activities.

Three samples from 03-001 recorded the need for very high treatment levels from depths throughout the sediment profile (0.3-0.5m, 1.8-2.0m, 3.3-3.5m). Two samples also required an extra high treatment level, including from 03-001 (0.8-1.0m) and 03-015 (0.0-0.1m).

Table 4.3 Treatment levels and volumes of CaCO₃/t

Treatment level	kg CaCO ₃ /t	Number of samples
Low	<1.0	49
Medium	1.0	0
High	>1.0-5.0	4
Very high	<5.0-25	3
Extra high	>25	2

4.4.3.4 Summary

Table 4.4 summarises the reported net acidity exceedances and the corresponding calculated liming rates should these sediments be disturbed. Figure 3.2 illustrates the previous sampling locations in the barge access channel where net acidity exceeded the action criteria of 18 mole H⁺/tonne.

Table 4.4 Sediment samples exceeding net acidity action criteria

Sample location	Depth (m)	Net acidity (mol H ⁺ /tonne)	Liming rate (kg CaCO ₃ /t)
03-001	0.3-0.5	103	8.0
03-001	0.8-1.0	422	32
03-001	1.3-1.5	72	5.0
03-001	1.8-2.0	75	6.0
03-001	2.3-2.5	39	3.0
03-001	3.3-3.5	196	15
03-001	4.3-4.5	26	2.0
03-015	0.0-0.1	436	33
03-023	0.3-0.5	71	5.0

A comparison between the ASS results from the Project investigation (refer Section 3.4) and results from previous sampling within the barge access channel (this section) has identified the following:

- There is a similar spread of ANC between the two investigations (as detailed in Figure 4.1), although previous sampling indicates greater ANC is present in the sediments

- A similar proportion of sediment samples require high to extra high liming rates, although previous sampling had sediment with higher net acidity of up to 436 mole H⁺/tonne and two samples requiring an extra high treatment level
- The results from previous sampling for the WBDDP (GHD 2009a) reiterates the presence of PASS throughout sediment within the barge access channel, although notes the high amount of neutralising capacity also present in the sediment
- ASS management measures will be detailed in a separate Project ASS Management Plan, based on the findings of both the Project investigation and the previous sampling.

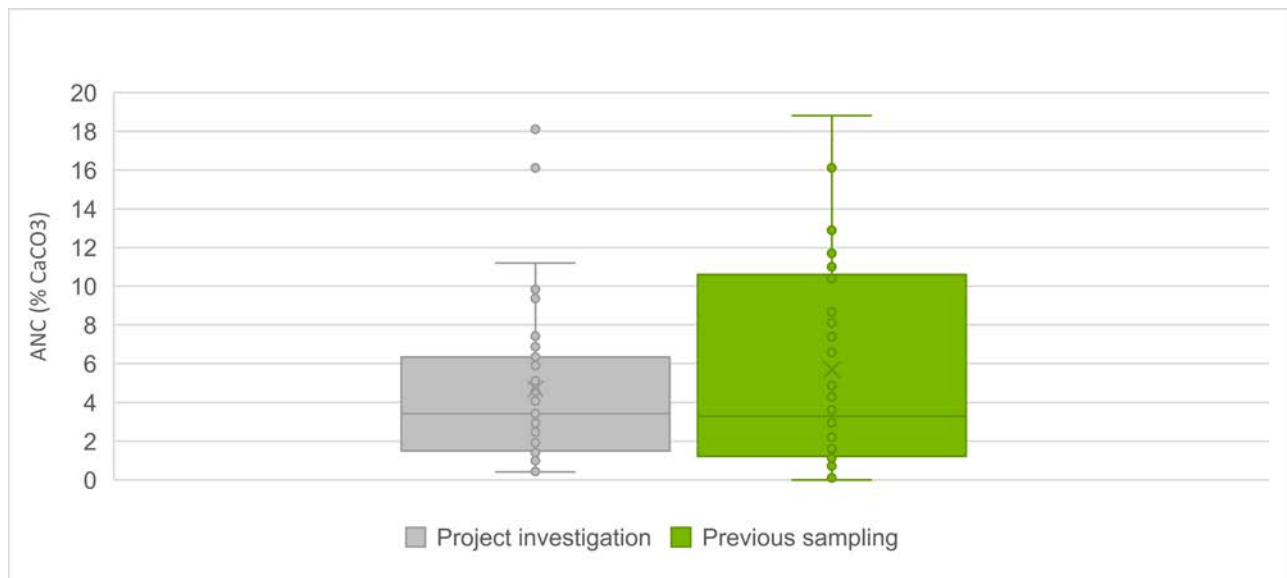


Figure 4.1 Comparison of ANC between current and previous investigations within the barge access channel

5 Discussion

5.1 General

The Project geochemical investigation demonstrated the presence of minor concentrations of naturally occurring and potential anthropogenic contaminants in individual samples across the investigation area. Individual concentrations that exceeded NAGD (2009) screening levels and/or the EPA Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (1998) – EILs included arsenic, chromium, manganese and nickel concentrations. Individual samples also recorded concentrations of total petroleum hydrocarbons (TPHs) and individual PAHs above the LOR but below the relevant guidelines.

5.2 Metals/metalloids

Aluminium, iron, arsenic, chromium, copper, cobalt, lead, nickel, manganese, selenium, vanadium and zinc were recorded above laboratory PQL in all the 63 samples collected (with mercury being recorded in 46 of 63 samples). The elements were identified in each depth horizon and as such, are ubiquitous across Port Curtis and likely to be naturally occurring.

The 95% UCL of all metals and metalloids for all horizon samples were below the NAGD (2009) screening levels. A small number of individual sample arsenic and nickel concentrations demonstrated values slightly above the NAGD screening levels; however, none of these exceedances were recorded at levels greater than their respective NAGD high levels (refer Table 1.2).

Metals with no NAGD screening level values (i.e. aluminium, iron, cobalt, manganese, selenium and vanadium) were compared against the locally derived reference values and terrestrial background values. While there were numerous exceedances over the PCIMP EH values, there were no exceedances of the PCIMP WCS values. These results also compare with other background investigations in Port Curtis, such as Angel et al. (2012), GHD (2009a) and Anastasi and Wilson (2010), which indicate that a number of metals are naturally elevated within Port Curtis, and the results from this investigation are comparable.

No discussion has been presented for antimony or cadmium as no values were reported above the NAGD (2009) PQL.

These findings are similar to those from previous sampling within the barge access channel during the WBDDP sediment investigation (GHD 2009a), where the 95% UCL of all metals and metalloids were below the relevant NAGD (2009) screening levels and only a small number of samples contained arsenic, copper and nickel at concentrations above the NAGD (2009) screening levels.

5.2.1 Aluminium

5.2.1.1 Guideline values

No NAGD screening level values are available for aluminium and as such, a comparison against locally derived reference values was conducted.

5.2.1.2 Locally derived reference values

Aluminium was recorded above the PQL of 50mg/kg within all 21 samples collected, with a minimum concentration of 2,220mg/kg at BH20 (0.0m to 0.5m) and a maximum concentration of 21,600mg/kg within BH06 at a depth of 2.0m to 3.0m.

When results for aluminium are compared against the locally derived reference values, 13 of the 21 samples recorded concentrations were above the PCIMP EH value, although the 95% UCL for aluminium was 12,529mg/kg, below the PCIMP EH value of 15,000mg/kg.

Aluminium concentrations from previous sampling within the barge access channel (GHD 2009a) ranged between 4,950mg/kg and 19,000mg/kg, with a 95% UCL of 14,122mg/kg. These concentrations are similar to those identified during the Project investigation with the 95% UCL below the PCIMP EH value of 15,000mg/kg.

Previous sediment investigations in Port Curtis recorded median aluminium concentrations of 8,770mg/kg (Angel et al. 2012) and 8,190mg/kg (GHD 2009a). The median aluminium concentration recorded during this investigation was 11,300mg/kg, which is similar to the previous results. In addition, aluminium concentrations collected from the investigation area are all below the PCIMP WCS value.

5.2.2 Iron

5.2.2.1 Guideline values

No NAGD screening level values are available for iron and as such, a comparison against locally derived reference values was conducted.

5.2.2.2 Locally derived reference values

Iron was reported above the PQL of 50mg/kg within all 63 samples collected, with a minimum concentration of 9,430mg/kg from BH15 (0.0m to 0.5m) and a maximum concentration of 98,600mg/kg from BH04 (3.0m to 3.7m).

When results for iron are compared against the locally derived reference values, 49 of the 63 samples recorded concentrations above the PCIMP EH value, as well as the 95% UCL for iron being 29,135mg/kg, above the PCIMP EH value of 21,000mg/kg.

Iron concentrations from previous sampling within the barge access channel (GHD 2009a) ranged between 2,190mg/kg and 39,500mg/kg, with a 95% UCL of 25,834mg/kg. The range of iron concentrations are below those identified during the Project investigation although the 95% UCL is also above the PCIMP EH value of 21,000mg/kg.

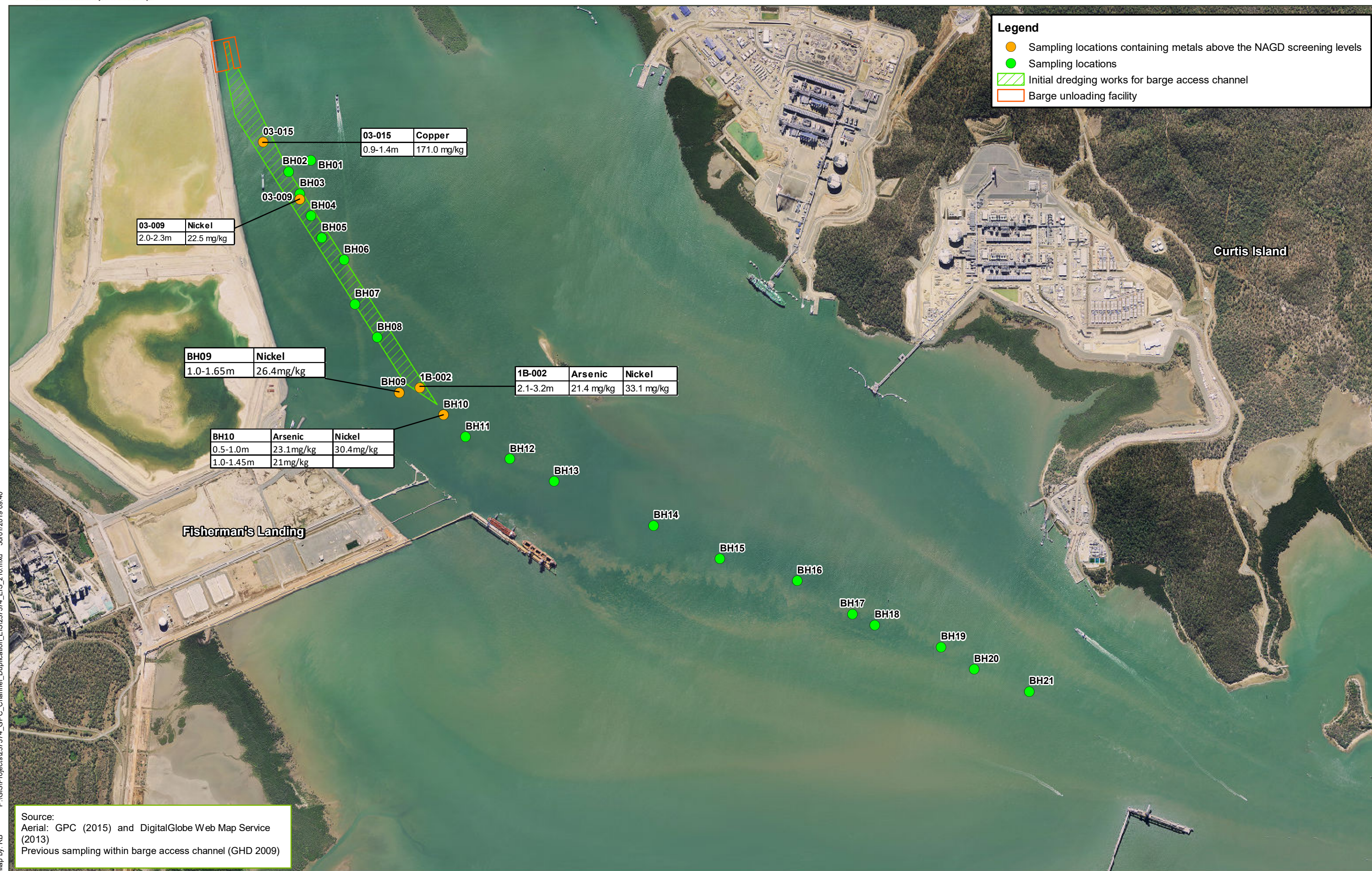
Previous sediment investigations in Port Curtis recorded median iron concentrations of 17,450mg/kg (Angel et al. 2012) and 20,900mg/kg (GHD 2009a). The median iron concentration recorded during this investigation was 26,700mg/kg, which is slightly above the previous results. However, the range of iron concentrations collected from the investigation area are all within the background range of the locally derived reference values.

The distribution of iron in Port Curtis appears to be correlated to that of aluminium, with elevated concentrations of iron widespread across the investigation area and throughout the depth profile of the sediments.

5.2.3 Arsenic

5.2.3.1 Guideline values

Arsenic was recorded above the PQL of 1.0mg/kg within all 63 samples collected, with two of the samples reporting levels above the NAGD (2009) screening level of 20mg/kg (refer Figure 5.1). No arsenic levels were recorded over the NAGD high level and the 95% UCL reported a value of 11mg/kg, which is well below the NAGD (2009) screening level.



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Map by RB



0 255 510 Metres

Date: 30/01/2019 Version: 2 Job No: 237374
Coordinate system: GDA_1994_MGA_Zone_56

Gatcombe and Golding Cutting Channel Duplication Project

Figure 5.1: Boreholes containing elevated arsenic, nickel and copper concentrations

Arsenic concentrations from previous sampling within the barge access channel (GHD 2009a) ranged between 2.0mg/kg and 21.4mg/kg, with a 95% UCL of 11.4mg/kg. These arsenic concentrations had a similar range to those identified during the Project investigation with only one exceedance of the NAGD (2009) screening level and a 95% UCL below the NAGD (2009) screening level of 21mg/kg.

Arsenic has previously been demonstrated to occur naturally within Port Curtis at concentrations very close to ANZECC ISQG-low guidelines. Vicente-Beckett et al. (2006) illustrated via multivariate analyses that the concentrations of arsenic (as well as nickel and chromium) in the Port Curtis region are at natural background levels which are very close to the ANZECC ISQG-low guidelines.

5.2.3.2 Locally derived reference values

Given the 95% UCL for arsenic was below the NAGD (2009) screening level value, a comparison against locally derived reference values was not required.

5.2.4 Chromium

5.2.4.1 Guideline values

Chromium was recorded above the NAGD PQL of 1.0mg/kg in all 63 samples. There were no samples with chromium concentrations above the NAGD screening level of 80mg/kg, with concentrations ranging from 4.9mg/kg to 29.5mg/kg from BH06 at a depth of 1.0 to 2.0m.

Chromium concentrations from previous sampling within the barge access channel (GHD 2009a) were also below the NAGD screening level, with concentrations ranging from 6.0mg/kg to 32mg/kg.

5.2.4.2 Locally derived reference values

Given chromium was below the NAGD (2009) screening level value in all samples, a comparison against locally derived reference values was not required.

5.2.5 Copper

5.2.5.1 Guideline values

While copper was recorded above the NAGD PQL in all 63 samples, no samples exceeded the NAGD screening level (65mg/kg) with a maximum concentration recorded of 57.9mg/kg taken from BH02 from a depth of 0.5m to 1.0m.

Copper concentrations from previous sampling within the barge access channel (GHD 2009a) ranged between 8.0mg/kg and 171mg/kg. There was one exceedance of the NAGD (2009) screening level of 65mg/kg from sample 03-015 at a depth of 0.9-1.4m. This result is a clear outlier, as the next highest copper concentration was 41mg/kg. The 95% UCL for copper was 31.3mg/kg, which is well below the NAGD screening level.

5.2.5.2 Locally derived reference values

Given copper was below the NAGD (2009) screening level value in all samples, a comparison against locally derived reference values was not required.

5.2.6 Cobalt

5.2.6.1 Guideline values

No NAGD screening level values are available for cobalt and as such, a comparison against locally derived reference values was conducted.

5.2.6.2 Locally derived reference values

Cobalt was recorded above the PQL of 0.5mg/kg within all 63 samples collected, with a minimum concentration of 4.7mg/kg from BH02 at a depth of 1.0m to 1.4m and a maximum concentration of 66.7mg/kg at BH03 (2.0m to 2.8m).

When results for cobalt are compared against the locally derived reference values, 57 of the 63 samples collected recorded concentrations above the PCIMP EH value, with the 95% UCL for cobalt (20.84mg/kg) above the PCIMP EH value of 6.9mg/kg.

Cobalt concentrations from previous sampling within the barge access channel (GHD 2009a) ranged between 1.0mg/kg and 37mg/kg, with a 95% UCL of 16.3mg/kg. The range of cobalt concentrations are below those identified during the Project investigation although the 95% UCL (16.3mg/kg) is also above the PCIMP EH value of 6.9mg/kg.

During the wider WBDDP investigations, cobalt was detected at concentrations up to 77.4mg/kg with a median concentration of 11.5mg/kg (GHD 2009a). Cobalt concentrations detected within the investigation area fall within the range of these WBDDP results and have a similar median of 8mg/kg.

5.2.6.3 Terrestrial background values

The cobalt concentrations are also within the terrestrial background values, which range from 2mg/kg to 170mg/kg (EPA 1998) and the median concentration is equal to the average abundance of cobalt in soil (8.0mg/kg), as determined by AusIMM (2011).

5.2.7 Lead

5.2.7.1 Guideline values

Lead was identified above the NAGD PQL within all 63 samples. No concentrations of lead were recorded above the NAGD (2009) screening level of 50mg/kg. The maximum concentration was 20.3mg/kg, which was recorded at a depth of approximately 0.5m to 1.0m at borehole BH10.

Lead concentrations from previous sampling within the barge access channel (GHD 2009a) were also below the NAGD screening level, with concentrations ranging from 3.2mg/kg to 14mg/kg.

5.2.7.2 Locally derived reference values

Given lead was below the NAGD (2009) screening level value in all samples, a comparison against locally derived reference values was not required.

5.2.8 Manganese

5.2.8.1 Guideline values

No NAGD (2009) screening level values are available for manganese and as such, a comparison against locally derived reference values and terrestrial background values was conducted.

5.2.8.2 Locally derived reference values

The presence of manganese within Port Curtis appears to be ubiquitous both spatially and with depth, with manganese being recorded within all 63 samples collected. Boreholes containing elevated manganese are presented in Figure 5.2.

Concentrations of manganese ranged between 36mg/kg (BH02 1.0-1.4m) to 5,510mg/kg (BH11 0.0-0.5m), with a 95% UCL of 926.1mg/kg. There were 20 samples with manganese concentrations above the EIL (500mg/kg).

In addition, manganese concentrations from previous sampling within the barge access channel (GHD 2009a) ranged between 21mg/kg and 673mg/kg, with a 95% UCL of 330mg/kg. The range of manganese concentrations are below those identified during the Project investigation. There were three exceedances of the EIL (500mg/kg), although the 95% UCL (330mg/kg) is below the EIL.

Angel et al. (2010) investigated dissolved metal levels in Port Curtis, including manganese, and concluded that nickel and manganese are likely to be released by natural processes such as reduction of manganese (hydr)oxides and leaching by the lower sediment and water pH. Anastasi and Wilson (2010) also examined Port Curtis as a case study in reviewing manganese in subtropical estuaries and stated that recorded naturally occurring manganese concentrations have been recorded in marine sediments with values up to 9,000mg/kg.

Previous sediment investigations in Port Curtis recorded median manganese concentrations of 382.5mg/kg (Angel et al. 2012) and 298mg/kg (GHD 2009a). In addition, concentrations of manganese in the sediments of Port Curtis derived by Angel et al. (2012) and during the wider WBDDP (GHD 2009) were recorded up to 1,330mg/kg and 7,680mg/kg, respectively.

The median manganese concentration recorded during this investigation was 383mg/kg, and a maximum of 5,510mg/kg, which are within the range of concentrations identified by previous investigations. This indicates that manganese concentrations from the investigation area are consistent with the locally derived reference values.

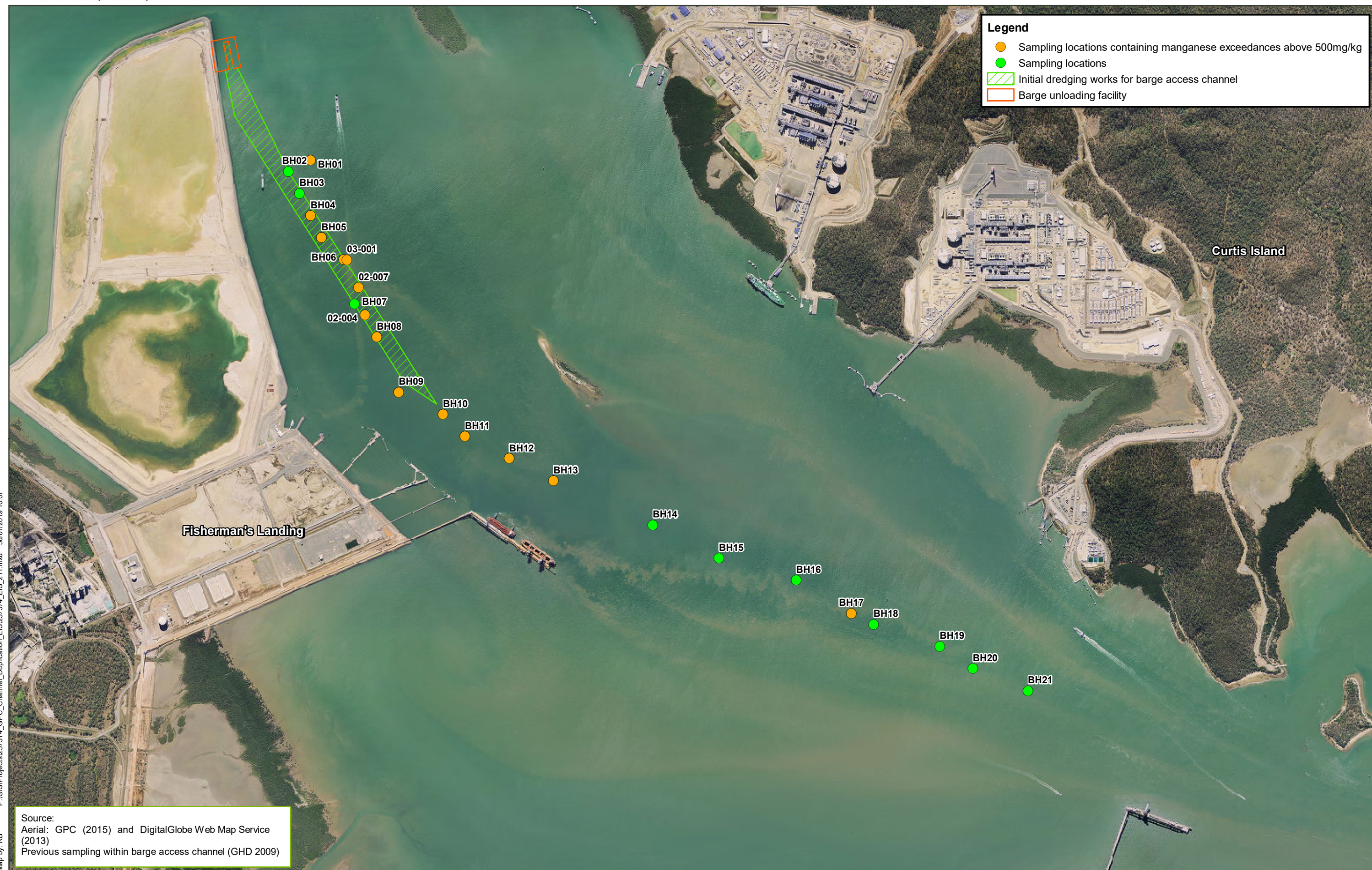
5.2.8.3 Terrestrial background values

Manganese is not specified within NAGD (2009) but is included within the EPA Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (1998). As such, the manganese EIL of 500mg/kg has been utilised in order to report the levels contained within the investigation area sediments. Of the 63 samples collected, 20 samples reported levels over the 500mg/kg EIL (refer Figure 5.2).

In addition, the EPA Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (1998) detail background levels for manganese in soils ranging from 4mg/kg to 12,600mg/kg, indicating a large abundance and variation of manganese in Queensland soils. All samples collected have manganese concentrations within this range.

While the deeper sediments did report a 95% UCL higher than the 500mg/kg EIL, these are naturally occurring soils (i.e. undisturbed and free from anthropogenic influence) and in line with levels previously reported within the Port Curtis area in previous studies. This was also the case for the previous sediment samples from within the barge access channel (GHD 2009a), where the three manganese concentrations above the 500mg/kg EIL were from samples collected from depths greater than 1.5m.

The AusIMM (2011), *Field Geologist's Manual*, Fifth Edition, provides background ranges for various metals and metalloids in Australia, with an average abundance of 850mg/kg for manganese observed in Australian soils. The 95% UCL for manganese (regardless of depth) was below this background value for soils.



5.2.9 Nickel

5.2.9.1 Guideline values

Nickel was recorded over the NAGD PQL for all the 63 samples collected. Three samples were reported at or above the NAGD screening level of 21mg/kg with the highest concentration being 32.8mg/kg from BH03 at a depth of 2.0m to 2.8m (refer Figure 5.2). The 95% UCL for all samples was 13.14mg/kg, which is well below the NAGD screening level.

Nickel concentrations from previous sampling within the barge access channel (GHD 2009a) ranged between 2.0mg/kg and 33mg/kg, with a 95% UCL of 13.1mg/kg. These nickel concentrations had a similar range to those identified during the Project investigation with only two exceedances of the NAGD (2009) screening level and a 95% UCL below the NAGD (2009) screening level of 21mg/kg.

5.2.9.2 Locally derived reference values

Given the 95% UCL for nickel was below the NAGD (2009) screening level value, a comparison against locally derived reference values was not required.

As discussed previously, Angel et al. (2010) investigated dissolved metal levels in Port Curtis and concluded that nickel and manganese are likely to be released by natural processes such as reduction of manganese (hydr)oxides and leaching by the lower sediment and water pH. This is evident in this investigation as nickel was identified in all samples and at all depths.

5.2.10 Selenium

5.2.10.1 Guideline values

Given there are no NAGD (2009) screening level values available for selenium, a comparison against locally derived reference values was conducted.

5.2.10.2 Locally derived reference values

Selenium was recorded above the PQL of 0.1mg/kg within all 63 samples collected. The minimum concentration of 0.1mg/kg was from BH05 at a depth of 4.0m to 4.3m while the maximum concentration of 2mg/kg was from BH10 at a depth of 1.0m to 1.45m.

When results for selenium are compared against the locally derived reference values, one of the 63 samples recorded concentrations above the PCIMP EH value, with the 95% UCL for selenium (0.441mg/kg) below the PCIMP EH value of 1.0mg/kg. All selenium concentrations were below the PCIMP WCS value.

Selenium concentrations from previous sampling within the barge access channel (GHD 2009a) ranged between not detected and 5.4mg/kg, with a 95% UCL of 1.1mg/kg. The selenium concentrations are above those identified during the Project investigation and the 95% UCL (1.1mg/kg) is above the PCIMP EH value of 1.0mg/kg, although below the PCIMP WCS value.

During the wider WBDDP investigation, selenium was detected at concentrations up to 5.4mg/kg with a median concentration of 0.4mg/kg (GHD 2009a). Selenium concentrations recorded within the investigation area are generally consistent with the results from the WBDDP with a median of 0.3mg/kg.

5.2.11 Silver

5.2.11.1 Guideline values

Silver was recorded above the NAGD PQL in two of 63 samples. However, no samples were recorded above the NAGD (2009) screening level of 1.0mg/kg and the maximum concentration detected was 0.4mg/kg from BH09 at a depth of 1.0m to 1.65m.

Previous sampling within the barge access channel (GHD 2009a) did not detect silver concentrations above the NAGD PQL in any samples analysed.

5.2.11.2 Locally derived reference values

Given silver was below the NAGD (2009) screening level value in all samples, a comparison against locally derived reference values was not required.

5.2.12 Vanadium

5.2.12.1 Guideline values

Given there are no NAGD (2009) screening level values available for vanadium, a comparison against locally derived reference values and terrestrial background values was conducted.

5.2.12.2 Locally derived reference values

Vanadium was recorded above the PQL of 2.0mg/kg within all 63 samples collected, with a minimum concentration of 25.1mg/kg from BH15 at a depth of 0.0m to 0.5m and a maximum concentration of 118mg/kg from BH13 at a depth of 0.5m to 1.0m.

When results for vanadium are compared against the locally derived reference values, 50 of the 63 samples recorded concentrations above the PCIMP EH value and the 95% UCL for vanadium was 54.52mg/kg, which is slightly above the PCIMP EH value (40mg/kg).

Vanadium concentrations from previous sampling within the barge access channel (GHD 2009a) ranged between 10mg/kg and 109mg/kg, with a 95% UCL of 55.3mg/kg. The vanadium concentrations are similar those identified during the Project investigation and the 95% UCL is slightly above the PCIMP EH value of 40mg/kg, although below the PCIMP WCS value.

An investigation by Angel et al. (2012) identified vanadium concentrations in sediments of Port Curtis ranging from 11mg/kg to 114mg/kg (median of 40.5mg/kg) while vanadium concentrations in sediments ranged from 5.6 mg/kg to 287mg/kg (median of 45.3mg/kg) during the wider and more detailed WBDDP investigation (GHD 2009a). The vanadium concentrations identified within the investigation area had a very similar range with a median concentration of 51mg/kg, similar to the locally derived reference values.

5.2.13 Zinc

5.2.13.1 Guideline values

Zinc was recorded above the NAGD PQL in all 63 samples collected. However, no exceedances were recorded over the NAGD (2009) screening level value of 200mg/kg with the highest concentration recorded being 72.5mg/kg from BH10 at a depth of 0.5m to 1.0m.

Zinc concentrations from previous sampling within the barge access channel (GHD 2009a) were also below the NAGD screening level, with concentrations ranging from 7.0mg/kg to 65mg/kg.

5.2.13.2 Locally derived reference values

Given zinc was below the NAGD (2009) screening level value in all samples, a comparison against locally derived reference values was not required.

5.2.14 Mercury

5.2.14.1 Guideline values

Mercury was recorded in 46 of the 63 samples at levels over the NAGD PQL. However, no exceedances were recorded over the NAGD (2009) screening level of 0.15mg/kg with the maximum concentration being 0.06mg/kg, recorded from both BH09 and BH10 at depths of 1.0m to 1.65m and 0.0m to 0.5m, respectively.

Mercury concentrations from previous sampling within the barge access channel (GHD 2009a) were also below the NAGD screening level, with concentrations ranging from not detected to 0.06mg/kg.

5.2.14.2 Locally derived reference values

Given mercury was below the NAGD (2009) screening level value in all samples, a comparison against locally derived reference values was not required.

5.3 Organics and BTEX

No PCB, OCP and OPP concentrations were identified with all samples tested reporting concentrations below the laboratory LORs (and hence below guideline levels) in both the Project investigation and previous sampling within the barge access channel (GHD 2009a).

A small number of samples (14 samples from 63 samples) recorded TPH concentrations over the LOR of 3.0mg/kg with the highest value recorded being 22mg/kg from BH12 at a depth of 0.0m to 0.5m. There were no BTEX detections within any of the samples analysed, although one sample (BH06 0.5-1.0m) detected naphthalene at a concentration of 0.3mg/kg. These findings are similar to previous sampling within the barge access channel (GHD 2009a), where TPH concentrations ranged from not detected to 64.5mg/kg. There were no detections of BTEX in any of the previous samples.

In relation to TRHs, 30 samples (of 63 collected) reported concentrations above the laboratory LOR with the maximum concentration of 25mg/kg (from BH12 at 0.0m to 0.5m) with a 95% UCL of 7.34mg/kg which is significantly lower than the NAGD screening level of 550mg/kg. When the data is normalised to 1.0% TOC, the maximum concentration is 70mg/kg, which remains below the NAGD screening level of 550mg/kg.

For total PAHs, 19 of 63 samples reported concentrations of perylene above the laboratory LORs. These 19 samples were restricted to eight individual borehole locations (BH01 (0.0m to 3.5m); BH03 (1.0m to 2.0m); BH05 (0.5m to 4.0m); BH06 (0.5m to 4.0m), BH07 (2.0m to 4.4m), BH08 (3.0m to 3.7m), BH09 (0.5m to 1.0m) and BH12 (0.5m to 1.0m)). The sum of the PAHs was low with a maximum concentration of 110µg/kg from BH06 at a depth of 3.0m to 4.0m and comprising perylene only. When the data is normalised to 1.0% TOC, the maximum value (144.7µg/kg) remains significantly below the NAGD (2009) screening level of 10,000µg/kg.

These findings are similar to previous sampling within the barge access channel (GHD 2009a), where PAHs were detected above the laboratory LOR in approximately 58% of samples, comprising perylene and benzo(a)pyrene. Concentrations of perylene ranged from not detected (<4µg/kg) to 100µg/kg, while there was one sample containing benzo(a)pyrene at a concentration of 4.0µg/kg.

5.4 Organotins

From the 63 samples collected, there were no samples that reported a concentration of organotins (including tributyltin) above the NAGD PQL of 1.0mg/kg. Previous sampling within the barge access channel (GHD 2009a) also did not detect tributyltin above the NAGD PQL.

5.5 Nutrients and total organic carbon

No guideline values exist for TOC and nutrients in sediments within NAGD (2009) although the PCIMP has set EH values derived from the 95th percentile of background data collected previously during the PCIMP monitoring with WCS values being set at 10 times the PCIMP EH values (PCIMP 2011). The PCIMP EH and WCS for ammonia as N are 15mg/kg and 150mg/kg, respectively.

Simpson et al. (2013) (unpublished) provides revised sediment quality values, with a proposed screening level of 4.0mg/kg for ammonia.

For ammonia as N, all 63 samples had concentrations recorded above the NAGD PQL of 0.1mg/kg with 57 samples recording concentrations over the Simpson et al. (2013) screening level of 4.0mg/kg with the maximum concentration recorded being 166mg/kg from BH12 at a 0.5m to 1.0m depth.

There were 28 samples where ammonia as N concentrations were recorded in exceedance of the PCIMP EH value (15mg/kg) within the investigation area. In addition, the 95% UCL of 46.85mg/kg was significantly above the PCIMP EH value and the Simpson et al. (2013) screening level.

Ammonia as N concentrations within the sediments were generally greater at locations with higher TOC and silt/clay content, compared with locations characterised by coarser material. The 95% UCLs for TOC and total ammonia as N were 0.711% and 46.85mg/kg, respectively, reflecting the relatively high clay content of most of the sampled locations.

These results were similar to previous sampling within the barge access channel (GHD 2009a), with ammonia as N was detected above the NAGD PQL in 44 of 45 samples, with 34 samples recording concentrations over the Simpson et al. (2013) screening level of 4.0mg/kg. The maximum concentration of ammonia as N detected during this previous sampling was 42.0mg/kg from sample 03-001 at a depth of 4.0-5.4m.

5.6 Dioxins

5.6.1 Guideline values

NAGD (2009) does not provide screening levels for dioxins.

Minimal sampling for dioxins levels has been undertaken previously within Port Curtis, with virtually no samples undertaken within the shipping channels. No sediment samples within previous sampling with the barge access channel during the WBDDP investigation were analysed for dioxins (GHD 2009a).

As such, during this investigation, 11 samples were taken within the investigation area (refer Figure 5.3).

The summary dioxin results from this investigation are:

- Median: 0.99pg TEQ/g
- Maximum: 2.43pg TEQ/g
- Minimum: 0.1pg TEQ/g.



P:\GIS\Projects\237374_GPC_Channel_Duplication_EIS\237374_EIS_212.mxd 30/01/2019 09:18
Map by RB



0 255 510 Metres

Date: 30/01/2019 Version: 2 Job No: 237374
Coordinate system: GDA_1994_MGA_Zone_56

Gatcombe and Golding Cutting Channel Duplication Project

Figure 5.3: Dioxin concentrations within the investigation area

Canadian sediment quality guidelines provide for dioxins in marine environments by adopting the freshwater ISQGs and probably effect levels (PELs). This is due to a paucity of data for the marine environment (Canadian Council of Ministers of the Environment (CCME) 1999). As a result, any comparison against these levels should be considered indicative only.

The Canadian ISQGs represent the concentration below which adverse biological effects are expected to rarely occur while PELs are the concentration above which adverse effects are expected to frequently occur. The Canadian ISQG value for dioxins is 0.85pg TEQ/g while the PEL is 21.5pg TEQ/g (CCME 1999).

All dioxin concentrations recorded during the investigation are significantly below the PEL, while the median concentration is just above the ISQG, indicating that dioxins within the sediments of Port Curtis are unlikely to result in adverse biological effects.

As barge access channel dredged material will be placed at the WB reclamation area for this Project, it is considered more appropriate to compare the results to the Dutch Intervention Levels for dioxins (1,000pg/g) (Ministry of Housing, Spatial Planning and the Environment 2000). As the median concentration is several magnitudes below the Dutch Intervention Level, no risk is likely to occur for future site users of the reclamation area.

5.6.2 Locally derived reference values

The National Dioxins Program (Müller et al. 2004) has investigated the levels of dioxins around Australia by reporting the concentrations of dioxins and dioxin-like chemicals. Dioxins often occur as complex mixtures and exert their toxicity by the same mechanism, the concept of toxic equivalents. This concept allows the concentration or mass of each dioxin in a complex mix to be connected to an equivalent mass of the most toxic dioxin – 2,3,7,8 tetrachlorodibenzo-p-dioxin (TCDD) by using a set of toxic equivalency factors (TEFs) which rate the toxicity of the various dioxins against TCDD. The equivalent TCDD concentrations are then summed (Σ) to estimate the concentration of mixture of dioxins as a TCDD equivalent concentration (called Σ TEQ).

The Department of Environment and Science undertook dioxin sampling across 31 sites within Port Curtis and related waterways in early 2012 whilst investigating the sediment quality of Port Curtis and its tributaries. Many dioxins were detected and these detection values were compared with dioxin concentrations from the National Dioxins Program using toxic equivalence values (Σ TEQ). The Σ TEQ values were found to be typical of those recorded throughout Australia for aquatic sediments adjacent to urban/industrial environments and the values were considered typical of estuaries in Australia.

In order to place this investigation in context and compare with the Müller et al. (2004) study and the former Department of Environment and Heritage Protection (EHP) (2012) Port Curtis results, the WHO-TEF calculated using zero for not detected dioxins was utilised. As noted within EHP (2012) Port Curtis report, an exact comparison cannot be made as the WHO has made some minor changes since the National Dioxins Program. A comparison of dioxins Σ TEQ values using the same TEFs cannot be made as the raw data from the National Dioxins Program are not available.

The Port Curtis study (EHP 2012) adapted two Müller et al. (2004) box plot figures and compared these against their own results. Müller et al. (2004) provides an explanation for interpretation of the box plots. When dioxin results from the investigation are compared with both of these previous studies (refer Figure 5.4a and Figure 5.4b), it can be seen that the results for this study for the sum of dioxin equivalent on a dry weight basis (reported as WHO-TEQ_{zero}) fall within the concentrations shown for urban/industrial sediments and are similar to the results reported from the Port Curtis investigation (EHP 2012).

When the sum of dioxin and furan concentrations on a dry weight basis are compared against group totals sediments from freshwater, estuarine and marine environments and the previous Port Curtis study (refer Figure 5.5a), the results fall within the estuarine sediments. The dioxin and furan results from this investigation are also comparable to results from the previous Port Curtis study (EHP 2012).

The dioxin and furan results from this investigation were also compared against the dioxin results from the geochemical investigation undertaken in February 2015 for the Gatcombe and Golding Cutting shipping channels and dredged material placement area (DMPA) options (refer Figure 5.4b and Figure 5.5b). The dioxin and furan concentrations within the barge access channel are higher than results from the Gatcombe and Golding Cutting shipping channels and DMPA options.

This is likely due to the sheltered nature of the barge access channel, compared with the outer harbour channel sediments. Sediments within the barge access channel are more likely to be influenced by anthropogenic sources, such as industries, shipping movements and discharges from surface waters. In addition, the dioxin and furan results from this investigation are more comparable to the previous Port Curtis study (EHP 2012), as the majority of samples collected in the Port Curtis study were also from the inner harbour.

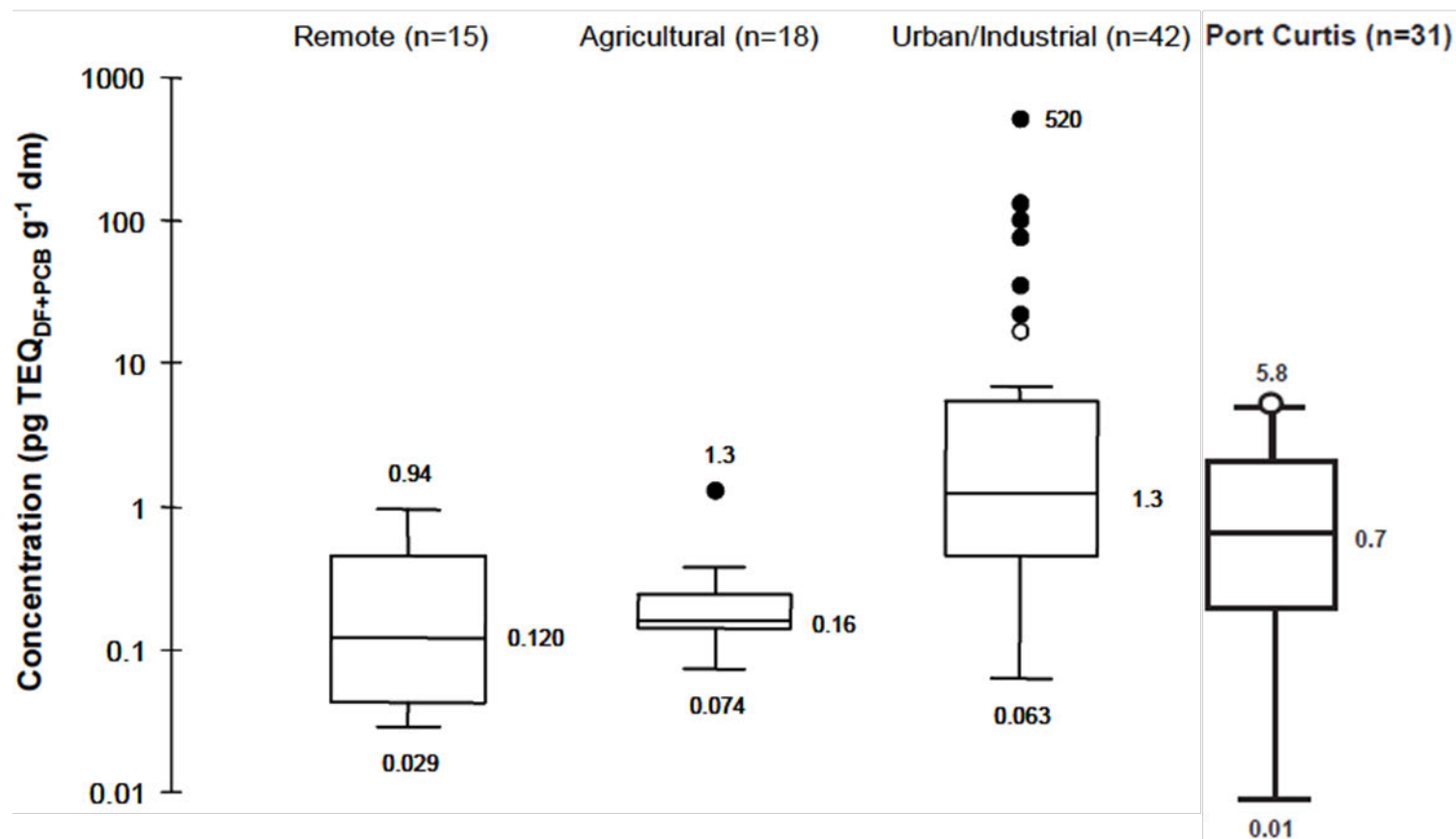


Figure 5.4a Box plot figures showing WHO-TEF values (calculated using zero for not detected dioxins)

Figure note: The first three box plots (remote, agriculture and urban/industrial) are adapted from the National Dioxins Program (Müller et al. 2004). The box plot labelled Port Curtis is taken from the EHP (2012) Port Curtis Study. For interpretation of the box plots, refer to the National Dioxins Program (Müller et al. 2004).

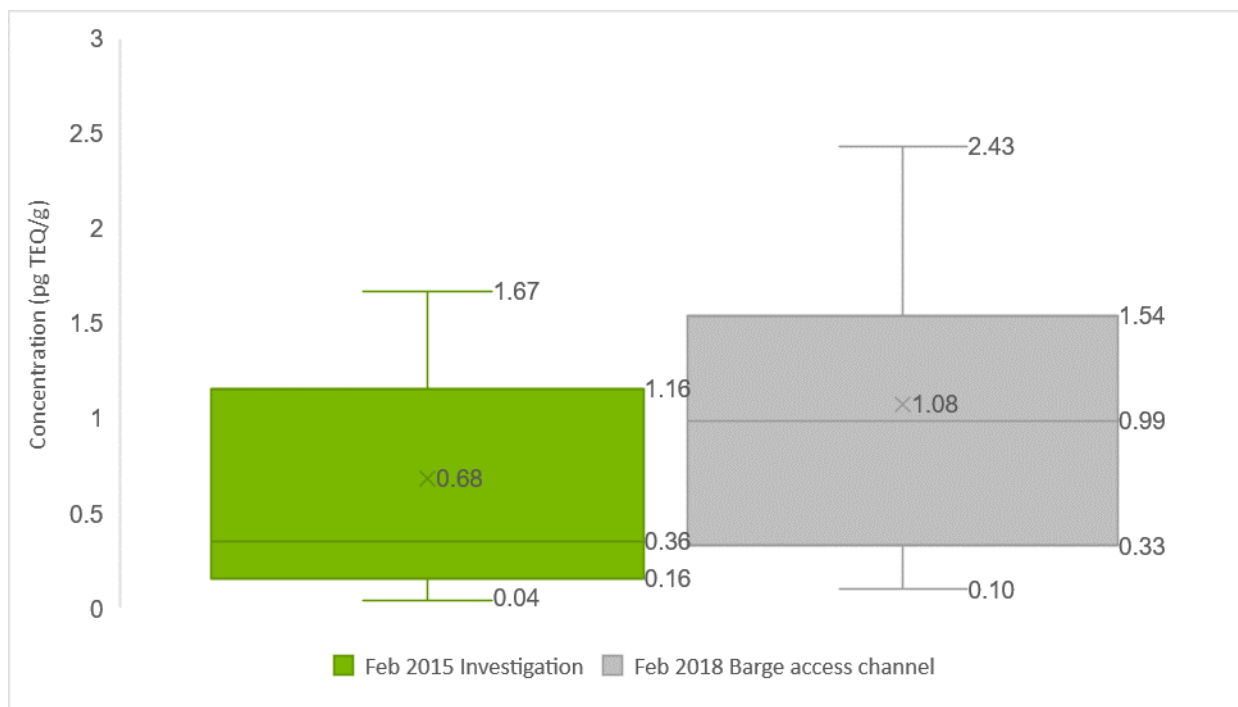


Figure 5.4b Box plot figures showing WHO-TEF values (calculated using zero for not detected dioxins)

Figure note: The left boxplot illustrates the dioxin results during the February 2015 investigation within the Gatcombe and Golding Cutting shipping channels and DMPA options. The right boxplot illustrates the dioxin results during this investigation (February 2018).

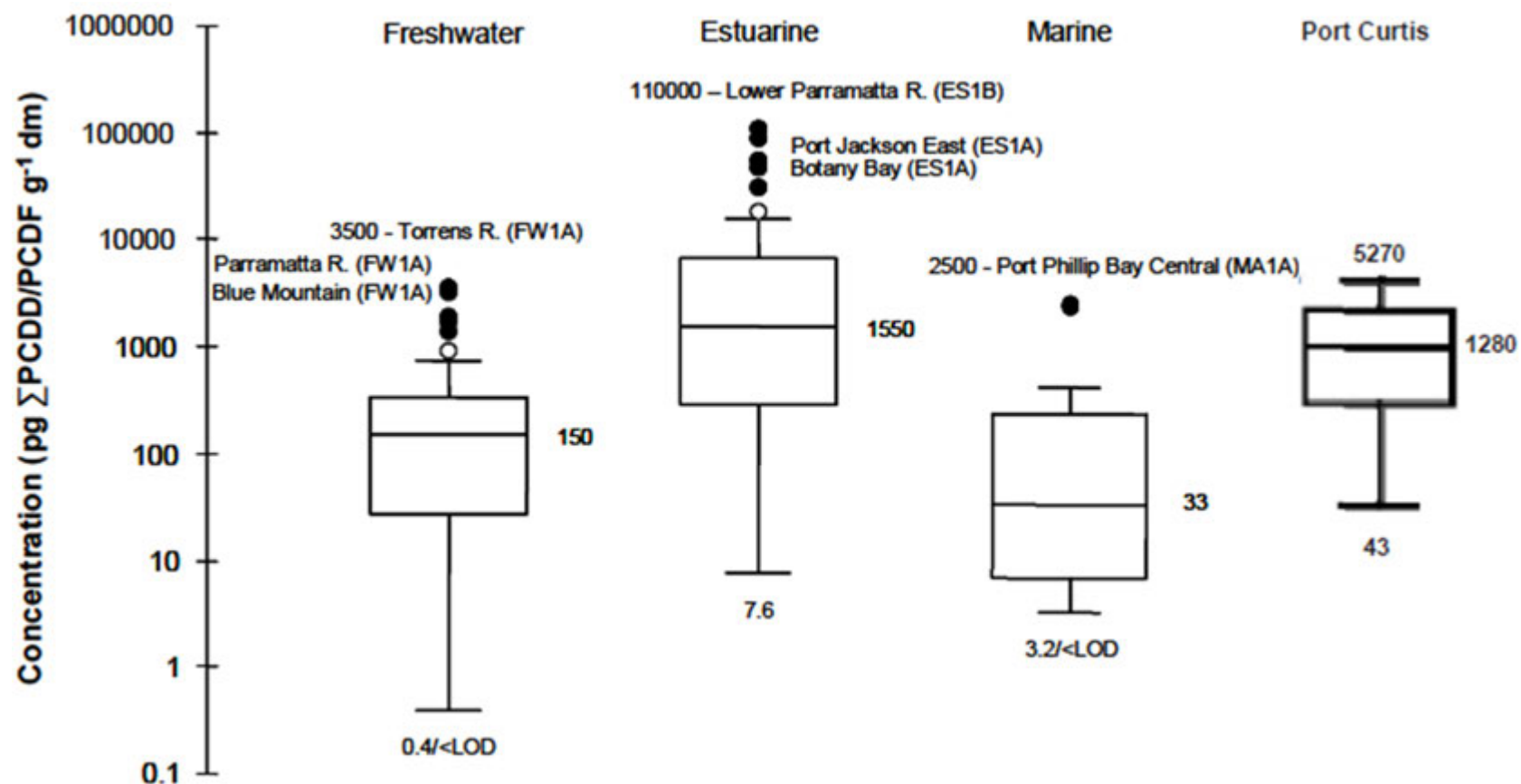


Figure 5.5a Box plot figures showing dioxin Group Total Concentrations pg/g

Figure note: The first three box plots (freshwater, estuarine and marine) are adapted from the National Dioxins Program (Müller et al. 2004). The box plot labelled Port Curtis is taken from the EHP (2012) Port Curtis Study. For interpretation of the box plots, refer to the National Dioxins Program (Müller et al. 2004).

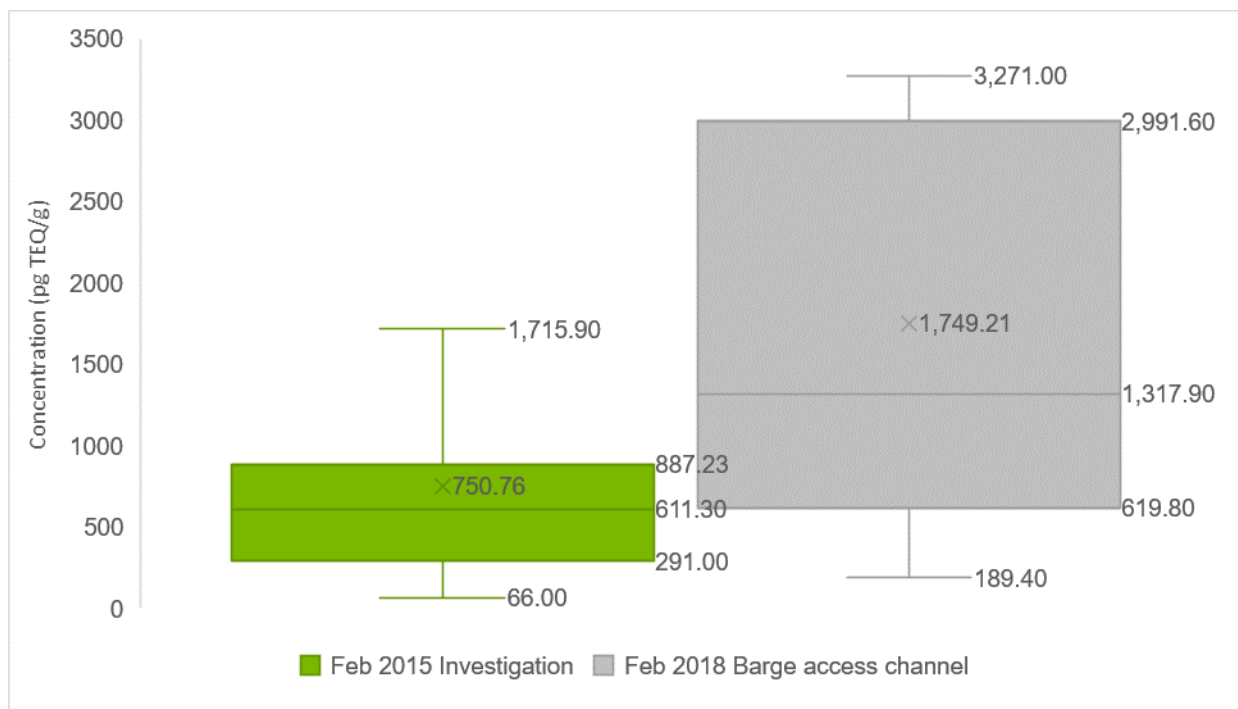


Figure 5.5b Box plot figures showing dioxin Group Total Concentrations pg/g

Figure note: The left boxplot illustrates the dioxin results during the February 2015 investigation within the Gatcombe and Golding Cutting shipping channels and DMPA options. The right boxplot illustrates the dioxin results during this investigation (February 2018).

6 Data validation

6.1 Laboratory quality assurance/quality control

6.1.1 General

Details of the primary and secondary laboratory QA/QC are provided in Appendices D and E. A description of the laboratory QA/QC procedures implemented is provided in Section 2.6.

6.1.2 Sample conditions

All samples were received by the laboratories in appropriate sample containers that were pre-treated and preserved. Samples were stored in a chilled esky with ice bricks whilst in the field and were frozen upon receipt by the laboratory. All samples were delivered to the laboratories within the recommended holding times.

All samples were analysed within the recommended holding times, with the exception of the following:

- TRIP_1A (OCP) 3 days overdue
- TRIP_1A (PCB) 3 days overdue.

Given the majority of samples were analysed within the recommended holding times and the above exceptions are for QA/QC purposes only, it is considered that these samples conditions are acceptable.

6.1.3 Laboratory blanks

The assessment of the laboratory blank samples reported by ALS Environmental reported concentrations of all parameters below the LOR, indicating that the samples were not contaminated during laboratory analysis.

6.1.4 Laboratory duplicates

The assessment of laboratory duplicates is considered generally acceptable, although some exceedances of the NAGD recommended RPD of $\pm 35\%$ were recorded. These exceedances were recorded in the following samples/analytes:

■ BH11_0.0-0.5	■ BH17_0.0-0.5
– Cobalt	– Manganese
– Manganese	■ Anonymous (15 February 2018)
– Zinc	– Manganese

These exceedances are likely due to the heterogeneous nature of the sediments, which comprised variations in particle sizes with sandy clay with trace shell fragments (BH11) and gravelly sand with shell fragments (BH17). The laboratory potentially sub-sampled different sediment particle sizes as part of the analytical process for laboratory duplicates.

The remaining laboratory duplicates are compliant with the RPD criteria. Given the large volume of samples analysed and that only three samples/analytes exceeded the RPD criteria, it is considered that the level of precision for the geochemical data is acceptable.

6.1.5 Laboratory control and matrix spikes

The laboratory control spikes were within the recovery limits for all analytes.

The percent recovery of matrix spikes for ammonia and manganese was not reported for some samples due to primary dilution requirements and the high concentrations in the samples. Matrix spike recoveries were outside the recovery limits in the following samples/analytes:

Recover greater than upper DQO

- BH11_0.5-1.0
 - Phosphorous

Recovery less than lower DQO

- BH11_0.5-1.0
 - C₁₀-C₁₄
 - Monobutyltin
- Anonymous (13 February 2018)
 - Ammonia
- Triplicate_2A
 - C₆-C₉
 - C₆-C₁₀
 - Benzene
- Anonymous (15 February 2018)
 - C₆-C₉
 - C₆-C₁₀
 - Benzene

A number of these contaminants were not detected above LOR in the actual samples. Given this and that these variations from the NAGD (2009) criteria were minor, it is considered the matrix spikes from the analysis are acceptable.

6.2 Field quality assurance/quality control

6.2.1 Trip blanks

Trip blank samples were utilised at a rate of one sample per day. All trip blank results reported no concentrations above the LOR indicating negligible QA issues are evident in relation to the storage and transport of samples.

6.2.2 Rinsates

Rinsate samples were collected at a rate of one sample per day from the sampling equipment after undergoing a standard decontamination. All rinsate samples reported concentrations below the LOR indicating negligible QA issues are evident in relation to the decontamination process and potential for cross contamination between samples.

6.2.3 Field triplicates

Field triplicates were collected to determine the spatial variability in the physical and chemical characteristics of the sediments. The RSD was calculated for each contaminant. NAGD (2009) recommends the RSD of field triplicates should fall within $\pm 50\%$.

A total of two field triplicates were sampled during the Project geochemical investigation within the investigation area. RSDs were calculated and reported within this threshold, with the exception of the samples presented in Table 6.1. QA/QC summary tables are provided in Appendix I.

Table 6.1 Field triplicates exceeding the recommended relative standard deviation

Analyte	Primary sample	Triplicate A	Triplicate B	RSD (%)
BH05 0.0-0.5m (Triplicate_2A; Triplicate_2B)				
C ₁₅ - C ₂₈	5	16	25	65.3
C ₁₀ - C ₃₆ (sum)	5	24	44	80.1
>C ₁₆ - C ₃₄	7	19	31	63.2
>C ₁₀ - C ₄₀ (sum)	7	24	46	76.2
BH14 0.0-0.5m (TRIP_1A; TRIP_1B)				
Iron	10,400	10,200	24,000	78.4
Arsenic	4.02	4.44	11.2	118.2
Copper	13	11.4	25.9	54.9
Cobalt	5.8	5.2	11.2	136.7
Lead	3.2	3.0	6.7	153.4
Manganese	104	98	222	136.5
Nickel	5.5	5.2	11.1	122.2
Selenium	0.2	0.2	0.5	60.6
Vanadium	28.2	25.1	52.8	68.8
Zinc	22.4	20.9	45.1	53.8
Total organic carbon	0.55	0.26	0.68	79.6

A total of 15 field triplicate results exceeded the recommended target RSD. The bulk of these exceedances were from TRIP_1B, which contained contaminants over double the concentration of the primary samples at TRIP_1A. These exceedances are likely due to poor homogenisation of the grab sample, resulting in TRIP_1B containing a variation in sediment size and composition, including approximately double the total organic carbon. The primary sample, BH14 0.0-0.5m, and TRIP_1A are more similar in contaminant concentration and, if the relative percent deviation between these two samples are calculated, there would be no exceedances.

6.2.4 Acid sulfate soil duplicates

Duplicate ASS samples were collected to assess the variability and precision of both the sampling procedure and the analytical laboratory. The RPD was calculated for each ASS parameter and is recommended to fall within the following limit:

- For values < 10 X LOR, any RPD value is acceptable
- For values between 10 and 20 times LOR, 0% to 50% RPD is acceptable
- For values > 20 times LOR, 0% to 20% is acceptable.

A total of seven ASS duplicates were sampled within the investigation area during the Project geochemical investigation. RPDs were calculated and reported within the threshold with the exception of the samples presented in Table 6.2. QA/QC summary tables are provided in Appendix I.

Table 6.2 Acid sulfate soils duplicates exceeding the recommended relative percent deviation

Analyte	Primary sample	ASS Duplicate	RPD (%)
BH01 0-0.5m			
Peroxide Calcium	2.42	1.04	79.8
Acid Reacted Calcium	2.15	0.798	91.7
Peroxide Magnesium	0.277	0.428	42.8
Acid Reacted Magnesium	0.139	0.261	61.0
Excess Acid Neutralising Capacity	1.48	5.18	111.1
BH20 0.0-0.5m			
There were no exceedances of the RPD limits			
BH16 0.0-0.5m			
Peroxide Sulfur	0.229	0.123	60.2
Peroxide Oxidisable Sulfur	0.129	0.067	63.3
Peroxide Calcium	1.05	1.47	33.3
Acid Reacted Calcium	0.834	1.3	43.7
KCl Extractable Magnesium	0.152	0.089	52.3
Peroxide Magnesium	0.241	0.18	29.0
Excess Acid Neutralising Capacity	2.81	4.07	36.6
BH12 0.0-0.5m			
Peroxide Calcium	1.09	0.871	22.3
Acid Reacted Calcium	0.833	0.613	30.4
BH18 0.0-0.5m			
Peroxide Calcium	0.602	3.18	136.3
Acid Reactive Calcium	0.469	3.02	146.2
Excess Acid Neutralising Capacity	1.78	6.88	117.8
BH06 0.0-0.5m			
Peroxide Calcium	1.76	3.87	75.0
Acid Reactive Calcium	1.5	3.61	82.6
Excess Acid Neutralising Capacity	2.77	4.69	51.5
BH08 0.0-0.5m			
Peroxide Calcium	3	3.82	24.1
Acid Reactive Calcium	2.81	3.59	24.4
Excess Acid Neutralising Capacity	7.41	9.37	23.4

Review of the ASS duplicates indicated an overall consistency between primary and duplicate samples suggesting adequate precision from sample collection, handling and laboratory analytical techniques.

6.3 Summary of data validation

A total of 15 field triplicate results exceeded the recommended target RSD. These exceedances are likely due to the inherent heterogeneity of the sample (i.e. variable mixture of particles and grain sizes) and poor homogenisation of the grab sample. Higher variations can also be expected for samples with low analyte concentrations, and higher for organic analytes than for inorganics.

The laboratory and field QA/QC are considered to comply with the NAGD requirements. The analytical results are therefore representative of the physical and chemical characteristics of the sediment.

The quality of the analytical component for the Project geochemical investigation is considered acceptable.

7 Conclusion

The Project geochemical investigation was undertaken in compliance with the SAP and NAGD (2009) by using the vibrocoring and grab sampling process, both NAGD recognised and approved devices for geochemical sampling, and by drilling and sampling at the required density and to the depth of sediments that have the potential to be contaminated. These sampling locations were supplemented by previous sampling within the barge access channel for the WBDDP, which used a combination of vibracoring, push tubes and rotary drilling methods, depending on the sediments encountered (GHD 2009a).

Where guideline values exist under NAGD (2009), an assessment against these was undertaken. Where no values are present under NAGD (2009), a comparison against locally derived reference values (equivalent to the NAGD (2009) term regional ambient baseline levels) was undertaken.

The 95% UCL of all metals and metalloids were below the relevant NAGD (2009) screening levels. A small number of arsenic, chromium and nickel samples demonstrated values slightly above the NAGD (2009) screening levels; however, none of these exceedances were recorded at levels greater than their respective NAGD high levels. This was reiterated by the previous sampling within the barge access channel (GHD 2009a), where the 95% UCL of all metals and metalloids were below the relevant NAGD (2009) screening levels and only a small number of samples contained arsenic, copper and nickel at concentrations above the NAGD (2009) screening levels.

Manganese was also recorded at elevated concentrations within the samples. While the sediments did report a 95% UCL for manganese that was higher than the 500mg/kg EIL during the Project investigation, these concentrations are likely to be naturally occurring, given their spatial and vertical distribution, and are in line with levels previously reported within the Port Curtis area in previous studies (e.g. Angel et al. 2012; GHD 2009a), below values observed by Anastasi and Wilson (2010) in Port Curtis of up to 9,000mg/kg, and below the average abundance of manganese (850mg/kg) observed in Australian soils (AusIMM 2011). In addition, the 95% UCL for manganese from previous sampling within the barge access channel (GHD 2009a) was below the 500mg/kg EIL.

No BTEX, PCBs, OCP and OPP concentrations were detected above the laboratory LOR with the samples analysed during both the Project investigation and previous sampling. Approximately half the samples recorded TRH values over the laboratory LOR and when adjusted to 1.0% TOC, the maximum concentration was 70mg/kg, significantly below the NAGD (2009) screening level of 550mg/kg. During the previous sampling within the barge access channel (GHD 2009a), TPH was also detected in one-third of sediment samples in low concentrations, well below the NAGD screening levels.

Just under a third of samples reported PAHs (comprising perylene) above the laboratory LORs. The sum of the PAHs was low with the normalised data (to 1.0% TOC) reporting a maximum value of 144.7µg/kg, which is significantly below the NAGD (2009) screening level of 10,000 µg/kg. During the previous sampling within the barge access channel (GHD 2009a), PAHs were detected in approximately 58% of sediment samples in low concentrations, well below the NAGD screening levels and comprised perylene and benzo(a)pyrene.

Dioxin concentrations from the Project chemical investigation were below the Dutch Intervention Levels and Canadian PELs, were in line with previous testing undertaken by the former EHP in 2012 and were typical of marine sediments around Australia when compared with the National Dioxins Program (Müller et al. 2004).

While AASS was absent from the sediments within the investigation area, PASS was present in the dredged material in the barge access channel, indicating that management would be required. However, the presence of shell material throughout the investigation area provides the sediments with an acid neutralising capacity, which lowers the risk of acid being produced during dredging and dredged material placement. The laboratory analysis procedure also removes shell fragments above a diameter of 2mm, only including shell fragments below this diameter in the analysis, and subsequent acid-base accounting. The activity of dredging and placement in the reclamation area is likely to crush/grind all or the majority of the shell fragments and make all of the CaCO_3 within the shell material available to neutralise any acid that may be generated. Management measures will be developed in the Project ASS Management Plan.

Geochemical results from this investigation have demonstrated that the sediment from the investigation area and the area to be dredged is **clean** as per NAGD (2009) and is therefore chemically suitable for placement within the WB reclamation area. Therefore, further testing such as elutriate and bioavailability testing is not required.

The appraisal of laboratory and field QA/QC procedures and assessments indicates that the results comply with the NAGD (2009) requirements. The analytical results are therefore representative of the physical and chemical characteristics of the sediment.

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A

Sampling and
Analysis Plan



Project: Port of Gladstone
 Gatcombe and Golding Cutting
 Channel Duplication Project –
 Access Channel and Rehandling Pit
 Sampling and Analysis Plan

Reference: 237374

Prepared for: Gladstone
 Ports Corporation

Revision: A

21 December 2017

Document Control Record

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Document control							aurecon
Report Title		Sampling and Analysis Plan					
Document ID			Project Number		237374		
File Path		N:\02_Advisory\E&A\Projects\Gladstone Ports Corporation\SAP\Approach channel and rehandling pit Sampling and Analysis Plan21122017.docx					
Client		Gladstone Ports Corporation	Client Contact		Anil Bhakta		
Re v	Date	Revision Details/Status	Prepared by	Author	Verifier	Approver	
A	21 December 2017	Draft for client review	MP	MP	PE	AA	
Current Revision		A					

Approval			
Author Signature		Approver Signature	
Name		Name	Adam Anderson
Title		Title	Project Director

Port of Gladstone Gatcombe and Golding Cutting Channel Duplication Project – Access Channel and Rehandling Pit

Date | 21 December 2017

Reference | 237374

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Acronyms

Acronym	Definition
Ag	Silver
ANZECC	Australian and New Zealand Environment and Conservation Council
APLNG	Australia Pacific LNG
ARMCANZ	Agriculture and Resources Management Council of Australia and New Zealand
As	Arsenic
Aurecon	Aurecon Australia Pty Ltd
BHD	Backhoe dredges
BTEX	Benzene, toluene, ethylbenzene, xylene
Cd	Cadmium
CEPA	Commonwealth Environmental Protection Agency
CQPA	Central Queensland Ports Authority
Cr	Chromium
CRC	The Cooperative Research Centre
CSD	Cutter suction dredges
Cu	Copper
DEEDI	Department of Employment, Economic Development and Innovation
DEH	Department of Environment and Heritage
DEHP	Department of Environment and Heritage Protection
DHM	Department of Harbours and Marine
DMPA	Dredge Material Placement Area
DoEE	Department of the Environment and Energy
DQI	Data Quality Indicator
DQO	Data Quality Objective
EA	Environment Australia
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
GLNG	Gladstone LNG
GPC	Gladstone Ports Corporation

Acronym	Definition
GPS	Global Positioning System
Hg	Mercury
ISQG	Interim Sediment Quality Guidelines
LNG	Liquefied Natural Gas
LOR	Limit of reporting
Mn	Manganese
MSQ	Maritime Safety Queensland
NAGD	National Assessment Guidelines for Dredging
NATA	National Association of Testing Authorities
Ni	Nickel
NRG	NRG Gladstone Operating Services Pty Ltd
OCP	Organochlorine pesticides
OPP	Organophosphate pesticides
PAH	Polycyclic aromatic hydrocarbons
Pb	Lead
PCB	Polychlorinated biphenyls
PQL	Practical Quantitation Limits
QA	Quality assurance
QAL	Queensland Alumina Ltd
QC	Quality control
QCLNG	Queensland Curtis LNG
QER	Queensland Energy Resources Pty Ltd
RPD	Relative percent deviation
SAP	Sampling and Analysis Plan
Sb	Antimony
SEWPaC	Department of Sustainability, Water, Populations and the Community
TBT	Tributyltin
TOC	Total organic carbon
TRH	Total recoverable hydrocarbons
TSHD	Trailer suction hopper dredges
UCL	Upper confidence limit
WICET	Wiggins Island Coal Export Terminal
Zn	Zinc



1 Introduction

1.1 Background

The Port of Gladstone has been identified by the Queensland Government as a major industrial centre for the future of Australia. It is Queensland's largest multi-commodity port, the world's fifth largest coal export terminal, and one of the busiest ports in Australia, vital to the local, state and national economies. Major exports from the port include coal, alumina, cement, petroleum, aluminium and agricultural resources. It is estimated that 250-300 million tonnes of product will be handled annually by the Port within the next 50 years (GPC 2012).

The introduction of the Liquefied Natural Gas (LNG) industry to the Gladstone region and the commencement of the Wiggins Island Coal Export Terminal (WICET) will substantially increase the throughput of the Port of Gladstone in the near future.

The current ability of the Port to accommodate high volumes of shipping traffic is limited by the channel depth and lack of passing capacity in the one way channel. Due to increasing development pressures and access demands from present and future Port developments, there is a need to duplicate the channel to support the growth of the Gladstone region.

The duplicate channel is proposed to be developed parallel to the existing Gatcombe and Golding shipping channels, facilitating a two-way rite of passage from the outer harbour, around East Banks, to the western side of Facing Island. This will release a bottleneck which will likely result with the increase in the total number of vessels handled annually in order to meet the committed trade. As part of this duplication project dredging of an access channel and rehandling pit in the vicinity of Fisherman's Landing are proposed to facilitate disposal of the channel duplication dredge sediments.

1.2 Dredging description

1.2.1 Location of dredging

Gladstone Ports Corporation (GPC), as the governing authority of the Port of Gladstone, proposes to dredge a duplicate shipping channel, running parallel to the existing Gatcombe and Golding Cutting shipping channels promoting two-way passage. It is proposed that a portion of the dredge spoil from the channel duplication project be disposed in the Western Basin reclamation area. In order to facilitate this disposal a rehandling pit and associated access channel are required to be dredged adjacent to the existing reclamation area.

The proposed access channel is 90 m wide and will be dredged to - 11 LAT, while the rehandling pit covers an area 306 m x 232 m and will be dredged to a depth of - 18 m LAT. The proposed dredge footprint is detailed in Figure 1. The likely volumes and timing of dredging is outlined in Table 1.1.

Legend

- Sampling locations
- Grid (63.82m)
- Dredger access channel and pit location
- Material to be dredged

Notes:

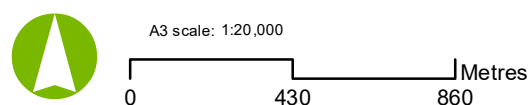
Date: 23/03/2018

Version: 1

Name	Longitude	Latitude	Easting	Northing
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2	151.169175	-23.772052	313436.73	7369808.337
3	151.169785	-23.773211	313500.55	7369680.697
4	151.170395	-23.774371	313564.37	7369553.057
5	151.171005	-23.775531	313628.19	7369425.417
6	151.172241	-23.776698	313755.83	7369297.777
7	151.172835	-23.77901	313819.65	7369042.497
8	151.174063	-23.780753	313947.29	7368851.037
9	151.175275	-23.783649	314074.93	7368531.937
10	151.177763	-23.784831	314330.21	7368404.297
11	151.178999	-23.785998	314457.85	7368276.657
12	151.181488	-23.78718	314713.13	7368149.017
13	151.183976	-23.788362	314968.41	7368021.377
14	151.189579	-23.790733	315542.79	7367766.097
15	151.193312	-23.792505	315925.71	7367574.637
16	151.19768	-23.793709	316372.45	7367446.997
17	151.200787	-23.795474	316691.55	7367255.537
18	151.202031	-23.796065	316819.19	7367191.717
19	151.205772	-23.797261	317202.11	7367064.077
20	151.207635	-23.798435	317393.57	7366936.437
21	151.21075	-23.799624	317712.67	7366808.797

Port of Gladstone Gatcombe and Golding Cutting Channel Duplication Project

Figure 1: Sediment Sampling Locations for Approach Channel and Rehandling Pit



Job No:
Coordinate System: GDA 1994 MGA Zone 56

Table 1.1 Dredging location, volumes and timing

Location	Design depth (m LAT)	Timing (weeks)	Volume (m ³)*	Area (ha)
Gatcombe and Golding Cutting – Access channel	-11	3	590,000	346,224
Gatcombe and Golding Cutting – rehandling pit	-18	5	830,000	70,991
Combined over dredge allowance (0.3m)	-	-	128,576	-
Total Dredge Volume	-	-	1,548,576	-

Table note: *Includes 0.3 m (depth) allowance for potential over-dredging

1.2.2 Equipment and methodology

The dredging is expected to commence in 2018 or later, with the commencement date being dependent on when the channel duplication project begins. The estimated duration of dredging is expected to be approximately 8 weeks with dredging equipment expected to operate 17 hours per day, 7 days per week.

It is currently proposed that a cutter suction dredge (CSD) will be used for the access channel and rehandling pit dredging.

Preliminary investigations have not identified rock within the dredge footprint and as such blasting will be avoided where possible to prevent disturbance to marine megafauna in the area. However, it is necessary to include a blasting option should hard or fractured material be encountered that cannot be managed by the dredging machinery.

The dredging methodology and equipment are dependent on the dredge material placement area(s), dredging depth, type of material to be dredged, Commonwealth and State approval conditions, and the dredge contractor.

The dredge methodology adopted will be subject to Maritime Safety Queensland's (MSQ) Regional Harbour Master acceptance of the successful dredge contractor's detailed execution plan. The dredge contractor will also need to comply with MSQ's Standard for Marine Construction Activities within Gladstone Harbour (Department of Transport and Main Roads 2012).

Recent sampling and dredging programs undertaken within the proposed Channel Duplication footprint are predominantly related to the maintenance dredging of the shipping channels, swing basins and berths undertaken by GPC (GHD 2012; GHD 2006). A summary of the previous dredging campaigns and sediment results in the areas within and adjacent to the proposed dredging footprint is provided in Sections 2.2.2 and 2.2.3.

While sediments within the Port of Gladstone are generally considered as '*probably clean*' (as defined by the NAGD 2009) through the results of previous sampling and dredging programmes (refer Section 2.2), this information was only used to inform the sampling methodology and the information was not utilised to reduce the number of sampling locations, as allowed by NAGD (2009).

1.3 Purpose of this report

This Sampling and Analysis Plan (SAP) outlines the proposed sampling plan and program required to characterise the contamination status of the sediments within the proposed access channel and



rehandling pit footprint. The results of the sampling program will be used to undertake an assessment of the suitability of the sediments for disposal. As the requirements of the National Assessment Guidelines for Dredging 2009 provide a stringent baseline for the testing of marine sediments, the results will be compared against these requirements for offshore disposal.

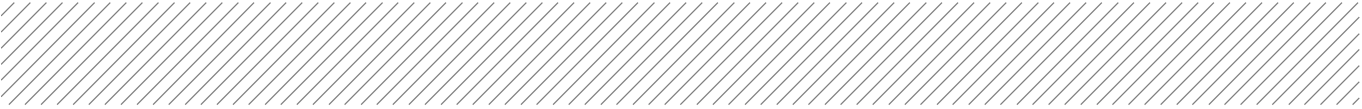
This SAP addresses Phase I – *evaluation of existing information* and Phase II – *sampling and analysis of sediments* as detailed in NAGD (2009). If required, Phase III, Phase IV and Phase V of NAGD (2009) will be addressed through a Supplementary SAP.

A separate SAP has been developed for the dredge disposal location(s) with the Western Basin

The results of this sampling program will inform the Environmental Impact Statement (EIS) for the Port of Gladstone Gatcombe and Golding Cutting Channel Duplication Project.

The SAP has been prepared by Aurecon Australia Pty Ltd (Aurecon) on behalf of GPC with reference to the following guidelines:

- National Assessment Guidelines for Dredging (NAGD) (2009)
- *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended in April 2013 (National Environment Protection Council 2013)
- Australian and New Zealand Water Quality Guidelines (ANZECC/ARMCANZ 2000)
- Queensland Water Quality Guidelines (DEHP 2013)
- Monitoring and Sampling Manual (DEHP 2010)



2 Description of Port Curtis

2.1 Geology

The geology of the Gladstone region has been mapped by the Geological Survey of Queensland, as shown on the 1:100,000 Gladstone Sheet 9150 (DEEDI 2005). The geologic map indicates that Curtis Island is underlain by rocks from the Palaeozoic-Devonian Wandilla Formation. The Wandilla Formation normally consists of sequences of mudstone, quartz greywacke and chert units, which are overlain by Quaternary alluvial, colluvial and marine sediments.

The geological survey mapping does not extend offshore to the access channel and rehandling pit dredge footprint. However, it is likely that alluvial deposits carried down the Boyne River will be encountered offshore within the Project footprint. The undifferentiated alluvium layers stemming from the Boyne River are likely to be of Quaternary age and comprise a mixture of clay, silt, sand and gravel.

The stratigraphy of the proposed dredge footprint is likely to comprise the following:

- Young (Holocene) Alluvium (marine sediments)
- Underlain by old (Pleistocene) Alluvium
- Underlain by bedrock of the Wandilla Formation

Previous works have shown that the Port Curtis area usually demonstrates young alluvium comprising of a thin layer of Holocene aged estuarine clay and recently deposited marine sediments, with a thickness from 0.5 m to approximately 5 m in un-dredged areas, and is described as soft clay and loose sand/gravel with shell fragments.

The young alluvium is typically underlain by residual clays of older alluvium, comprising sandy clay, clayey sand, gravelly sand and clay. The gravel and sand are typically intersected in discrete pockets up to 1 m thick. This is underlain by extremely weathered bedrock of the Wandilla Formation.

Dominant substrate at all depths is usually sand and then clay; however deeper samples taken during the Western Basin Dredging and Disposal Project EIS sampling found higher proportions of gravels with the finer sediments being located generally within the top 0.5 m with gravel or sand layers likely to be located in the top 10 m of sediment. Sandy clayey sediments typical of the Gladstone area, with 30% fines are expected to be found in the access channel and rehandling pit dredge footprint.

2.2 Previous investigations and potential pollution sources

2.2.1 Potential pollution sources

The Gladstone region contains the city of Gladstone and a variety of coastal and hinterland townships, including Boyne Island/Tannum Sands, Yarwun, Targinie, Miriam Vale and Calliope. Industries within the catchment include pastoral, agricultural and processing and manufacturing. Major processing and manufacturing industries located within the Gladstone region are summarised in Table 2.1. Major imports and exports handled within the Port on behalf of local industries and industries located within the Central Queensland hinterland are provided in Table 2.2. Potential pollutant sources in the Port of Gladstone and the associated contaminants are listed in Table 2.3 and are used to inform the analysis of sediment samples (refer Section 3.2.6).

Table 2.1 Major industries in the Gladstone region

Industry name	Industry type
QAL – Queensland Alumina Ltd	Alumina refinery
Rio Tinto Aluminium Yarwun	Alumina refinery
Boyne Smelters Limited	Aluminium smelter
Cement Australia	Cement and clinker plant
NRG – NRG Gladstone Operating Services Pty Ltd	Coal fired power plant
Auckland Point Terminal	Wharves – bulk trades, grain, petroleum products, containers and break bulk products
Barney Point Terminal*	Dry bulk and new trade opportunities
RG Tanna Coal Terminal (RGCT)	Coal terminal
WICET	Coal terminal
Australia Pacific LNG (APLNG)	LNG facility
Gladstone LNG (GLNG)	LNG facility
Queensland Curtis LNG (QCLNG)	LNG facility
QER – Queensland Energy Resources Pty Ltd	Oil shale miner and medium shale oil and naphtha plant
Orica Australia Pty Ltd	Sodium cyanide, ammonium nitrate and chlorine plant

*Coal operations ceased in May 2016.

Source: Updated from Central Queensland Ports Authority (CQPA) (2006)

Table 2.2 Major imports and exports of Port of Gladstone

Imports	Exports
Bauxite	Alumina
Break bulk	Aluminium
Bunker oil	Ammonium nitrate
Caustic soda	Break bulk
Cement gypsum	Calcite
Containers	Cement
Copper slag	Cement Clinker

Imports	Exports
General cargo	Coal
Liquid ammonia	Containers
Liquid pitch	Fly ash
LP gas	General cargo
Magnetite	Ilmenite
Petroleum coke	Limestone
Petroleum products	LNG
	Magnesia
	Magnesite
	Scrap metal
	Sorghum
	Wheat

Source: GPC (2017)

Table 2.3 Potential pollutant sources and contaminants of concern in the Port of Gladstone

Industry	Potential pollutant sources	Associated contaminants of concern
Shipping	Hydrocarbons (fuels and oils)	Total recoverable hydrocarbons (TRH) Benzene, toluene, ethylbenzene, xylene (BTEX)
	Anti-fouling paints	Polycyclic Aromatic Hydrocarbons (PAHs) Organotins (Tributyltin (TBT), Dibutyltin (DBT) and Monobutyltin (MBT))
	Spillage of product during import and export (bauxite, coal, clinker, alumina etc)	Heavy metals (including Sb, As, Cd, Cr, Cu, Pb, Hg, Mn, Ni, Ag, Zn) PAHs TRH BTEX
Natural geology	Metals (especially arsenic and nickel)	Heavy metals (including As, Mn, Ni, Ag, Zn)
Industrial discharges	Intentional and/or unintentional waste products discharged from nearby industries	Heavy metals (including Sb, As, Cd, Cr, Cu, Pb, Hg, Mn, Ni, Ag, Zn) PAHs TRH Polychlorinated biphenyls (PCB)
Landfills	Metals and other leachates – few likely in Gladstone as only small inactive landfills present close to the coast	Heavy metals (including Sb, As, Cd, Cr, Cu, Pb, Hg, Mn, Ni, Ag, Zn)
Agriculture and horticulture	Herbicides, pesticides and fertilisers – however it should be noted that agriculture/horticulture has reduced in the Gladstone area in recent years	Organochlorine and Organophosphate pesticides (OCP and OPP) Ammonia Nutrients (eg total phosphorous and total nitrogen)
Stormwater	Urban stormwater discharges	Heavy metals (including Sb, As, Cd, Cr, Cu, Pb, Hg, Mn, Ni, Ag, Zn)

Industry	Potential pollutant sources	Associated contaminants of concern
		PAHs TRH BTEX
Sewage treatment plants	Secondary treated water re-used at local industrial sites	Heavy metals (including Sb, As, Cd, Cr, Cu, Pb, Hg, Mn, Ni, Ag, Zn)

Source: GHD (2012)

As can be seen from the export / import history of Port Curtis, there are few inputs to the system of arsenic, zinc, silver or manganese. This further demonstrates that the previously recorded exceedances over the NAGD (2009) Screening Levels of these elements in sampling undertaken across the Port Curtis area are likely due to naturally occurring geological deposits rather than anthropogenic inputs to the system.

2.2.2 Previous dredging campaigns

The Port of Gladstone has a long history of dredging and disposal of dredged material both onshore and offshore. Table 2.4 lists previous dredging and sea dumping permits that have been applied for and received by GPC (previously known as CQPA and Gladstone Port Authority) under both State and Commonwealth legislation since the 1960's. Please note that total dredging volumes approved may not have always been dredged and there may be cross-over between approved dredge volumes between Commonwealth and State Government approvals (i.e. total volume approved/dredged in Gladstone is not a simple addition of the total volumes listed in the table).

Table 2.4 GPC dredging and sea dumping history

Year	Dredge location	Permit type	Permit number	Agency	Legislation	Issued/ expired	Volume (m ³)	Sea dump site
1965	Auckland Point Berth and swing basin	Dredging and Sea Disposal	-	Department of Harbours and Marine (DHM)	<i>Harbours Act 1955 - 1972</i>	Issued: 15/07/65	480,000 (Auckland Point)	Picnic Island Dump Ground
1975	Not stated	Section 86 & Sea Disposal	-	DHM	<i>Harbours Act 1955 - 1972</i>	Issued: 12/12/75		Near Boyne Channel
1979	Auckland Point to Clinton Coal Facility Channel	Section 86 & Sea Disposal	-	DHM	<i>Harbours Act 1955 - 1978</i>	Issued: 7/06/79		Inside harbour
1982	Dredging Marina Basin between Auckland Inlet and the Calliope River	Section 86	-	DHM	<i>Harbours Act 1955 - 1982</i>	Issued: 27/05/85	12,000,000	
1986	Clinton Channel, Auckland Channel, outer channel, Clinton Berth & Clinton Swing Basin		-	DHM	<i>Harbours Act 1955 - 1983</i>	Issued: 10/06/86	2,500,000	
1987	Outer Channel	Section 86	-	DHM	<i>Harbours Act 1955</i>	Issued: 31/07/86	(extension of permit time – 1986 works)	
1988	Fisherman's Landing and Targinie Channel	Section 86	H-466	DHM			(extension of permit time – 1986 works)	
1993	Maintenance and Capital dredging - Outer Channel (deepening)	Sea Dumping Permit	-	Commonwealth Environmental Protection Agency (CEPA)	<i>Environment Protection (Sea Dumping) Act 1981</i>	Issued: 10/03/93 – Expired: 10/03/94	1,000,000 (capital and maintenance)	East Banks
1994-1995	Maintenance and Capital dredging - Outer Channel (deepening) extension of permit from 1993	Sea Dumping Permit	-	CEPA	<i>Environment Protection (Sea Dumping) Act 1981</i>	Issued: 23/02/94 – Expired: 10/03/95	Extension of permit time (1994-1995 works above)	East Banks

Year	Dredge location	Permit type	Permit number	Agency	Legislation	Issued/ expired	Volume (m³)	Sea dump site
1995	Maintenance Dredging - Golding Cutting	Sea Dumping Permit	-	CEPA	<i>Environment Protection (Sea Dumping) Act 1981</i>	Issued: 17/05/95 - Expired: 17/06/95	3,000 (maintenance)	East Banks
1996	Maintenance Dredging and spoil removal	Sea Dumping Permit	-	CEPA	<i>Environment Protection (Sea Dumping) Act 1981</i>	Issued: 12/10/96 Expired: 17/06/95	100,000	East Banks
1997	Fisherman's Landing & Targinie Channel Areas A, B and D	Section 86	H-466 / CR2162	Department of Environment and Heritage (DEH)	<i>Harbours Act 1955</i>	Issued: 1/12/97 – Expired: None		
1997	Dredging and interim spoil disposal	Section 86 Amendment	-	DEH	<i>Harbours Act 1955</i>	Issued: 10/12/97 – Expired: None		Fisherman's Landing (temporarily)
1997	Maintenance and Capital dredging - Outer Channel	Section 86	-	DEH	<i>Harbours Act 1955</i>	Issued: 31/07/86 – Expired: None	100,000	East Banks
1997	Amendment to Maintenance and Capital dredging - Outer Channel	Sea Dumping Permit Amendment	-	CEPA	<i>Harbours Act 1955</i>	Issued: 28/04/97 – Expired: 15/10/97	900,000	East Banks
1997-1998	Amendment to Maintenance and Capital dredging - Outer Channel	Sea Dumping Permit Amendment	-	CEPA	<i>Harbours Act 1955</i>	Issued: 32/09/97 – Expired: 31/03/98	Extension of permit time	East Banks
1998	Golding Cutting Bypass Channel & Maintenance Dredging	Sea Dumping Permit	-	CEPA	<i>Environment Protection (Sea Dumping) Act 1981</i>	Issued: 22/04/98 – Expired: 22/04/99	60,000 (capital)	East Banks
1998	Shipping channels and berths	Sea Dumping Permit	-	CEPA	<i>Environment Protection (Sea</i>	Issued: 22/04/98 – Expired: 22/04/00	100,000 (maintenance)	East Banks

Year	Dredge location	Permit type	Permit number	Agency	Legislation	Issued/ expired	Volume (m³)	Sea dump site
					<i>Dumping) Act 1981</i>			
1998	Golding Cutting Bypass Channel	Section 86	-	Environmental Protection Agency (EPA)	<i>Harbours Act 1955</i>	Issued: 17/08/98 – Expired: None		
1998	Inner Channel Swing Basin	Unknown	-				2,000,000	
1999	Inner channel	Unknown	-				2,000,000	
1999-2000	Maintenance Dredging	Sea Dumping Permit				09/09/1999-0906-2000	300,000	East Banks
2000	Shipping channels – maintenance dredging	Sea Dumping Permit	-	CEPA	<i>Environment Protection (Sea Dumping) Act 1981</i>	Issued: 25/07/00 Expired: 25/07/01	250,000	East Banks
2001-03	RGTCT Berth 3, Fisherman's Landing, Targinie Channel and Clinton Bypass Channel		-					
2001	RGTCT Berth 3	Section 86	-	EPA	<i>Harbours Act 1955</i>	Issued: 14/09/01 – Expired: None		
2001	RGTCT Berth 3	Marine Dredging By-Laws	01/855020	EPA	<i>Harbours Act 1955</i>	Issued: 08/10/01 – Expired: 07/10/02		
2001-2002	Maintenance Dredging	Sea Dumping Permit				05/07/01 to 08/07/02	300,000	East Banks
2002-2007	Maintenance Dredging	Sea Dumping Permit	SD2002/0006			08/07/02 to 08/07/07	1,000,000	East Banks
2002	Clinton Bypass Channel	Section 86	CSTW00089302	EPA	<i>Harbours Act 1955</i>	Issued: 24/12/02 – Expired: None	176,000	
2002-04	Targinie Channel	Marine Dredging By-Laws	02/855001	EPA	<i>Harbours Act 1955</i>			

Year	Dredge location	Permit type	Permit number	Agency	Legislation	Issued/ expired	Volume (m ³)	Sea dump site
2003-04	Clinton Bypass Channel	Marine Dredging By-Laws	CSDR00090302	EPA	<i>Harbours Act 1955</i>		176,000	
2003	Targinie Channel & Clinton Bypass Channel	Sea Dumping Permit	-	Environment Australia (EA)	<i>Harbours Act 1955</i>	Issued: 21/03/03 – Expired: 21/09/03	20,000	East Banks
2004	RGTCT Berth 4		EPBC2004/1619	Department of Environment and Heritage (DEHP)	EPBC Act 1999	Issued: 29/07/04		
2004	RGTCT Berths	ERA19C	CG1111DA	EPA	<i>Integrated Planning act 1997</i>	Issued: 16/06/04	100,000 m ³ /year	
2005	RGTCT Berth 4	Reclamation	2004/1906	DEHP	EPBC Act 1999	Issued: 10/01/05		
2005	RGTCT Berth 4	Marine Dredging By-Laws	ENAD00236905	EPA	<i>Coastal Protection and Management Act 1995</i>	Issued: 19/09/05 – Expired: 18/09/11	750,000	
2007	Maintenance dredging - Whole of Port (shipping channels, turning basins & berth pockets)	Sea Dumping Permit	SD2007/0622	Department of Sustainability, Environment, Water, Populations and the Community (SEWPaC)	<i>Environment Protection (Sea Dumping) Act 1981</i>	Issued: 07/11/07 – Expired: 07/11/12	1,000,000	East Banks
2008	Clinton bypass channel	Sea Dumping Permit	SD2008-0922	SEWPaC	<i>Environment Protection (Sea Dumping) Act 1981</i>	Issued: 13/11/08 – Expired: 13/11/09	100,000	East Banks
2008-2009	Fisherman's Landing berth pocket and approach	Marine Dredging By-Laws	ENAD00739408	EPA	<i>Coastal Protection and Management Act 1995</i>	Issued: 28/02/08	660,000	

Year	Dredge location	Permit type	Permit number	Agency	Legislation	Issued/ expired	Volume (m³)	Sea dump site
2009-2010	Gladstone Marina		ROK2008/3516	DERM	<i>Coastal Protection and Management Act 1995</i>		350,000	
2010-2013	Maintenance dredging - Whole of Port (shipping channels, turning basins & berth pockets) (extension of timeframe)	Sea Dumping Permit	SD2007/0622	Department of Sustainability, Environment, Water, Populations and the Community (SEWPaC)	<i>Environment Protection (Sea Dumping) Act 1981</i>	Issued: 07/11/12 Expired: 07/02/13	Remainder of 1,000,000 not previously dredged (2007)	East Banks
2010-2011	Early works access to Curtis Island		ENAD0121010 / SPDE00271810	DERM			475,000	
2010-2015	Capital dredging – Western Basin	Sea Dumping Permit	SD2010/1742	SEWPaC	<i>Environment Protection (Sea Dumping) Act 1981</i>	22/10/10 to 22/10/15	11,000,000	East Banks
2010-2012	Capital (Clinton Bypass Wedge Variation)	Sea Dumping Permit	SD2010/1743	SEWPaC	<i>Environment Protection (Sea Dumping) Act 1981</i>	06/12/10 to 06/12/12	65,000	East Banks
2010-2011	Capital dredging, QGC MOF	Sea Dumping Permit		SEW-PaC	<i>Environment Protection (Sea Dumping) Act 1981</i>	24/12/10 to 24/12/11	70,000	East Banks
2011 - present	Western Basin Main Works dredging	ERA(16)	SPDE01443011 /SPDE01611411	DERM	<i>Coastal Protection and Management Act 1995</i>	Amendment issued 26/03/2012	25,800,000	East Banks (portion)
2013-2014	Maintenance dredging	Sea Dumping Permit	2012/2362	DoE	<i>Environment Protection</i>	18/12/13 to 18/12/14	350,000	East Banks

Year	Dredge location	Permit type	Permit number	Agency	Legislation	Issued/ expired	Volume (m³)	Sea dump site
					(Sea Dumping) Act 1981			

All material dredged in recent years has had sampling and analysis undertaken prior to dredging and all material has been determined as suitable for its intended disposal location. A summary of recent dredging programmes with corresponding sampling programmes is provided in Table 2.5.

The majority of sediment sampling within Port Curtis has previously occurred as part of the dredging campaigns within the inner channels, generally north of the Calliope River (ie the Western Basin Project).

Table 2.5 Recent dredging programmes in the Port of Gladstone

Project	Timing of dredging	Volume (Mm ³)	Disposal	Timing of sampling programme
Western Basin Dredging and Disposal Project (Western Basin Project) (GHD 2009a)	May 2011 – September 2013	25	Fisherman's Landing Northern Expansion and Western Basin reclamation area East Banks Dredge Material Placement Area (DMPA)	16 November 2008 – 17 June 2009
GLNG Project (URS 2009)				29 July – 5 August 2009 23 – 27 August 2009 21 – 22 September 2009
WICET Project (Connell Hatch 2006)	May 2012 – February 2013	2.9	WICET Reclamation Areas	22 July – 15 October 2008 23 January – 15 July 2006
Maintenance dredging of the shipping channels, swing basins and berths (GHD 2012; GHD 2006)	Annual	1 (across 5 years)	East Banks DMPA	19 – 23 June 2012 17 – 24 July 2006

2.2.3 Previous sediment investigation results

A review of previous sediment data from the Port Curtis area has indicated that although Gladstone is an urban and industrial area, results show relatively few incidences of sediments with elevated metal results. A review of the previous sediment investigation works undertaken for GPC indicate that approximately the top 30 cm of sediment within Port Curtis is likely to be post 1950s with this sediment band being the most likely (if any) to contain contaminants from anthropogenic inputs. This is in agreement with Vicente-Beckett *et al.* (2006) who demonstrated that anthropogenic influenced sediments are likely to only occur in the top 0.28 m. Below this depth, elevated levels of metals, if detected, are likely to be naturally occurring and related to geology within the area.

The occurrence of naturally elevated levels of some metals was demonstrated by Connell Hatch (2006), who reported elevated levels of silver at depths of >6 m within the sediments tested offshore of Port Curtis. The Cooperative Research Centre (CRC) (Apte *et al.* 2005; Apte *et al.* 2006; Vicente-Beckett *et al.* 2006) also reported elevated levels of arsenic at depth and attributed the arsenic levels as being due to natural geology rather than anthropogenic in origin.

In addition to the large array of geotechnical investigations, a number of reports relating to water and sediment quality, in relation to environmental testing levels, are also available for the Port Curtis area. The earliest of these studies examining the sediment dates back to the early 1990s (as reported in GHD 2012), with the most recent being the Western Basin EIS (GHD 2009a). Most of the studies were undertaken in order to inform dredging campaigns (both capital and maintenance) or to support dredge license applications. Although the currency of the data is now greater than the preferred five years (as specified in the NAGD 2009), since the data was collected to supply geotechnical and environmental information, it is considered appropriate for informing on the background locality information to these dredging works.



A comprehensive sampling programme was undertaken for both the Western Basin EIS (GHD 2009a) and the Fisherman's Landing Northern Expansion Project (GHD 2009b). The Western Basin sampling comprised of a total of 189 samples with extensive environmental testing. This work demonstrated that the presence of minor concentrations of anthropogenic contaminants and naturally occurring compounds in individual samples across the areas to be dredged. Individual results that were above NAGD (2009) and/or Draft Guidelines for the Assessment and Management of Contaminated Land in QLD (EPA 1998) – Environmental Investigation Levels included arsenic, cadmium, copper and manganese levels. Individual samples also recorded concentration of BTEX, hydrocarbons and individual PAHs above the limits of reporting but below the relevant guidelines.

Angel *et al.* (2010) investigated dissolved metal levels in Port Curtis and concluded that nickel and manganese are likely to be released by natural processes such as reduction of manganese (hydr)oxides and leaching by the lower sediment and water pH.

Arsenic has previously been demonstrated to occur naturally within the Port with Vicente-Beckett *et al.* (2006) determining that the concentrations of arsenic (as well as nickel and chromium) in the Port Curtis region were at natural background levels very close to the Australian and New Zealand Environment and Conservation Council (ANZECC) ISQG-low guidelines.

The following sections provide further detail on those metals/metalloids (namely arsenic, manganese, silver and zinc) that have consistently been recorded within sediment samples during the previous investigations at levels above the NAGD (2009) Screening Level and, as such, can be regarded as 'Contaminants of Concern' under the NAGD (2009).

2.2.3.1 Arsenic

Sediment testing within the Port Curtis area has consistently reported levels of arsenic above the NAGD Screening Level for a number of the dredge programme investigations. Sediment sampling for the Western Basin Project recorded arsenic concentrations exceeding the NAGD Screening Levels on 56 occasions (5% of all samples). Of these samples, only 11 (1% of all samples) were obtained from the top 0.5 m of sediment, indicating the sediments contain a natural source of arsenic, rather than an anthropogenic source.

Geochemical testing for the WICET Project identified three samples of the 75 samples analysed (equating 4%) that reported arsenic concentrations exceeding the NAGD Screening Levels. These samples were all taken at a depth greater than 6.0 m.

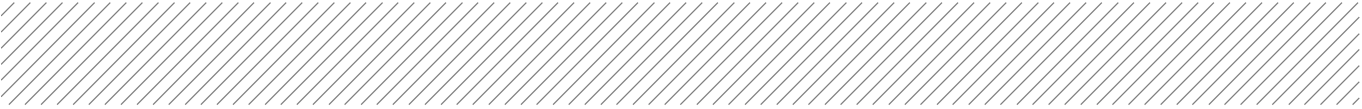
Sediment sampling undertaken for the GLNG Project recorded 12 samples (7% of all samples) exceeding NAGD Screening Levels for arsenic. Of these, half the samples were taken within the top 0.5 m layer of sediment.

The QCLNG Jetty Optimisation Study (Geocoastal Australia 2009) investigated the sediment composition in Port Curtis. The study determined a strong relationship between arsenic-containing sediments and residual and weathering products of the Wandilla Formation of Curtis Island.

Sediment sampling conducted for maintenance dredging of the shipping channels (GPC 2012) recorded elevated concentrations of arsenic above NAGD Screening Levels in four samples from a total of 47 samples with the samples all taken within the top 1 m of sediment.

Previous testing for maintenance dredging in 2006 also recorded 17 samples above the Screening Levels but below the NAGD high value (equating 53% of all samples with the 95% UCL for arsenic exceeding the NAGD Screening Level. Again, these samples were all taken within the top 1 m of sediment.

In the samples taken for maintenance dredging, although the sediments reporting elevated arsenic levels were within the top 1 m, it is impossible to ascertain whether these sediments were recent



anthropogenic deposits or older deposits that naturally contain arsenic deposits that have slumped into the maintenance channel.

However, the widespread occurrence of arsenic in local sediments is consistent with the local geological formations surrounding Port Curtis. Arsenic is common in marine mudstones (Wandilla Formations) where it is substituted for sulfur in marine pyrite and in mineralised sequences surrounding granite intrusions (Mount Larcom region). The arsenic is often immobilised into pyrite structures until exposed to weathering. An investigation into sediment contamination in Port Curtis by Vicente-Beckett *et al.* (2006) also identified that heavy metal concentrations, including arsenic, were close to ANZECC ISQG-low guidelines.

2.2.3.2 Manganese

Manganese is an abundant element in the Earth's crust with many minerals containing manganese, of which the two most common are pyrolusite (MnO_2) and rhodochrosite (MnCO_3). Mining of manganese was common within the Gladstone area, including the historic Mount Millar manganese mine. Several exploration permits for striking manganese ore deposits are active and located approximately 15 km west of Gladstone.

In Port Curtis, Angel *et al.* (2010) investigated dissolved metal levels, including manganese, and concluded that manganese is likely to be released by natural processes, such as reduction of manganese (hydr)oxides and leaching by the lower sediment and water pH.

As manganese is not specified within the NAGD (2009) guidelines, previous samples from both the Western Basin and GLNG Projects were compared against the Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (EPA 1998), which utilises a Trigger Value of 500 mg/kg. Numerous samples with manganese in excess of this Trigger Value were recorded across the dredge footprints and at all sediment depths.

As would be expected with a naturally occurring metalloid, there was however no clear pattern of distribution of manganese with depth and concentrations at individual boreholes are likely to be a result of multiple erosion and deposition cycles that have occurred over the geologic past.

2.2.3.3 Nickel

While sediment sampling for the WICET Project and Port of Gladstone maintenance dredging did not exceed the NAGD Screening Levels for nickel, sampling for the Western Basin Project recorded 28 exceedances (2.6% of all samples). Of these samples, 22 were recorded at depths greater than 0.5 m and outside the sediment layer of anthropogenic influence. As such, these elevated nickel concentrations are likely to be naturally occurring as sporadic cases of weathered substrate material that have become concentrated.

Sediment samples taken during the GLNG Project exceeded NAGD Screening Levels for nickel on eight occasions (4.7% of all samples). Of these, only two of the eight samples were taken from within the top 0.5 m of sediment and are within the level of anthropogenic influence.

Sediment quality investigations undertaken for QCLNG identified 13 samples (1.1% of all samples) with nickel exceeding NAGD (2009) Screening Levels. Of these samples, 11 were taken from within Pleistocene clays and two were taken in silty clayey gravel/sands immediately above the pre-Holocene boundary. This supports the finding that levels of nickel exceeding the sediment quality guidelines appear confined to pre-Holocene sediments (GHD 2009a). Elevated nickel concentrations in consolidated clays have previously been identified in the Port of Melbourne and in Ralphs Bay, Tasmania (Aurecon 2010).



As previously discussed, Angel *et al.* (2010) found that the water concentrations of some heavy metals exceeded the background levels in surrounding coastal waters. These heavy metals included nickel and manganese, which were likely to have been released by natural processes.

2.2.3.4 Silver

During sampling for the WICET Project, the NAGD Screening Levels for silver were exceeded in nine samples with seven of the samples in excess of the NAGD High Level of 3.7 mg/kg. All these samples were taken at depths ranging from 2 to 11 m. It was suggested in the WICET Project EIS (Connell Hatch 2006) that from the geomorphology of the area (ie alluvium likely transported by the Calliope River) and the depths of exceeding samples, that silver is a natural occurrence in Port Curtis and was located too deep to represent anthropogenic contamination.

2.2.3.5 Zinc

Zinc has been identified in the sediment within the Port of Gladstone, at concentrations exceeding the NAGD Screening and High Levels.

Sediment sampling for the WICET Project identified one sample with zinc above the NAGD Screening Levels (1.3% of all samples). Two samples were recorded in a single borehole for the Western Basin Project (1.8% of all samples) that exceeded the NAGD High Level of 410 mg/kg. These samples were collected from BH 2A-22 (from the APLNG berth pocket adjacent Curtis Island) at depths of 6 – 6.4 m and 13 – 13.4 m, which are depths well below the likely anthropogenic influence and therefore are likely to be attributable to natural geological influence. Zinc is naturally found in basalt, biotite (a constituent of granite), magnetite and shale, which are common throughout the Gladstone region. Despite the exceedances, the 95% upper confidence limit (UCL) for zinc did not exceed the NAGD High Level.

2.2.3.6 Other metals and contaminants

A few occurrences of other metals such as cadmium, copper, lead, mercury and TBT have also been detected over the NAGD (2009) Screening Levels (although TBT has not been recorded in recent years) but none (other than PAHs as discussed below) demonstrated 95% UCL over the NAGD Screening Levels and as such have not been discussed further.

A single sample recorded concentrations of the PAHs, acenaphthene and fluorene, in excess of the NAGD (2009) Screening Levels during the maintenance dredging sediment sampling conducted in July 2006. As a result, the 95% UCL exceeded the NAGD Screening Levels for these contaminants. Subsequent elutriate testing of the sample indicated that water column impacts were not likely during ocean disposal and re-extraction of the primary sample was clean, which suggested that the original sample was particularly heterogeneous. The presence of tar or coal was provided as a possible explanation for the anomaly (GHD 2006).

Sediment sampling was conducted by the Queensland Department of Environment and Heritage Protection during February–March 2012 at 31 sites throughout Port Curtis. Testing covered a wide range of metals and metalloids, pesticides, and petroleum hydrocarbons, including PAHs and BTEX (the aromatic hydrocarbons benzene, toluene, ethylbenzene and xylene), as well as PCBs, dioxins and dioxin-like chemicals. Almost all measured concentrations were less than guideline trigger values, and the very few exceedances of one metalloid (arsenic) were not significantly over the guideline. For dioxins and dioxin-like chemicals, the levels in Port Curtis sediments were consistent with the range in urban/industrial locations elsewhere in Australia (Department of Environment and Heritage Protection 2012)



3 Sampling and Analysis Plan

3.1 Introduction

3.1.1 Objectives

This SAP has been prepared to meet the requirements outlined in the NAGD (2009) for the assessment of sediment quality (Phase I and Phase II).

The SAP also provides guidance for the assessment of the contamination status of the material to be dredged, including the appropriate sample collection, handling, storage, analysis methods and quality control requirements.

The objectives of the SAP are to:

- Identify and justify the analytes to be tested
- Develop a set of procedures for assessing the data and ensuring the data obtained is acceptable and sufficient for assessing the suitability of the dredge material for disposal
- Develop a set of procedures to provide a statistically valid representation of the physical and chemical properties of the dredge material
- Develop procedures for quality assurance and control and data validation for field sampling and laboratory analysis
- Characterise the sediments to be dredged during the access channel and rehandling pit Project
- Determine the suitability of sediments for offshore disposal

The following sections outline the procedures for sampling and sub-sampling consistent with the Appendix D of the NAGD (2009), including sample handling, preservation, storage and quality assurance (QA) and quality control (QC). It should be noted that while field procedures will be developed by the Contractor, they will be required to adhere to the Commonwealth Department of the Environment and Energy (DoEE) approved SAP and NAGD (2009).

3.1.2 Responsible parties

GPC is the proponent for the proposed Channel Duplication Project (including the access channel and rehandling pit dredging) at the Port of Gladstone. GPC has engaged Aurecon for the preparation of this SAP and provision of the results of the sediment sampling as supporting information for the EIS for the Gatcombe and Golding Cutting Channel Duplication Project.

The SAP will also provide supporting information for the authorities that are assessing the development approvals for the Gatcombe and Golding Cutting Channel Duplication Project.

A laboratory holding National Association of Testing Authorities (NATA) certification for the required analyses will be contracted to undertake chemical analysis of the samples.

3.1.3 Occupational health and safety

Sediment sampling will be undertaken in reference to a suitable occupational health and safety plan. This includes sample collection, processing and handling, and will be supplemented by health and safety documentation from the vessel contractor. This is to ensure the safety, health and welfare for personnel for all work performed within the contracted work-scope, and that the safety, health and welfare of others, including the public and the natural environment are not affected by that work. In particular, the occupational health and safety plan will address safety in relation to working over water and addressing potential adverse weather conditions.

Given the majority of sediment to be collected is *probably clean*, risk to human health from hazardous materials is not anticipated. However, appropriate sample collection, processing and handling techniques will be developed as part of an occupational health and safety plan and will be implemented during sediment sampling.

3.1.4 Personnel and vessel requirements

The vessel from which sampling is undertaken will have an appropriate sample processing area, free from debris and residue and removed from motors and exhaust, to minimise the potential for sample contamination. The sample processing area will be washed down prior to use.

Two appropriately qualified and experienced environmental scientists (or equivalent) will be on board the vessel to direct, log and provide records of sampling, take photographs, process and package samples in accordance with NAGD (2009) and make sure they are delivered to the analytical laboratory within the required holding times.

3.1.5 Contingency planning

The Contractor and associated vessel employed to undertake sampling will be required to have contingency plans in place for adverse weather conditions and/or equipment malfunction to prevent any impacts on the timing of the field programme.

The Contractor and field staff will also make themselves aware of environmental conditions that may affect sampling, including the depth of water (which is variable across the areas to be sampled), tidal currents and onshore winds.

3.1.6 Review of the SAP

This SAP has been prepared by Aurecon, on behalf of GPC, to comply with NAGD (2009). The results of the SAP will provide supporting information for the Gatcombe and Golding Cutting Channel Duplication Project EIS and subsequent permit applications required to undertake capital dredging and disposal.

The draft SAP will be submitted for review by the Commonwealth DoEE and the Queensland DEHP. Final approval will be granted by the DoEE as the assessment authority.

The results of the sampling and analysis will be presented within a SAP Implementation Report as supporting information for the EIS and any subsequent permit applications, with a copy of the final SAP as an appendix.

3.2 Sampling of sediments to be dredged

3.2.1 Design of sampling program

According to the NAGD guidelines, capital dredging programmes that are not located in pristine sites in remote or offshore areas, such as the access channel and rehandling pit Project, can calculate the number of sampling locations based on the volume of *potentially contaminated* dredge material. *Potentially contaminated* material is sediment that is contiguous with an area of known contamination, or sediment that has been exposed to known contamination sources (NAGD 2009). It does not include the volume of underlying natural geographic materials which are, except for a boundary layer, expected to be uncontaminated.

Although studies undertaken within Port Curtis indicate that anthropogenic influenced sediments are likely to only occur in the top 0.28 m (Vicente-Beckett *et al.* 2006), it is considered conservative to regard the top 0.5 m as being *potentially contaminated*. As discussed in Section 2.2, the majority of recent sediment sampling for capital dredging within Port Curtis has previously occurred within the inner channels, generally north of the Calliope River (ie the Western Basin Project). The only sediment sampling that has occurred within the outer channels in the past five years occurred in June 2012 for the shipping channel maintenance dredging.

Previous sediment testing from the maintenance dredging in the outer channels of Port Curtis found sediment quality to be compliant with NAGD guidelines and can be considered to be *probably clean*. However, given a conservative approach has been adopted for this SAP, the number of sampling locations will not be reduced based on this assumption.

The full number of sampling locations for the dredge footprint was calculated using the volume of *potentially contaminated* material. The proposed access is to be dredged to a depth of -11 m LAT and the rehandling pit to a depth of -18 m LAT. The total channel footprint and rehandling pit, including batter slopes, equates to an area of 428,585 m². The volume of *potentially contaminated* material is therefore 214,293 m³ if considering a 0.5 m depth of *potentially contaminated* material. The volume of *probably clean* sediments is approximately 1.334 Mm³, resulting in a total dredge volume of 1.549 Mm³ (including 0.3 m of over dredging).

Although this *probably clean* material does not require sampling to be undertaken as it contains only underlying natural geographic materials, it is proposed that testing be undertaken at 1 m intervals (with samples taken at 0.5 m intervals and those samples not tested to be stored) in order that the distribution of any naturally occurring metals can be ascertained.

Table 3.1 outlines the number of proposed boreholes in accordance with Table 6 of the NAGD guidelines (2009) for a volume of *potentially contaminated* material to be dredged between 182,000 – 223,000 m³.

Table 3.1 Proposed number of sampling locations

Sediment classification	Volume of dredge material (m ³)	Minimum number of sampling locations (NAGD) for Phase II sampling
<i>Probably contaminated</i>	214,293	21
<i>Probably clean</i>	1,334,283	Not required, however, samples will be taken at 0.5 m intervals for full dredge depth for all boreholes with those taken at the 1 m interval tested

The sampling sites have been randomly allocated in accordance with the method outlined in NAGD (2009). A square grid was laid over the dredge footprint with at least five times the number of grid squares as there is sampling locations (ie 105 grids squares) (refer Figure 1). Due to the long and thin

nature of the proposed dredge channel, the following additional work was required to allocate the grid squares:

1. The side of each of the grid squares was calculated with a total area $\div 105 = 4,081.8 \text{ m}^2$
2. A grid was created which extends over the full extent of footprint and their centroids
3. A spatial selection of all grid squares and centroids that intersect the footprint was performed
4. 21 random points were allocated, constrained to the centroids selected using ArcGIS 10.1 Advanced – Create Random Points Tool
5. If the point fell outside the actual dredge footprint, it was snapped to the boundary of the dredge footprint – top of batter (while still falling within its grid square)

The sampling locations are displayed in Figure 1 and listed in Table 3.2. Samples will be collected at the centre of each grid square with the actual sampling to be taken as close as possible to the GPS coordinates generated.

Table 3.2 Proposed sediment sample locations

Sampling location	Easting	Northing	Sampling type
1	313564.37	7369872.157	Phase II
2	313436.73	7369808.337	Phase II
3	313500.55	7369680.697	Phase II
4	313564.37	7369553.057	Phase II
5	313628.19	7369425.417	Phase II
6	313755.83	7369297.777	Phase II
7	313819.65	7369042.497	Phase II
8	313947.29	7368851.037	Phase II
9	314074.93	7368531.937	Phase II
10	314330.21	7368404.297	Phase II
11	314457.85	7368276.657	Phase II
12	314713.13	7368149.017	Phase II
13	314968.41	7368021.377	Phase II
14	315542.79	7367766.097	Phase II
15	315925.71	7367574.637	Phase II
16	316372.45	7367446.997	Phase II
17	316691.55	7367255.537	Phase II
18	316819.19	7367191.717	Phase II
19	317202.11	7367064.077	Phase II
20	317393.57	7366936.437	Phase II
21	317712.67	7366808.797	Phase II

3.2.2 Depth of sampling and collection method

Samples will be collected using a vibrocoring method designed to retrieve continuous, undisturbed core samples from unconsolidated and semi-consolidated sediments. The core barrel (approximately 76 mm diameter) is vibrated into the sediment whilst fixed to the vibrocorer head. The sediment in



immediate contact of the core barrel forms a 'liquefied' boundary layer by the vibration mechanics enabling the core barrel to penetrate the sediment strata. In the field, GPS coordinates of each sampling site will be recorded and sites plotted on a map of appropriate scale. Differential GPS will be used, giving an accuracy of not less than +/- 10 m.

The corer will be used to collect samples to below the depth of dredging (-18.1 m LAT in the rehandling pit and - 11.1 m LAT in the access channel) or until refusal. The required depth of each core will be determined from bathymetry at each sampling location while in the field.

3.2.3 Sub sampling of cores

The cores are to be split on recovery and sub sampled on one split only. The other split is to be stored in appropriate conditions in the event that retesting and further Phase II is required.

Following logging of each core, grab samples will be collected along the core in 250 mL glass jars for volatile analysis. The remaining samples will be collected by placing approximately 0.5 m lengths of each representative core into a stainless steel mixing bowl and mixing the sample to make a homogeneous mix.

The following intervals will be used for testing of physical and chemical characteristics:

- 0.0 – 0.5 m
- 0.5 – 1 m
- Every 1 m thereafter until below dredge depth

It is likely that five samples will be taken for geochemical testing for each borehole within the actual channel and rehandling pit, whilst those boreholes within the slope batter will likely only have a top sample taken.

The remaining samples which have not been analysed will be retained in case further testing is required.

3.2.4 Sample volume and containers

The volume of sediment collected for each sample must be adequate to conduct all required chemical and physical analyses. Based on Table 5 of the NAGD (2009), it is anticipated that 250 mL of sediment per sample/replicate for chemical analysis and 500 mL for particle size will be adequate for the basic Phase II suite.

Samples will be placed in laboratory supplied glass jars with Teflon-lined lids or zip-lock bags as required by the laboratory. Jars will be completely filled with sample. Sample volume and container requirements will be confirmed with the laboratory prior to sample collection.

3.2.5 Field measurements

The following field measurements will be recorded on an appropriate field data sheet:

- Date and time of sampling of each core
- Person conducting sampling, client, project, sample location identifier, GPS coordinates of actual sampling location
- Core logs – each core will be logged with reference to AS 1726 – Geotechnical Site Investigations, before samples are processed. Details recorded will include depth, physical appearance (eg sand, clay), colour, odour, plasticity, sand grain size and presence of organic matter, marine organisms, coal particles, shell layers and other relevant features

- Water quality – each sample will be logged with reference to ANZECC/ARMCANZ (2000) and visual observations such as turbidity (by eye), odour, colour etc will be recorded as well as in situ instrument readings including temperature, dissolved oxygen, electrical conductivity and pH
- Photographs – digital photographs (minimum resolution of 12 megapixels) will be taken of each sediment core and sampling equipment/methodology
- Tides – the tide chart for each day of sampling will be included in the report and water depth at the time of sampling recorded. Observations such as falling/rising tides will also be recorded
- Weather – weather conditions including wind speed, sea state, currents and rainfall for each day of sampling will be recorded

3.2.6 Analysis of sediment samples

3.2.6.1 Geochemical

All samples will be analysed for the following analytes:

- TRH
- Metals and metalloids (Sb, As, Cd, Cr, Cu, Pb, Hg, Mn, Ni, Ag, Zn)
- Ammonia
- Nutrients (total phosphorous and total nitrogen)
- Dioxins (12 randomly selected boreholes, sample taken from top 0.5 m)
- OCP and OPP
- PCB
- Organometallics (TBT, DBT, MBT)
- PAHs
- Total organic carbon (TOC)
- BTEX
- Acid sulfate soils

Refer Table 3.3 for further information regarding the analytes to be investigated.

3.2.6.2 Physical characteristics

Settling rates and particle sizes (sieve and hydrometer) will be analysed on selected samples that are representative of the sediment types and layers that are identified.

3.2.6.3 Geotechnical cores

Other physical characteristics, such as bulk density and shear velocities will also be investigated as part of the geotechnical sampling programmes.

3.2.7 Data assessment

Results of chemical testing will be assessed for compliance to the Screening Levels specified in Table 2 of the NAGD guidelines (2009) and the revised sediment quality values as provided in Simpson *et al.* (2013). Concentrations of organic contaminants, including organometallics and PAHs, will be adjusted to 1% TOC before being compared to Screening Levels. Statistical analyses of the data will include the calculation of 95% UCL of the mean as specified in the NAGD (2009). Where no NAGD Screening Level exists (e.g. manganese) the levels outlined in the Draft QLD Contaminated Land guidelines (EPA 1998) will be utilised.

The analysis data will be checked and validated with unusual results rechecked by the laboratory within the holding times.

If contaminants exceed the Sediment Quality Guidelines (High) Levels presented in Table 4 of the NAGD (2009), toxicity tests are required as outlined in Section 3.2.8. If this occurs, a Supplementary SAP will be prepared and submitted to DoEE and DEHP for approval and will detail any required Phase III or Phase IV sampling and analysis.

Table 3.3 outlines the Screening Levels and the High Levels for the analytes to be investigated.

Table 3.3 Contaminant Screening and High Levels for sediment

Chemical	Units	NAGD (2009) Practical Quantification Limits (PQL)	NAGD (2009) Screening Level ¹	NAGD (2009) High Level ¹	Draft QLD Contaminated Land guidelines (EPA 1998)
Metals and metalloids					
Antimony	mg/kg	0.5	2	25	
Arsenic	mg/kg	1	20	70	
Cadmium	mg/kg	0.1	1.5	10	
Chromium	mg/kg	1	80	370	
Copper	mg/kg	1	65	270	
Lead	mg/kg	1	50	220	
Mercury	mg/kg	0.01	0.15	1	
Manganese	mg/kg	10	-	-	500
Nickel	mg/kg	1	21	52	
Silver	mg/kg	0.1	1.0	3.7 (4.0)	
Zinc	mg/kg	1	200	410	
Organometallics²					
Tributyltin	µg Sn/kg	1	9	70	
Organics²					
TRH C6-C10	mg/kg	100	-	-	
TRH >C10-C16	mg/kg	100	-	-	
TRH >C16-C34	mg/kg	100	-	-	
TRH >C34-C40	mg/kg	100	-	-	
Total TRH	mg/kg	100	550 (280)	- (550)	
Total PCB	µg/kg	5	23 (34)	- (280)	
Total PAH	µg/kg	5	10,000	45,000 – 50,000 (50,000)	
DDD	µg/kg	5	2 (3.5)	20 (9.0)	
DDE	µg/kg	5	2.2 (1.4)	27 (7.0)	
Total DDT	µg/kg	5	1.6 (1.2)	46 (5.0)	
Dieldrin	µg/kg	5	280 (2.8)	270 e/ 620 (7.0)	
Chlordane	µg/kg	5	0.5 (4.5)	6 (9.0)	
Lindane	µg/kg	5	0.32 (0.9)	1.0 (1.4)	
Endrin	µg/kg	5	10 (2.7)	120 e/ 220 (60)	
Dioxins	µg/kg	0.02	-	-	

Chemical	Units	NAGD (2009) Practical Quantification Limits (PQL)	NAGD (2009) Screening Level ¹	NAGD (2009) High Level ¹	Draft QLD Contaminated Land guidelines (EPA 1998)
Inorganics					
Ammonia (NH ₃ -N/L)	mg/kg	0.1	- (4)	- (4.5)	
BTEX					
Benzene	µg/kg	200	-	-	
Toluene	µg/kg	200	-	-	
Ethylbenzene	µg/kg	200	-	-	
Xylene	µg/kg	200	-	-	

Table note: ¹ Values provided in brackets represent revised sediment quality values as provided in Simpson *et al.* (2013).

² For comparison to revised sediment quality values (Simpson *et al.* 2013), concentrations will be normalised to 1.0% total organic carbon

3.2.8 Further analysis (Phases III & IV)

If contaminants of concern are identified at concentrations exceeding the Screening Levels outlined in the NAGD (2009), the deeper sample/s for that location will be analysed. Where concentrations exceed the Screening Levels and deeper samples do not, a Supplementary SAP will be prepared detailing additional elutriate, bioavailability, toxicity and bioaccumulation testing proposed to be undertaken as required and as outlined in Phases III & IV of the NAGD (2009) and in consultation with the DoEE and DEHP.

3.3 Data quality objectives and indicators

3.3.1 Data quality objectives

Data Quality Objectives (DQOs) are qualitative and quantitative statements derived from the outputs of the first six steps of the seven steps DQO process that:

- Clarify the study objective
- Define the most appropriate type of data to collect
- Determine the most appropriate conditions from which to collect data
- Specify tolerable limits on decision errors which will be used as the basis for establishing the quantity and quality of data needed to support the decision

The DQO process (AS4482.1-2005) follows a systematic approach for defining the criteria that a data collection design should satisfy, including the number of samples and when, where and how to collect these samples. DQOs are employed to develop a scientific and resource-effective data collection design to assure decision makers that the type, quantity and quality of environmental data are appropriate for the intended application. In addition, decision makers will guard against committing resources to data collection efforts that do not support defensible decisions.

The DQOs for this SAP have been developed to define the type and quality of data required to achieve the objectives stated in Section 3.1.1. The DQOs were selected with reference to relevant guidelines published by the NAGD (2009) and the ANZECC/ARMCANZ (2000), which define minimum data requirements and quality control procedures.

These matters are addressed in the seven-step DQO approach presented in Table 3.4.

Table 3.4 Data Quality Objectives

Process	Response
Step 1: State the Problem	The contamination status of the material proposed to be dredged is required to be assessed in accordance with the requirements outlined in the NAGD (2009)
Step 2: Identify the Decision	The principle objectives of the SAP are as follows: - Identify and justify the analytes to be tested - Develop a set of procedures for assessing the data and ensuring the data obtained is acceptable and sufficient for assessing the suitability of the dredge material for disposal - Develop a set of procedures to provide a statistically valid representation of the physical and chemical properties of the dredge material - Develop procedures for quality assurance and control and data validation for field sampling and laboratory analysis - Characterise the sediments to be dredged during the access channel and rehandling pit Project - Determine the suitability of sediments for offshore disposal
Step 3: Identify the Inputs to the Decision	- Dredging design depth and volume - Previous investigations within the Port of Gladstone - Industries and potential pollutant sources within the Port of Gladstone - History of dredging and sea dumping within the Port of Gladstone
Step 4: Define the Boundaries of the Study	The ultimate dredge footprint to -11 m LAT for the access channel and -18 m LAT for the rehandling pit is illustrated in Figure 1
Step 5: Develop a Decision Rule	The assessment program has been designed to characterise the sediments to be dredged using the following criteria: - NAGD (2009) Screening Levels - NAGD (2009) High Values - Simpson <i>et al.</i> (2013) - Draft QLD Contaminated Land guidelines (EPA 1998) where NAGD Screening Levels are not available
Step 6: Specify Tolerable Limits on Decision Errors	The Data Quality Indicators (DQIs) have been established to set acceptance limits on field and laboratory data collected during the investigation
Step 7: Optimise the Design for Obtaining Data	The SAP was developed in accordance with the NAGD 2009. Nominated samples judged as being representative of sediment values will be submitted for analysis as described in Section 3.2.7. Samples are to be analysed by a NATA Accredited Laboratory within approved sample withholding times.

3.3.2 Data Quality Indicators

The DQIs for the assessment are presented in Table 3.5.

Table 3.5 Data Quality Indicators

DQI	Field	Laboratory	Acceptability limits
Completeness	Sediment proposed to be dredged pose a potential risk to health, safety and the environment and require	- All required samples analysed - Appropriate methods	As per NAGD 2009 and Simpson <i>et al.</i> (2013)

DQI	Field	Laboratory	Acceptability limits
	- investigation to characterise and assess the suitability for disposal - Appropriate sampling procedures to be used - Experienced field team to undertake sampling - Correct documentation to be completed	- Appropriate Limits of Reporting (LORs) - Appropriate PQLs - Sample documentation correct - Sample holding times in compliance	
Comparability	- Correct sample procedures used at each location - Experienced field team - Same type (medium, volume and sampling technique) of samples collected	- Same analytical methods used - Appropriate LORs - Samples submitted to the same NATA accredited laboratory - Analytical data is presented in the same unit	As per NAGD 2009
Representativeness	- Appropriate media sampled - All media identified (i.e. sediment)	All required samples analysed	As per NAGD 2009
Precision	- Correct sample procedures used at each location - Collection of appropriate QA/QC samples	Analysis of: - Duplicate samples - Laboratory duplicate samples	Relative percent deviation (RPD) of 30-50%
Accuracy	- Sampling procedures appropriate and complied with - Collection of appropriate QA/QC samples	Analysis of: - Method blanks - Laboratory surrogate spikes - Laboratory control samples - Reference material	- Non-detect for contaminants of concern 70-130%

3.4 Quality control and quality assurance procedures

3.4.1 Decontamination

Prior to use, the survey vessel must be thoroughly inspected and washed down. Any evident sources of contamination (such as copper or brass, or galvanised or oily surfaces) will be cleaned, covered in plastic and taped down to avoid accidental contamination of any sample. Lead diving weights will be stowed away and work surfaces will be covered with clean plastic sheeting.

3.4.2 Sampling equipment

Stainless steel, uPVC or Teflon equipment will be used, where practicable, to minimise the risk of cross contamination of samples. The following procedure will be used for cleaning the sampling vibrocores, or any equipment used to handle samples, prior to obtaining each sample to be submitted for chemical analysis:

- An initial rinse with seawater
- A detergent solution scrub (Decon 90)
- A seawater rinse
- A final distilled water rinse

3.4.3 Sample collection

All staff collecting sediment samples will wear disposable nitrile, powder free gloves for each individual sample collected. This will ensure no cross-contamination between sample locations and sample depths occurs.

3.4.4 Sample preservation

Once samples are collected and labelled, they will be promptly stored in the dark at less than 4°C (on ice bricks) and transported to the testing laboratory within the specified holding times, ideally within 24 hours. Samples will be collected, preserved, stored and transported according to the requirements of the NAGD (2009) and instructions given by the analytical laboratory accompanied by a Chain of Custody form.

3.4.5 Sample labels

Each sample will be labelled with a sample number. The sample number will be unique to a particular sample and will be recorded with indelible ink on both the waterproof label and the cap of the sample bottle in case the sample label is lost or destroyed.

Table 3.6 identifies the sample types and the prefixes for the specific samples that will be used in the identification of the different samples for the access channel and rehandling pit Project.

Table 3.6 Identification of samples

Sample type	Sample label prefix
Borehole samples (locations 1 – 21)	BH (eg BH01 – BH21)
Triplicates	T (eg T01)
Trip blanks	TB (eg TB01)
Rinsates	R (eg R01)

3.4.6 Analytical testing laboratories

All laboratories used for analysis will be NATA accredited and experienced in the chemical and physical analysis of marine sediments. 5% of samples will be checked with an independent NATA accredited laboratory.

3.4.7 Chain of Custody

Chain of Custody forms will detail all samples collected and dispatched to the laboratory for analysis, including any specific comments or requirements (eg notes that samples are of marine origin and where samples are expected to be contaminated, or where ultra-trace tests are required). Details provided on the Chain of Custody forms will be as follows:

- Sampler
- Nature of sample
- Collection date
- Analysis requested
- Preservation method

- Time sampled
- Condition of samples at dispatch
- Staff contact details

3.4.8 Laboratory QA/QC procedures

In accordance with the NAGD (2009), the NATA accredited laboratories will include a range of QA/QC methods, which are summarised in Table 3.7.

Table 3.7 Laboratory QA/QC procedure details

QA/QC procedure	Analysis rate	Details
Laboratory blank	1 per 20 samples (or fewer)	Laboratory blanks are submitted with each sample batch during analysis to determine the level (if any) of cross contamination that may occur during laboratory preparation, extraction and/or analysis. Analysis of the laboratory blanks should result in contaminant concentrations that do not exceed the detection limit
Laboratory control	1 per 20 samples (or fewer)	Laboratory controls are submitted with each sample batch and contain known concentrations. Analysis of the laboratory controls should result in contaminant concentrations that do not deviate from the known concentration to determine the accuracy of the laboratory analysis
Laboratory spike (surrogate and matrix)	1 per 20 samples (or fewer)	A surrogate laboratory spike involves additions of a known concentration of compounds that are similar to those analysed, but are not likely to be present in the environment. The recovery of these compounds indicates the ability of the laboratory to extract the specified analyte. Surrogate spikes are generally performed on organic compounds A matrix laboratory spike is performed by splitting a sample and spiking it with a known contaminant concentration. The recovery of the contaminant is calculated and used to determine interference from the sediment upon the level of recovery
Laboratory duplicates	1 per 10 samples (or fewer)	Laboratory duplicates uses relative percent difference of an intra-laboratory split sample material to analyse laboratory precision

3.4.9 Analysis of QA/QC samples

In addition to the internal laboratory quality assurance procedures, field replicates and quality assurance replicates will be collected and tested for the basic suite of contaminants of concern. Field QA/QC procedures to be implemented during sampling and analysis are outlined in Table 3.8.

Table 3.8 Field QA/QC procedures

QA/QC procedure	Frequency	Details
Trip blank	Once per day	One container filled with inert material (provided by the laboratory) to be transported with samples and analysed for volatile compounds
Rinsate blank	Once per day	One rinsate container collected during the decontamination process where cross-contamination of samples is likely
Field triplicate	10% of samples	Two replicate samples collected at the same location as the primary sample and analysed to determine the variability of the sediment physical and chemical characteristics
Inter-laboratory duplicate	5% of samples	Replicate samples collected from the same homogenised sediment as the primary sample and analysed by the primary laboratory and secondary laboratory to identify variation associated with sub sample handling and variation in analytical protocol

3.4.10 Validation and checking of laboratory results

Upon receipt of laboratory results, QA/QC results will be checked and the results reviewed for inconsistencies or atypical results. Validation of the laboratory data and field quality control samples will be undertaken according to the requirements of the NAGD (2009) and presented in the report.

3.5 Reporting

Once the approved SAP has been carried out, the SAP Implementation Report will be prepared and will contain the following sections:

- Introduction/purpose of the SAP
- Details of the sampling, including sample locations and depths, sample numbers (including QA samples), completed Chain of Custody forms, field logs, descriptions of the sediments and any issues encountered or deviations from the procedures outlined in the SAP
- Methodology including sample collection, processing, storage and analysis
- Results including compliance to NAGD (2009) Screening Levels and Simpson *et al.* (2013) , statistical analyses and data validation. All laboratory results and field data will be appended in full
- QA/QC assessment of field and laboratory data and comparison to the DQOs
- Discussion, including an assessment of the suitability of the dredge material for various disposal options as required under the NAGD (2009)
- Conclusions and recommendations

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B

Borehole
logs



Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		13.2.18		Northing		7369870.00		Slope		90°	
Completed Drilling		13.2.18		Easting		313562.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 3.50m: Silty CLAY: Grey brown, high plasticity, with fine grained sand, with shell fragments to 0.25m, >PL, firm			ASS D ES PSD	0.0-0.5m: ES, PSD, ASS, D, ASS Duplicate 1	
									ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
									ASS ES PSD	1.0-2.0m: ES, PSD, ASS	
			2						ASS ES PSD	2.0-3.0m: ES, PSD, ASS	
			3						ASS ES PSD	3.0-3.5m: ES, PSD, ASS	
			4			Borehole BH-01 Terminated at 3.50 m				Target depth	
			5								
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		13.2.18		Northing		73690810.00		Slope		90°	
Completed Drilling		13.2.18		Easting		313439.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 0.60m: Silty CLAY: Dark grey, medium to high plasticity, with fine grained sand, some black inclusions noted (Possible hydrocarbons), >PL, soft			ASS ES PSD	0.0-0.5m: ES, PSD, ASS, D	
						0.60m to 1.40m: Sandy CLAY: Grey mottled brown, high plasticity, trace peat, ~PL, very stiff			ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
									ASS ES PSD	1.0-1.4m: ES, PSD, ASS	
			2			Borehole BH-02 Terminated at 1.40 m				Target depth	
			3								
			4								
			5								
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		14.2.18		Northing		7369682.00		Slope		90°	
Completed Drilling		14.2.18		Easting		313497.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 2.40m: Silty CLAY: Dark grey brown, medium to high plasticity, trace fine grained sand, trace shell fragments, >PL, soft to firm.			ASS D ES PSD	0.0-0.5m: ES, PSD, ASS, D	
			2						ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
									ASS ES PSD	1.0-2.0m: ES, PSD, ASS	
									ASS ES PSD	2.0-2.8m: ES, PSD, ASS	
			3			2.40m to 2.80m: Silty CLAY: Pale green grey, medium plasticity, with fine to medium grained sand, <PL, very stiff.					
						Borehole BH-03 Terminated at 2.80 m				Refusal	
			4								
			5								
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374		
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO		
Location						Checked By				
Started Drilling		14.2.18		Northing		7369550.00		Slope 90°		
Completed Drilling		14.2.18		Easting		313566.00		Bearing ---		
								Equipment Vibrocore		
								Ground Level		
DRILLING			MATERIAL DESCRIPTION					TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)
			1			0.00m to 0.15m: Sandy CLAY: Dark grey brown, medium plasticity, fine to coarse grained sand, with shell fragments, >PL, very soft. 0.15m to 3.50m: Silty CLAY: Dark grey brown, high plasticity, trace shell fragments, trace fine to medium grained sand, >PL, soft to firm.			ASS ES PSD	0.0-0.5m: ES, PSD, ASS
			2						ASS ES PSD	0.5-1.0m: ES, PSD, ASS
			3						ASS ES PSD	1.0-2.0m: ES, PSD, ASS
			4						ASS ES PSD	2.0-3.0m: ES, PSD, ASS
			5			3.50m to 3.70m: Silty CLAY: Pale grey green, medium plasticity, with fine to medium grained sand, <PL, stiff to very stiff.			ASS ES PSD	3.0-3.7m: ES, PSD, ASS
Borehole BH-04 Terminated at 3.70 m										Refusal
Remarks:										

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		14.2.18		Northing		7369426.00		Slope		90°	
Completed Drilling		14.2.18		Easting		313633.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 3.95m: Silty CLAY: Dark grey brown, high plasticity, trace shell fragments, with fine to medium grained sand, >PL, soft.			ASS D ES PSD	0.0-0.5m: ES, PSD, ASS, D, Triplicate 2A	
						0.50m: Trace fine to medium grained sand.			ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
									ASS ES PSD	1.0-2.0m: ES, PSD, ASS	
			2						ASS ES PSD	2.0-3.0m: ES, PSD, ASS	
									ASS ES PSD	3.0-4.0m: ES, PSD, ASS	
			3						ASS ES PSD	4.0-4.3m: ES, PSD, ASS	
			4			3.95m to 4.15m: Sandy CLAY: Dark grey brown, low plasticity, fine to coarse grained sand, ~PL, stiff.			ASS ES PSD		
						Borehole BH-05A Terminated at 4.30 m				Refusal	
			5								
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		14.2.18		Northing		7369423.00		Slope		90°	
Completed Drilling		14.2.18		Easting		313635.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 0.15m: Sandy CLAY: Dark grey brown, medium plasticity, fine to coarse grained sand, with shell fragments, >PL, very soft. 0.15m to 1.50m: Silty CLAY: Dark grey brown, high plasticity, trace fine grained sand, >PL, soft.			ES	0.0-0.5m: Triplicate 2B	
			2			Borehole BH-05B Terminated at 1.50 m				Target depth	
			3								
			4								
			5								
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		14.2.18		Northing		7369424.00		Slope		90°	
Completed Drilling		14.2.18		Easting		313634.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
						0.00m to 0.15m: Silty CLAY: Dark grey brown, high plasticity, with fine grained sand, trace shell fragments, >PL, very soft. 0.15m: Trace fine to medium grained sand, soft. 0.50m to 1.80m: Soft to firm.			ES	0.0-0.5m: ES	
						Borehole BH-05C Terminated at 1.80 m				Target depth	
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		14.2.18		Northing		7369296.00		Slope		90°	
Completed Drilling		14.2.18		Easting		313748.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 0.50m: Silty CLAY: Dark grey brown, medium plasticity, with fine to coarse grained sand, trace shell fragments, >PL, soft.			ASS ES PSD	0.0-0.5m: ES, PSD, ASS, ASS Duplicate 6	
			2			0.50m to 3.90m: High plasticity, trace fine to medium grained sand.			ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
			3						ASS ES PSD	1.0-2.0m: ES, PSD, ASS	
			4						ASS ES PSD	2.0-3.0m: ES, PSD, ASS	
			5			3.60m: Firm.			ASS ES PSD	3.0-3.9m: ES, PSD, ASS	
Borehole BH-06 Terminated at 3.90 m										Refusal	
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		15.5.18		Northing		7369038.00		Slope		90°	
Completed Drilling		15.2.18		Easting		313821.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 0.50m: Clayey SAND: Dark grey brown, low plasticity, fine to coarse grained sand, with shell fragments, wet.			ASS D ES PSD	0.0-0.5m: ES, PSD, ASS, D	
						0.50m to 1.60m: Sandy CLAY: Dark grey brown, medium plasticity, fine to medium grained sand, with shell fragments, >PL, soft.			ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
									ASS ES PSD	1.0-2.0m: ES, PSD, ASS	
			2			1.60m to 4.40m: Silty CLAY: Dark grey brown, high plasticity, trace fine to medium grained sand, trace shell fragments, >PL, soft.			ASS ES PSD	2.0-3.0m: ES, PSD, ASS	
			3						ASS ES PSD	3.0-4.0m: ES, PSD, ASS	
			4						ASS ES PSD	4.0-4.4m: ES, PSD, ASS	
			5			Borehole BH-07 Terminated at 4.40 m				Refusal	
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		15.2.18		Northing		7368851.00		Slope		90°	
Completed Drilling		15.2.18		Easting		313944.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
						0.00m to 0.50m: Sandy CLAY: Dark grey brown, low plasticity, fine to coarse grained sand, with shell fragments, >PL, soft.			ASS ES PSD	0.0-0.5m: ES, PSD, ASS, ASS Duplicate 7	
						0.50m to 2.50m: Medium plasticity.			ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
			1						ASS ES PSD	1.0-2.0m: ES, PSD, ASS	
			2						ASS ES PSD	2.0-3.0m: ES, PSD, ASS	
						2.50m to 2.80m: Silty CLAY: Dark grey brown, medium to high plasticity, with fine to medium grained sand, >PL, firm.					
						2.80m to 3.70m: High plasticity, trace fine to coarse grained sand.			ASS ES PSD	3.0-3.7m: ES, PSD, ASS	
			3								
			4			Borehole BH-08 Terminated at 3.70 m				Refusal	
			5								
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		14.2.18		Northing		7368534.00		Slope		90°	
Completed Drilling		14.2.18		Easting		314072.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 0.40m: Sandy CLAY: Dark grey brown, low plasticity, low to medium grained sand, some black substance noted with smell (possible hydrocarbons), >PL, very soft			ASS D ES PSD	0.0-0.5m: ES, PSD, ASS, D	
						0.40m to 1.50m: Sandy CLAY: Grey with orange brown mottling, low to medium plasticity, fine to medium grained sand, black substance noted with smell (possible hydrocarbons), ~PL, soft to firm			ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
						1.00m: 50mm lense with fine to medium sub-rounded to rounded gravel 1.05m: Firm to stiff			ASS ES PSD	1.0-1.65m: ES, PSD, ASS	
						1.50m to 1.65m: Silty CLAY: Grey with orange brown, high plasticity, with fine to medium grained sand, stiff to very stiff Borehole BH-09 Terminated at 1.65 m				Target depth	
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		14.2.18		Northing		7368402.00		Slope		90°	
Completed Drilling		14.2.18		Easting		314331.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 0.40m: Sandy CLAY: Dark grey brown, low plasticity, fine to medium grained sand, trace shell fragments, >PL, very soft			ASS ES PSD	0.0-0.5m: ES, PSD, ASS, Duplicate 1A	
						0.40m to 1.45m: Clayey SAND: Pale grey, fine grained sand, low plasticity, sandy clay lenses with higher plasticity, ~PL, stiff			ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
						0.60m: Sand size increased to fine to medium			ASS ES PSD	1.0-1.45m: ES, PSD, ASS	
			2			Borehole BH-10 Terminated at 1.45 m				Refusal	
			3								
			4								
			5								
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		13.2.18		Northing		7368273.00		Slope		90°	
Completed Drilling		13.2.18		Easting		314455.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 0.40m: Sandy CLAY: Grey brown, low to medium plasticity, fine to medium grained sand, trace shell fragments, wet, very soft			ASS D ES PSD	0.0-0.5m: ES, PSD, ASS, D	
						0.40m to 0.60m: Sandy CLAY: Brown, low plasticity, fine to coarse grained sand, with fine to medium sub-rounded to sub-angular gravel, with lenses of grey medium to high plasticity silty clay, wet, soft			ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
						0.60m: Clayey SAND: Brown, fine to coarse grained sand, low plasticity, wet					
						1.00m: With fine to coarse angular to sub-angular gravel			ASS ES PSD	1.0-2.0m: ES, PSD, ASS	
						1.20m to 2.67m: Sandy CLAY: Grey mottled brown, low plasticity, fine grained sand, ~PL, firm					
			2						ASS ES PSD	2.0-2.67m: ES, PSD, ASS	
			3			Borehole BH-11 Terminated at 2.67 m				Refusal	
			4								
			5								
Remarks:											

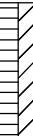
Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		13.2.18		Northing		7368150.00		Slope		90°	
Completed Drilling		13.2.18		Easting		314719.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 1.01m: Sandy CLAY: Grey brown, medium plasticity, fine grained sand, >PL, very soft			ASS ES PSD	0.0-0.5m: ES, PSD, ASS, ASS Duplicate 4	
						1.00m: Shell fragment ~10mm thick lense 1.01m to 2.00m: Sandy CLAY: Grey mottled brown, medium plasticity, fine grained sand, ~PL, stiff with hard lenses			ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
			2						ASS ES PSD	1.0-2.0m: ES, PSD, ASS	
						Borehole BH-12 Terminated at 2.00 m				Target depth	
			3								
			4								
			5								
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		13.2.18		Northing		7368026.00		Slope		90°	
Completed Drilling		13.2.18		Easting		314974.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
			1			0.00m to 1.20m: Sandy gravelly CLAY: Grey brown, low plasticity, fine to medium angular to sub-angular gravel, fine to coarse grained sand, trace shell fragments, trace black substance with smell (possible hydrocarbons), >PL, soft			ASS D ES PSD	0.0-0.5m: ES, PSD, ASS, D	
									ASS ES PSD	0.5-1.0m: ES, PSD, ASS	
						1.20m to 1.80m: Sandy CLAY: Grey brown, low to medium plasticity, fine to coarse grained sand, >PL, soft to firm			ASS ES PSD	1.0-1.8m: ES, PSD, ASS	
			2			Borehole BH-13 Terminated at 1.80 m				Target depth	
			3								
			4								
			5								
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		12.2.18		Northing		7367781.00		Slope		90°	
Completed Drilling		12.2.18		Easting		315539.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
						0.00m to 0.50m: Sandy CLAY: Brown, low to medium plasticity, fine to coarse grained sand, trace fine to coarse rounded gravel, trace fine to coarse cobble, wet.			ASS ES PSD	0.0-0.5m: ES, PSD, ASS, Triplicate 1A/B/C	
						Borehole BH-14 Terminated at 0.50 m				Target depth	
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		13.2.18		Northing		7367574.00		Slope		90°	
Completed Drilling		13.2.18		Easting		315934.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
						0.00m to 0.50m: Gravelly SAND: Brown, fine to coarse grained sand, fine to coarse rounded to sub-rounded gravel, with fines, wet			ASS D ES PSD	0.0-0.5m: ES, PSD, ASS, D	
						Borehole BH-15 Terminated at 0.50 m				Target depth	
			1								
			2								
			3								
			4								
			5								
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		13.2.18		Northing		7367446.00		Slope		90°	
Completed Drilling		13.2.18		Easting		316370.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
						0.00m to 0.50m: Sandy CLAY: Grey brown, low to medium plasticity, fine to coarse grained sand, trace fine rounded gravel, wet			ASS ES PSD	0.0-0.5m: ES, PSD, ASS, ASS Duplicate 3	
						Borehole BH-16 Terminated at 0.50 m				Target depth	
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		14.2.18		Northing		7367256.00		Slope		90°	
Completed Drilling		14.2.18		Easting		316697.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
						0.00m to 0.50m: Gravelly SAND: Brown, fine to coarse grained sand, fine to coarse rounded to sub-rounded gravel, with shell fragments, with fines, wet.			ASS D ES PSD	0.0-0.5m: ES, PSD, ASS, D	
						Borehole BH-17 Terminated at 0.50 m				Target depth	
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		14.2.18		Northing		7367128.00		Slope		90°	
Completed Drilling		14.2.18		Easting		316820.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
						0.00m to 0.50m: SAND: Brown, fine to coarse grained sand, with shell fragments, trace rounded fine to medium gravel, trace fines, wet			ASS ES PSD	0.0-0.5m: ES, PSD, ASS, ASS Duplicate 5	
						Borehole BH-18 Terminated at 0.50 m				Target depth	
Remarks:											

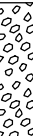
Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		14.2.18		Northing		7367071.00		Slope		90°	
Completed Drilling		14.2.18		Easting		317205.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
						0.00m to 0.50m: SAND: Brown, fine to coarse grained sand, with fine to medium rounded gravel, with shell fragments, trace coral, trace fines, wet			ASS D ES PSD	0.0-0.5m: ES, PSD, ASS, D	
						Borehole BH-19 Terminated at 0.50 m				Target depth	
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		13.2.18		Northing		7366935.00		Slope		90°	
Completed Drilling		13.2.18		Easting		317391.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
						0.00m to 0.50m: SAND: Brown, fine to coarse grained sand, with shell fragments, trace fines, wet			ASS D ES PSD	0.0-0.5m: ES, PSD, ASS, ASS Duplicate 2, D	
						Borehole BH-20 Terminated at 0.50 m				Target depth	
			1								
			2								
			3								
			4								
			5								
Remarks:											

Engineering Log - Borehole

Client		GPC				Project No.		237374			
Project		Gatcombe and Golding Cutting Channel Duplication				Logged By		KO			
Location						Checked By					
Started Drilling		13.2.18		Northing		7366810.00		Slope		90°	
Completed Drilling		13.2.18		Easting		317713.00		Bearing		---	
								Equipment		Vibrocore	
								Ground Level			
DRILLING			MATERIAL DESCRIPTION						TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	
						0.00m to 0.50m: Clayey sandy GRAVEL: Brown, fine to coarse rounded to sub-rounded gravel, fine to coarse grained sand, with shell fragments, trace cobbles, wet			ASS ES PSD	0.0-0.5m: ES, PSD, ASS	
						Borehole BH-21 Terminated at 0.50 m				Target depth	
Remarks:											



C

Photographic
record

Appendix C – Photographic record



Figure 1 BH01 (0.0 to 3.5m) (top to bottom)



Figure 2 BH02 (0.0 to 1.4m) (top to bottom)



Figure 3 BH03 (0.0 to 2.8m) (top to bottom)



Figure 4 BH05 (0.0 to 4.3m) (top to bottom)



Figure 5 BH06 (0.0 to 4.0m) (top to bottom)



Figure 6 BH07 (0.0 to 4.4m) (top to bottom)



Figure 7 BH08 (0.0 to 3.7m) (top to bottom)



Figure 8 BH09 (0.0 to 1.65m)



Figure 9 BH10 (0.0 to 1.45m)



Figure 10 BH11 (0.0 to 2.7m)



Figure 11 BH12 (0.0 to 2.0m)



Figure 12 BH13 (1.0 to 1.8m)



Figure 13 BH14 (0.0 to 0.5m)



Figure 14 BH15 (0.0 to 0.5m)



Figure 15 BH16 (0.0 to 0.5m)



Figure 16 BH17 (0.0 to 0.5m)



Figure 17 BH19 (0.0 to 0.5m)



Figure 18 BH20 (0.0 to 0.5m)



D

Laboratory
certificates



ALS Laboratory:
please tick →

[illegible]

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Ph: 415/774-2232, 1-800-541-8933 ext. 2232

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1. 280 DURET 217 252 Woodlark Road Seville, NSW 2114
Ph: 02 9364 1566 E: seville@seville.com.au www.seville.com.au

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[illegible]

APERTH, L. for *Asy. blanda* ♀ 4.8.80
 1st of 2nd 1980: 2nd only, very large, 1st only

Dr. H. Chaf'fah Fakhry, Siregar Walidjari MSc. 2700
P- 01 425 3134 E-mail: chaf'fah@indosat.net

CLIENT: Aurecon		TURNAROUND REQUIREMENTS : ☐ Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE:		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):		Custody Seal Intact? Yes No N/A	
PROJECT: 237374		ALS QUOTE NO.: BN/004/18		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:		COC SEQUENCE NUMBER (Circle)		Random Sample Temperature on Receipt C	
PROJECT MANAGER: Georgina Kerr		CONTACT PH: 07 3173 8396 / [REDACTED]		Other comment:	
SAMPLER: Kaitlin Neill-Mulcahy		SAMPLER MOBILE [REDACTED]		RECEIVED BY: K Schaffer	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME: 12-2-18 1750	
Email Reports to (will default to PM if no other addresses are listed): georgina.kerr@aurecongroup.com		RELINQUISHED BY: Tim Murphy		DATE/TIME: 12-2-18 1500	
Email Invoice to (will default to PM if no other addresses are listed): georgina.kerr@aurecongroup.com		DATE/TIME: 12/2/18 1750		DATE/TIME: 14-2-18 915	

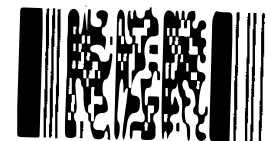
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:															
ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <i>(refer to codes below)</i>	TOTAL CONTAINERS	TRH, BTEXN, PAH, OCP/OPP, PCB, 10 metals	Nutrients (nitrate, nitrite, total phosphorous and total nitrogen), ammonia	Total organic carbon	SPOCAS	Field pH (pH/pHfox)	Particle size distribution	Dioxins	TRH/BTEX	HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BH14_0.0_0.5	12/02/2018	S	250ml jar	4	X	X	X	X		X				
2	TRIP_1A	12/02/2018	S	250ml jar	1	X		X							
3	TRIP_1B	12/02/2018	S	250ml jar	1	X		X							
4	TRIP_1C	12/02/2018	S	250ml jar	1									X	
5	TRIPBLANK01	12/02/2018	S	Trip Blank Jar	1								X		
6	RIN01	12/02/2018	S	Rinsate bottles	1	X									
			S												
			S												
			S												
			S												
TOTAL					9										

Environmental Division
Brisbane
Work Order Reference
EB1804028



Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; Y = Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SF = Sulfuric Preserved Plastic; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Soils; B = Unpreserved Bag.

Environmental Division
Brisbane
Work Order Reference
EB1804028



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EB1804028

Client : AURECON AUSTRALASIA PTY LTD Contact : MS GEORGINA KERR Address : LOCKED BAG 331 32 TURBOT STREET BRISBANE QLD, AUSTRALIA 4001 E-mail : georgina.kerr@aurecongroup.com Telephone : +61 07 3173 8396 Facsimile : +61 07 3173 8001 Project : 237374 Order number : ---- C-O-C number : ---- Site : ---- Sampler : KAITLIN MULCAHY	Laboratory : Environmental Division Brisbane Contact : John Pickering Address : 2 Byth Street Stafford QLD Australia 4053 E-mail : john.pickering@alsglobal.com Telephone : +61-7-3243 7222 Facsimile : +61-7-3243 7218 Page : 1 of 3 Quote number : EB2018CONWAG0001 (BN/004/18) QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 14-Feb-2018 09:15 Client Requested Due Date : 02-Mar-2018	Issue Date : 16-Feb-2018 Scheduled Reporting Date : 02-Mar-2018

Delivery Details

Mode of Delivery : Carrier No. of coolers/boxes : 1 Receipt Detail : MEDIUM ESKY	Security Seal : Intact. Temperature : 6.9°C - Ice present No. of samples received / analysed : 6 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please be advised, as sample "TRIPBLANK01" is a Soil Trip Blank, ALS suite "S-18" (TPH C6-C9/BTEXN) has been assigned.**
- **Please be advised, where "10 metals" has been listed on the submitted Chain of Custody, the NEPM suite of 15 metals has been assigned.**
- ***15/02/2018*: SRN has been resent to acknowledge additional analysis added to sample "RIN01" as per the submitted Chain of Custody. For any further information regarding these adjustments please contact client services at ALSEnviro.Brisbane@alsglobal.com.**
- **16/02/2018: SRN has been resent to acknowledge addition of EP090 Organotins on samples 1-3. Organotins was not added to the water due to no 500mL Amber provided. For any further information regarding these adjustments please contact client services at ALSEnviro.Brisbane@alsglobal.com.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **Particle Size Distribution analysis will be conducted by ALS Environmental, Newcastle, NATA accreditation no. 825, Site No. 1656.**
- **Specialty Organics analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EK255A SD Ammonia in Sediment by FIA	SOIL - EP090 (solids) Organotins	SOIL - NT-11S Total N + Total P	SOIL - NT-4S NO2 and NO3	SOIL - SD-02 OC/OP/PCB/PAH ultra trace	SOIL - SD-03 Metals by ICPMS (15 metals + low level Hg)
EB1804028-001	12-Feb-2018 00:00	BH14_0.0_00.5	✓	✓	✓	✓	✓	✓	✓
EB1804028-002	12-Feb-2018 00:00	TRIP_1A	✓		✓			✓	✓
EB1804028-003	12-Feb-2018 00:00	TRIP_1B	✓		✓			✓	✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA029 SPOCAS	SOIL - EA150H/EA152 Particle Sizing with Hydrometer + Soil Particle	SOIL - EP003 Total Organic Carbon (TOC) in Soil	SOIL - EP071 - SD TRH ultra trace in sediments	SOIL - EP080-SD TRH(V)/BTEXN in Sediments	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs
EB1804028-001	12-Feb-2018 00:00	BH14_0.0_00.5		✓	✓	✓	✓	✓	
EB1804028-002	12-Feb-2018 00:00	TRIP_1A				✓	✓	✓	
EB1804028-003	12-Feb-2018 00:00	TRIP_1B				✓	✓	✓	
EB1804028-004	12-Feb-2018 00:00	TRIP_1C	✓						
EB1804028-005	12-Feb-2018 00:00	TRIPBLANK01							✓



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-03T 15 Metals (Total) (NEPM)	WATER - W-07 TRH/BTEXN/PAH	WATER - W-13 OC/OP/PCB
EB1804028-006	12-Feb-2018 00:00	RIN01	✓	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)

Email creditors@aurecongroup.com

EQUIS REPORTING

- EDI Format - EQUIS_AURECON (EQUIS_AURECON)

Email Aurecon.equis@aurecongroup.com

GEORGINA KERR

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Attachment - Report (SUBCO)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS_AURECON (EQUIS_AURECON)
- EDI Format - XTab (XTAB)

Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com
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Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com

JOHN PICKERING

- Chain of Custody (CoC) (COC)

Email john.pickering@alsglobal.com

CERTIFICATE OF ANALYSIS

Work Order : **EB1804028**
Client : **AURECON AUSTRALASIA PTY LTD**
Contact : **MS GEORGINA KERR**
Address : **LOCKED BAG 331 32 TURBOT STREET**
BRISBANE QLD, AUSTRALIA 4001
Telephone : **+61 07 3173 8396**
Project : **237374**
Order number : **----**
C-O-C number : **----**
Sampler : **KAITLIN MULCAHY**
Site : **----**
Quote number : **BN/004/18**
No. of samples received : **6**
No. of samples analysed : **5**

Page : 1 of 16
Laboratory : Environmental Division Brisbane
Contact : John Pickering
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 14-Feb-2018 09:15
Date Analysis Commenced : 16-Feb-2018
Issue Date : 06-Mar-2018 14:19



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	Position	Accreditation Category
Andrew Epps	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD
Nathan Webb	Asbestos Identifier	Newcastle - Inorganics, Mayfield West, NSW



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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP090 Organotin: Sample 'BH14_0.0_00.5' shows poor surrogate recovery due to matrix interference. Confirmed by duplicate extraction.
- EP090 Organotin: Sample 'TRIP_1A' shows poor matrix spike recovery for MBT due to matrix interference.
- EP071-SD: The LOR for sample 'TRIP_1A' has been raised due to possible background laboratory contamination. Insufficient sample remaining for re-extraction.
- **Specialty Organics analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- ASS: EA029 (SPOCAS): Retained Acidity not required because pH KCl greater than or equal to 4.5
- EP071-SD: The LOR for 'TRIP_1B' has been raised due to high moisture content.
- ASS: EA029 (SPOCAS): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO₃) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from kg/t dry weight to kg/m³ in-situ soil, multiply reported results x wet bulk density of soil in t/m³.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH14_0.0_00.5	TRIP_1A	TRIP_1B	TRIPBLANK01	----
Client sampling date / time					12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	----
Compound	CAS Number	LOR	Unit		EB1804028-001	EB1804028-002	EB1804028-003	EB1804028-005	-----
					Result	Result	Result	Result	----
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		9.0	----	----	----	----
pH OX (23B)	----	0.1	pH Unit		8.4	----	----	----	----
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	----	----	----	----
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	----	----	----	----
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	----	----	----	----
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	----	----	----	----
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		<0.020	----	----	----	----
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		<0.020	----	----	----	----
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.054	----	----	----	----
Peroxide Sulfur (23De)	----	0.020	% S		0.142	----	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		0.088	----	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		55	----	----	----	----
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.162	----	----	----	----
Peroxide Calcium (23Wh)	----	0.020	% Ca		1.02	----	----	----	----
Acid Reacted Calcium (23X)	----	0.020	% Ca		0.857	----	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		427	----	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		0.685	----	----	----	----
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.079	----	----	----	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.132	----	----	----	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.053	----	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		44	----	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.070	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		2.93	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		586	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		0.939	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH14_0.0_00.5	TRIP_1A	TRIP_1B	TRIPBLANK01	----
Client sampling date / time					12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	----
Compound	CAS Number	LOR	Unit		EB1804028-001	EB1804028-002	EB1804028-003	EB1804028-005	-----
					Result	Result	Result	Result	----
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S		<0.02	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t		<10	----	----	----	----
Liming Rate	----	1	kg CaCO3/t		<1	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		0.09	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		55	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t		4	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		31.0	26.4	48.9	----	----
EA150: Particle Sizing									
+75µm	----	1	%		69	----	----	----	----
+150µm	----	1	%		65	----	----	----	----
+300µm	----	1	%		60	----	----	----	----
+425µm	----	1	%		55	----	----	----	----
+600µm	----	1	%		48	----	----	----	----
+1180µm	----	1	%		34	----	----	----	----
+2.36mm	----	1	%		26	----	----	----	----
+4.75mm	----	1	%		24	----	----	----	----
+9.5mm	----	1	%		22	----	----	----	----
+19.0mm	----	1	%		15	----	----	----	----
+37.5mm	----	1	%		<1	----	----	----	----
+75.0mm	----	1	%		<1	----	----	----	----
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		19	----	----	----	----
Silt (2-60 µm)	----	1	%		10	----	----	----	----
Sand (0.06-2.00 mm)	----	1	%		42	----	----	----	----
Gravel (>2mm)	----	1	%		29	----	----	----	----
Cobbles (>6cm)	----	1	%		<1	----	----	----	----
EA152: Soil Particle Density									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.62	----	----	----	----
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		5940	5950	13000	----	----
Iron	7439-89-6	50	mg/kg		10400	10200	24000	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH14_0.0_00.5	TRIP_1A	TRIP_1B	TRIPBLANK01	----
Client sampling date / time					12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	----
Compound	CAS Number	LOR	Unit		EB1804028-001	EB1804028-002	EB1804028-003	EB1804028-005	-----
					Result	Result	Result	Result	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	<0.50	----	----
Arsenic	7440-38-2	1.00	mg/kg		4.02	4.44	11.2	----	----
Cadmium	7440-43-9	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
Chromium	7440-47-3	1.0	mg/kg		8.5	8.1	17.6	----	----
Copper	7440-50-8	1.0	mg/kg		13.0	11.4	25.9	----	----
Cobalt	7440-48-4	0.5	mg/kg		5.8	5.2	11.2	----	----
Lead	7439-92-1	1.0	mg/kg		3.2	3.0	6.7	----	----
Manganese	7439-96-5	10	mg/kg		104	98	222	----	----
Nickel	7440-02-0	1.0	mg/kg		5.5	5.2	11.1	----	----
Selenium	7782-49-2	0.1	mg/kg		0.2	0.2	0.5	----	----
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
Vanadium	7440-62-2	2.0	mg/kg		28.2	25.1	52.8	----	----
Zinc	7440-66-6	1.0	mg/kg		22.4	20.9	45.1	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	0.02	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg		<0.1	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg		<0.1	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.1	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		240	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		240	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		188	----	----	----	----
EK255A SD: Ammonia in Sediment									
Ammonia as N	7664-41-7	0.2	mg/kg		3.1	----	----	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.55	0.26	0.68	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	----	<10	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH14_0.0_00.5	TRIP_1A	TRIP_1B	TRIPBLANK01	----
Client sampling date / time					12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	----
Compound	CAS Number	LOR	Unit		EB1804028-001	EB1804028-002	EB1804028-003	EB1804028-005	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	----	<10	----
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	----	<10	----
>C16 - C34 Fraction	----	3	mg/kg		<3	<9	<4	----	----
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	<3	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	<3	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg		----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		----	----	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg		----	----	----	<1	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	----	----
C10 - C14 Fraction	----	3	mg/kg		<3	<3	<3	----	----
C15 - C28 Fraction	----	3	mg/kg		<3	<6	<3	----	----
C29 - C36 Fraction	----	5	mg/kg		<5	<9	<5	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	<3	<3	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH14_0.0_00.5	TRIP_1A	TRIP_1B	TRIPBLANK01	----
Client sampling date / time					12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	----
Compound	CAS Number	LOR	Unit		EB1804028-001	EB1804028-002	EB1804028-003	EB1804028-005	-----
					Result	Result	Result	Result	----
EP080-SD: BTEXN - Continued									
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	<1	----	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	<1	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	----	----
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	----	----
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	----	----
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	----	----
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	----	----
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	<10	----	----
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	<10	----	----
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	<10	----	----
Diazinon	333-41-5	10	µg/kg		<10	<10	<10	----	----
Dichlorvos	62-73-7	10	µg/kg		<10	<10	<10	----	----
Dimethoate	60-51-5	10	µg/kg		<10	<10	<10	----	----
Ethion	563-12-2	10	µg/kg		<10	<10	<10	----	----
Fenamiphos	22224-92-6	10	µg/kg		<10	<10	<10	----	----
Fenthion	55-38-9	10	µg/kg		<10	<10	<10	----	----
Malathion	121-75-5	10	µg/kg		<10	<10	<10	----	----
Azinphos Methyl	86-50-0	10	µg/kg		<10	<10	<10	----	----
Monocrotophos	6923-22-4	10	µg/kg		<10	<10	<10	----	----
Parathion	56-38-2	10	µg/kg		<10	<10	<10	----	----
Parathion-methyl	298-00-0	10	µg/kg		<10	<10	<10	----	----
Pirimphos-ethyl	23505-41-1	10	µg/kg		<10	<10	<10	----	----
Prothiofos	34643-46-4	10	µg/kg		<10	<10	<10	----	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
4,4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
4,4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	<0.50	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH14_0.0_00.5	TRIP_1A	TRIP_1B	TRIPBLANK01	----
Client sampling date / time				12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	----
Compound	CAS Number	LOR	Unit	EB1804028-001	EB1804028-002	EB1804028-003	EB1804028-005	-----
				Result	Result	Result	Result	----
EP131A: Organochlorine Pesticides - Continued								
4,4'-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	<0.25	----	----
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	<0.25	----	----
trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	<0.25	----	----
^ Total Chlordane (sum)	-----	0.25	µg/kg	<0.25	<0.25	<0.25	----	----
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	-----	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	----	----
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	<5	<5	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	<5	----	----
Acenaphthylene	208-96-8	4	µg/kg	<4	<4	<4	----	----
Acenaphthene	83-32-9	4	µg/kg	<4	<4	<4	----	----
Fluorene	86-73-7	4	µg/kg	<4	<4	<4	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH14_0.0_00.5	TRIP_1A	TRIP_1B	TRIPBLANK01	----
Client sampling date / time					12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	----
Compound	CAS Number	LOR	Unit		EB1804028-001	EB1804028-002	EB1804028-003	EB1804028-005	-----
					Result	Result	Result	Result	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	----	----
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	----	----
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<4	----	----
Pyrene	129-00-0	4	µg/kg		<4	<4	<4	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	----	----
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	----	----
Perylene	198-55-0	4	µg/kg		<4	<4	<4	----	----
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	----	----
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	----	----
Indeno(1,2,3-cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	----	----
Coronene	191-07-1	5	µg/kg		<5	<5	<5	----	----
^ Sum of PAHs	----	4	µg/kg		<4	<4	<4	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	72.6	----
Toluene-D8	2037-26-5	0.2	%		----	----	----	76.4	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	78.0	----
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		71.9	63.6	57.4	----	----
Toluene-D8	2037-26-5	0.2	%		75.3	68.2	60.6	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		79.9	69.2	61.2	----	----
EP090S: Organotin Surrogate									
Tripolytin	----	0.5	%		18.4	63.8	79.0	----	----
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		49.7	52.8	73.9	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		110	69.4	79.4	----	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		96.3	52.5	66.4	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		85.5	114	110	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH14_0.0_00.5	TRIP_1A	TRIP_1B	TRIPBLANK01	----
				Client sampling date / time	12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	12-Feb-2018 00:00	----
Compound	CAS Number	LOR	Unit		EB1804028-001	EB1804028-002	EB1804028-003	EB1804028-005	-----
					Result	Result	Result	Result	----
EP132T: Base/Neutral Extractable Surrogates - Continued									
Anthracene-d10	1719-06-8	10	%		117	120	120	----	----
4-Terphenyl-d14	1718-51-0	10	%		114	120	101	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RIN01	----	----	----	----
Client sampling date / time					12-Feb-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1804028-006	-----	-----	-----	-----
					Result	----	----	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Boron	7440-42-8	0.05	mg/L		<0.05	----	----	----	----
Barium	7440-39-3	0.001	mg/L		<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L		<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	----	----	----	----
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RIN01	----	----	----	----
Client sampling date / time					12-Feb-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1804028-006	-----	-----	-----	-----
					Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L		<0.5	----	----	----	----
4,4'-DDT	50-29-3	2.0	µg/L		<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L		<2.0	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L		<0.5	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L		<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L		<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.5	µg/L		<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L		<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L		<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L		<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L		<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L		<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L		<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L		<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L		<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L		<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L		<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L		<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L		<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L		<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L		<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L		<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RIN01	----	----	----	----
Client sampling date / time					12-Feb-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1804028-006	-----	-----	-----	-----
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons		-----	0.5	µg/L	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)		-----	0.5	µg/L	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction		-----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction		-----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction		-----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction		-----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)		-----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction		C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)		C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction		-----	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction		-----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction		-----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)		-----	100	µg/L	<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)		-----	100	µg/L	<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RIN01	----	----	----	----
Client sampling date / time					12-Feb-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1804028-006	-----	-----	-----	-----
					Result	----	----	----	----
EP080: BTEXN - Continued									
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		77.6	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		49.2	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		58.0	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		21.3	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		58.5	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		55.6	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		62.0	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		64.6	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		78.1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		102	----	----	----	----
Toluene-D8	2037-26-5	2	%		97.5	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		94.5	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP080-SD: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	145
Toluene-D8	2037-26-5	42	144
4-Bromofluorobenzene	460-00-4	58	142
EP090S: Organotin Surrogate			
Tripropyltin	----	35	130
EP130S: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	14	102
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	119
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	106
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	55	135
Anthracene-d10	1719-06-8	70	136
4-Terphenyl-d14	1718-51-0	57	127

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	37	138
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	40	134
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	42	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			

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Work Order : EB1804028
Client : AURECON AUSTRALASIA PTY LTD
Project : 237374



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates - Continued			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Certificate of Analysis

ALS Laboratory Group Pty Ltd
5/585 Maitland Road
Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Georgina Kerr

DATE REPORTED: 2-Mar-2018

COMPANY: Aurecon Australasia Pty Ltd

DATE RECEIVED: 14-Feb-2018

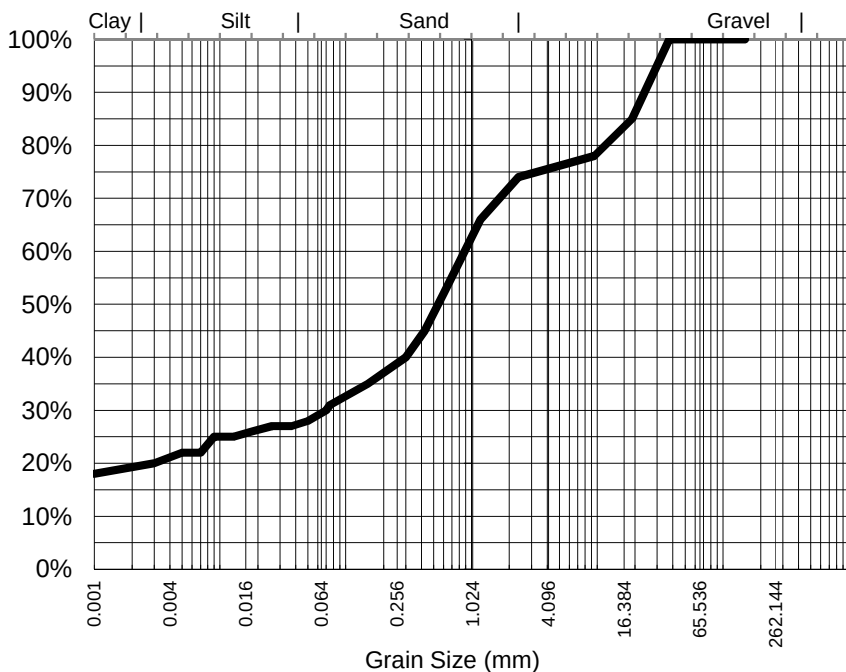
ADDRESS: Locked Bag 331
32 Turbot Street, Brisbane
QLD, Australia 4001

REPORT NO: EB1804028-001 / PSD

PROJECT: 237374

SAMPLE ID: BH14_0.0_00.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
37.5	100%
19.0	85%
9.50	78%
4.75	76%
2.36	74%
1.18	66%
0.600	52%
0.425	45%
0.300	40%
0.150	35%
0.075	31%
Particle Size (microns)	
70	30%
50	28%
37	27%
18	26%
9	25%
5	22%
1	18%

Samples analysed as received.

Median Particle Size (mm)*	0.550

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 28-Feb-18

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: FINES, SAND, STONE

Dispersion Method Shaker

Test Method: AS1289.3.6.3 2003

Hydrometer Type ASTM E100

Soil Particle Density (<2.36mm) 2.62 g/cm3

NATA Accreditation: 825 Site: Newcastle
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NA

Nathan Webb
Laboratory Coordinator
Authorised Signatory

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EB1804028**

Page : 1 of 14

Client : **AURECON AUSTRALASIA PTY LTD**
Contact : **MS GEORGINA KERR**
Project : **237374**
Site : **----**
Sampler : **KAITLIN MULCAHY**
Order number : **----**

Laboratory : **Environmental Division Brisbane**
Telephone : **+61-7-3243 7222**
Date Samples Received : **14-Feb-2018**
Issue Date : **06-Mar-2018**
No. of samples received : **6**
No. of samples analysed : **5**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK255A SD: Ammonia in Sediment	EB1804028--001	BH14_0.0_00.5	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP090: Organotin Compounds	EB1804028--002	TRIP_1A	Monobutyltin	78763-54-9	14.4 %	35-130%	Recovery less than lower data quality objective

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068B: Organophosphorus Pesticides (OP)	QC-1441881-002	----	Monocrotophos	6923-22-4	5.87 %	16-49%	Recovery less than lower control limit

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP090S: Organotin Surrogate	EB1804028-001	BH14_0.0_00.5	Tripropyltin	----	18.4 %	35-130 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method			Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Soil Glass Jar - Unpreserved TRIP_1A, TRIP_1B			01-Mar-2018	26-Feb-2018	3	----	----	----
EP131A: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved TRIP_1A, TRIP_1B			01-Mar-2018	26-Feb-2018	3	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
Soil Glass Jar - Unpreserved TRIP_1A, TRIP_1B			01-Mar-2018	26-Feb-2018	3	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS) - Continued					
Total Phosphorus By Discrete Analyser	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	7	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	7	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-A: pH Measurements							
Snap Lock Bag - frozen (EA029) BH14_0.0_00.5	12-Feb-2018	27-Feb-2018	07-Nov-2020	✓	27-Feb-2018	28-May-2018	✓
EA029-B: Acidity Trail							
Snap Lock Bag - frozen (EA029) BH14_0.0_00.5	12-Feb-2018	27-Feb-2018	07-Nov-2020	✓	27-Feb-2018	28-May-2018	✓
EA029-C: Sulfur Trail							
Snap Lock Bag - frozen (EA029) BH14_0.0_00.5	12-Feb-2018	27-Feb-2018	07-Nov-2020	✓	27-Feb-2018	28-May-2018	✓
EA029-D: Calcium Values							
Snap Lock Bag - frozen (EA029) BH14_0.0_00.5	12-Feb-2018	27-Feb-2018	07-Nov-2020	✓	27-Feb-2018	28-May-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-E: Magnesium Values							
Snap Lock Bag - frozen (EA029) BH14_0.0_00.5	12-Feb-2018	27-Feb-2018	07-Nov-2020	✓	27-Feb-2018	28-May-2018	✓
EA029-F: Excess Acid Neutralising Capacity							
Snap Lock Bag - frozen (EA029) BH14_0.0_00.5	12-Feb-2018	27-Feb-2018	07-Nov-2020	✓	27-Feb-2018	28-May-2018	✓
EA029-G: Retained Acidity							
Snap Lock Bag - frozen (EA029) BH14_0.0_00.5	12-Feb-2018	27-Feb-2018	07-Nov-2020	✓	27-Feb-2018	28-May-2018	✓
EA029-H: Acid Base Accounting							
Snap Lock Bag - frozen (EA029) BH14_0.0_00.5	12-Feb-2018	27-Feb-2018	07-Nov-2020	✓	27-Feb-2018	28-May-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) BH14_0.0_00.5, TRIP_1A, TRIP_1B	12-Feb-2018	----	----	----	16-Feb-2018	26-Feb-2018	✓
EA150: Particle Sizing							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150H) BH14_0.0_00.5	12-Feb-2018	----	----	----	01-Mar-2018	11-Aug-2018	✓
EA150: Soil Classification based on Particle Size							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150H) BH14_0.0_00.5	12-Feb-2018	----	----	----	01-Mar-2018	11-Aug-2018	✓
EA152: Soil Particle Density							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA152) BH14_0.0_00.5	12-Feb-2018	----	----	----	01-Mar-2018	11-Aug-2018	✓
EG005-SD: Total Metals in Sediments by ICP-AES							
Soil Glass Jar - Unpreserved (EG005-SD) BH14_0.0_00.5, TRIP_1A, TRIP_1B	12-Feb-2018	17-Feb-2018	11-Aug-2018	✓	19-Feb-2018	11-Aug-2018	✓
EG020-SD: Total Metals in Sediments by ICPMS							
Soil Glass Jar - Unpreserved (EG020-SD) BH14_0.0_00.5, TRIP_1A, TRIP_1B	12-Feb-2018	17-Feb-2018	11-Aug-2018	✓	19-Feb-2018	11-Aug-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T-LL) BH14_0.0_00.5, TRIP_1A, TRIP_1B	12-Feb-2018	17-Feb-2018	12-Mar-2018	✓	19-Feb-2018	12-Mar-2018	✓
EK057G: Nitrite as N by Discrete Analyser							
Soil Glass Jar - Unpreserved (EK057G) BH14_0.0_00.5	12-Feb-2018	20-Feb-2018	11-Aug-2018	✓	21-Feb-2018	11-Aug-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Soil Glass Jar - Unpreserved (EK059G) BH14_0.0_00.5	12-Feb-2018	20-Feb-2018	11-Aug-2018	✓	21-Feb-2018	11-Aug-2018	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Soil Glass Jar - Unpreserved (EK061G) BH14_0.0_00.5	12-Feb-2018	23-Feb-2018	11-Aug-2018	✓	23-Feb-2018	11-Aug-2018	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Soil Glass Jar - Unpreserved (EK067G) BH14_0.0_00.5	12-Feb-2018	23-Feb-2018	11-Aug-2018	✓	23-Feb-2018	11-Aug-2018	✓
EK255A SD: Ammonia in Sediment							
Soil Glass Jar - Unpreserved (EK255A SD) BH14_0.0_00.5	12-Feb-2018	----	----	----	19-Feb-2018	11-Aug-2018	✓
EP003: Total Organic Carbon (TOC) in Soil							
Pulp Bag (EP003) BH14_0.0_00.5, TRIP_1A, TRIP_1B	12-Feb-2018	28-Feb-2018	12-Mar-2018	✓	28-Feb-2018	12-Mar-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) TRIPBLANK01	12-Feb-2018	16-Feb-2018	26-Feb-2018	✓	19-Feb-2018	26-Feb-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) TRIPBLANK01	12-Feb-2018	16-Feb-2018	26-Feb-2018	✓	19-Feb-2018	26-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP071-SD) BH14_0.0_00.5, TRIP_1A, TRIP_1B	12-Feb-2018	20-Feb-2018	26-Feb-2018	✓	02-Mar-2018	01-Apr-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) TRIPBLANK01	12-Feb-2018	16-Feb-2018	26-Feb-2018	✓	19-Feb-2018	26-Feb-2018	✓
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080-SD) BH14_0.0_00.5, TRIP_1A, TRIP_1B	12-Feb-2018	16-Feb-2018	26-Feb-2018	✓	19-Feb-2018	26-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP071-SD) BH14_0.0_00.5, TRIP_1A, TRIP_1B	12-Feb-2018	20-Feb-2018	26-Feb-2018	✓	02-Mar-2018	01-Apr-2018	✓
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080-SD) BH14_0.0_00.5, TRIP_1A, TRIP_1B	12-Feb-2018	16-Feb-2018	26-Feb-2018	✓	19-Feb-2018	26-Feb-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080-SD: BTEXN								
Soil Glass Jar - Unpreserved (EP080-SD) BH14_0.0_00.5, TRIP_1B	TRIP_1A,	12-Feb-2018	16-Feb-2018	26-Feb-2018	✓	19-Feb-2018	26-Feb-2018	✓
EP090: Organotin Compounds								
Soil Glass Jar - Unpreserved (EP090) BH14_0.0_00.5, TRIP_1B	TRIP_1A,	12-Feb-2018	26-Feb-2018	26-Feb-2018	✓	01-Mar-2018	07-Apr-2018	✓
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Soil Glass Jar - Unpreserved (EP130) TRIP_1A,	TRIP_1B	12-Feb-2018	01-Mar-2018	26-Feb-2018	✗	01-Mar-2018	10-Apr-2018	✓
Soil Glass Jar - Unpreserved (EP130) BH14_0.0_00.5		12-Feb-2018	16-Feb-2018	26-Feb-2018	✓	21-Feb-2018	28-Mar-2018	✓
EP131A: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP131A) TRIP_1A,	TRIP_1B	12-Feb-2018	01-Mar-2018	26-Feb-2018	✗	01-Mar-2018	10-Apr-2018	✓
Soil Glass Jar - Unpreserved (EP131A) BH14_0.0_00.5		12-Feb-2018	16-Feb-2018	26-Feb-2018	✓	21-Feb-2018	28-Mar-2018	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)								
Soil Glass Jar - Unpreserved (EP131B) TRIP_1A,	TRIP_1B	12-Feb-2018	01-Mar-2018	26-Feb-2018	✗	01-Mar-2018	10-Apr-2018	✓
Soil Glass Jar - Unpreserved (EP131B) BH14_0.0_00.5		12-Feb-2018	16-Feb-2018	26-Feb-2018	✓	21-Feb-2018	28-Mar-2018	✓
EP132B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP132B-SD) BH14_0.0_00.5		12-Feb-2018	16-Feb-2018	26-Feb-2018	✓	20-Feb-2018	28-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP132B-SD) TRIP_1A,	TRIP_1B	12-Feb-2018	22-Feb-2018	26-Feb-2018	✓	23-Feb-2018	03-Apr-2018	✓

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Unspecified; Lab-acidified (EG020A-T) RIN01	12-Feb-2018	17-Feb-2018	11-Aug-2018	✓	17-Feb-2018	11-Aug-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Unspecified; Lab-acidified (EG035T) RIN01	12-Feb-2018	----	----	----	19-Feb-2018	12-Mar-2018	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066) RIN01	12-Feb-2018	19-Feb-2018	19-Feb-2018	✓	20-Feb-2018	31-Mar-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068) RIN01	12-Feb-2018	19-Feb-2018	19-Feb-2018	✓	20-Feb-2018	31-Mar-2018	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) RIN01	12-Feb-2018	19-Feb-2018	19-Feb-2018	✓	20-Feb-2018	31-Mar-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) RIN01	12-Feb-2018	19-Feb-2018	19-Feb-2018	✓	20-Feb-2018	31-Mar-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) RIN01	12-Feb-2018	19-Feb-2018	19-Feb-2018	✓	20-Feb-2018	31-Mar-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RIN01	12-Feb-2018	22-Feb-2018	26-Feb-2018	✓	22-Feb-2018	26-Feb-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) RIN01	12-Feb-2018	19-Feb-2018	19-Feb-2018	✓	20-Feb-2018	31-Mar-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RIN01	12-Feb-2018	22-Feb-2018	26-Feb-2018	✓	22-Feb-2018	26-Feb-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) RIN01	12-Feb-2018	22-Feb-2018	26-Feb-2018	✓	22-Feb-2018	26-Feb-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Ammonia in Sediments	EK255A SD	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	3	66.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	3	66.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	3	66.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	2	3	66.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fe and Al in Sediments by ICPAES	EG005-SD	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia in Sediments	EK255A SD	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	2	1	200.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
Total Organic Carbon	EP003	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	2	1	200.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia in Sediments	EK255A SD	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fe and Al in Sediments by ICPAES	EG005-SD	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia in Sediments	EK255A SD	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
TPH - Semivolatile Fraction	EP071-SD	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	7	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	1	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	1	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	7	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	SOIL	In house: Referenced to Ahern et al 2004 - a suspension peroxide oxidation method following the 'sulfur trail' by determining the level of 1M KCL extractable sulfur and the sulfur level after oxidation of soil sulphides. The 'acidity trail' is followed by measurement of TAA, TPA and TSA. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Soil Particle Density	* EA152	SOIL	Soil Particle Density by AS 1289.3.5.1-2006 : Methods of testing soils for engineering purposes - Soil classification tests - Determination of the soil particle density of a soil - Standard method
Total Fe and Al in Sediments by ICPAES	EG005-SD	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3). LORs per NODG
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N - Soluble by Discrete Analyser	EK057G	SOIL	In house: Referenced to APHA 4500-NO ₃ - B. Nitrite in a water extract is determined by direct colourimetry by Discrete Analyser.
Nitrate as N - Soluble by Discrete Analyser	EK058G	SOIL	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate in the 1:5 soil:water extract is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N (NO _x)- Soluble by Discrete Analyser	EK059G	SOIL	In house: Thermo Scientific Method D08727 and NEMI (National Environmental Method Index) Method ID: 9171. This method covers the determination of total oxidised nitrogen (NO _x -N) and nitrate (NO ₃ -N) by calculation, Combined oxidised Nitrogen (NO ₂ +NO ₃) in a water extract is determined by direct colourimetry by Discrete Analyser.
TKN as N By Discrete Analyser	EK061G	SOIL	In house: Referenced to APHA 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Discrete Analyser.
Total Nitrogen as N (TKN + NO _x) By Discrete Analyser	EK062G	SOIL	In house: Referenced to APHA 4500 Norg/NO ₃ - Total Nitrogen is determined as the sum of TKN and Oxidised Nitrogen, each determined separately as N.
Total Phosphorus By Discrete Analyser	EK067G	SOIL	In house: Referenced to APHA 4500 P-B&F This procedure involves sulfuric acid digestion and quantification using Discrete Analyser.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia in Sediments	EK255A SD	SOIL	In house: Referenced to Rayment and Higginson (1992) Method 7C1 and 7C2. This method measures exchangeable ammonium which is defined by the amount of ammonium released by shaking sediment with an un-buffered 2M potassium chloride solution.
Total Organic Carbon	EP003	SOIL	In house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.
TPH - Semivolatile Fraction	EP071-SD	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
TRH Volatiles/BTEX in Sediments	EP080-SD	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Organotin Analysis	EP090	SOIL	In house: Referenced to USEPA SW 846 - 8270D Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quantified against an established calibration curve.
Organophosphorus Pesticides (Ultra-trace)	EP130	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup), 8141 (GC/FPD - Capillary Column) This technique is compliant with NEPM (2013) Schedule B(3).
Organochlorine Pesticides (Ultra-trace)	EP131A	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup), 3620 (Florisil), 8081/8082 (GC/ μ ECD/ μ ECD) This technique is compliant with NEPM (2013) Schedule B(3)
PCB's (Ultra-trace)	EP131B	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup), 3620 (Florisil), 8081/8082 (GC/ μ ECD/ μ ECD) This technique is compliant with NEPM (2013) Schedule B(3)
PAHs in Sediments by GCMS(SIM)	EP132B-SD	SOIL	In house: Referenced to USEPA 8270D GCMS Capillary column, SIM mode using large volume programmed temperature vaporisation injection.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	SOIL	In house: Referenced to APHA 4500 Norg- D; APHA 4500 P - H. Macro Kjeldahl digestion.
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Dry and Pulverise (up to 100g)	GEO30	SOIL	#
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In house: Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids for LVI (Non-concentrating)	ORG17D	SOIL	In house: 10g of sample, Na2SO4 and surrogate are extracted with 50mL 1:1 DCM/Acetone by end over end tumbling. An aliquot is concentrated by nitrogen blowdown to a reduced volume for analysis if required.
Organotin Sample Preparation	ORG35	SOIL	In house: 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



QUALITY CONTROL REPORT

Work Order	: EB1804028	Page	: 1 of 26
Client	: AURECON AUSTRALASIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MS GEORGINA KERR	Contact	: John Pickering
Address	: LOCKED BAG 331 32 TURBOT STREET BRISBANE QLD, AUSTRALIA 4001	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3173 8396	Telephone	: +61-7-3243 7222
Project	: 237374	Date Samples Received	: 14-Feb-2018
Order number	: ----	Date Analysis Commenced	: 16-Feb-2018
C-O-C number	: ----	Issue Date	: 06-Mar-2018
Sampler	: KAITLIN MULCAHY		
Site	: ----		
Quote number	: BN/004/18		
No. of samples received	: 6		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Andrew Epps	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
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Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
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Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD
Nathan Webb	Asbestos Identifier	Newcastle - Inorganics, Mayfield West, NSW

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
= Indicates failed QC

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-A: pH Measurements (QC Lot: 1456381)									
EB1803370-019	Anonymous	EA029: pH KCl (23A)	----	0.1	pH Unit	8.7	8.8	1.14	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	2.4	2.4	0.00	0% - 20%
EA029-B: Acidity Trail (QC Lot: 1456381)									
EB1803370-019	Anonymous	EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	0.614	0.584	4.95	0% - 20%
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	0.614	0.584	4.95	0% - 20%
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	383	364	4.95	0% - 20%
		EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	383	364	4.95	0% - 20%
EA029-C: Sulfur Trail (QC Lot: 1456381)									
EB1803370-019	Anonymous	EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.174	0.155	11.6	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.856	0.843	1.52	0% - 20%
		EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.682	0.688	0.890	0% - 20%
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	425	429	0.890	0% - 20%
EA029-D: Calcium Values (QC Lot: 1456381)									
EB1803370-019	Anonymous	EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.232	0.227	1.96	0% - 50%
		EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	0.232	0.230	1.12	0% - 50%
		EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.020	<0.020	0.00	No Limit
		EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EA029-E: Magnesium Values (QC Lot: 1456381)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-E: Magnesium Values (QC Lot: 1456381) - continued									
EB1803370-019	Anonymous	EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.025	0.023	8.97	No Limit
		EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.042	0.041	0.00	No Limit
		EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.022	0.024	10.9	No Limit
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	13	15	10.9	No Limit
EA029-H: Acid Base Accounting (QC Lot: 1456381)									
EB1803370-019	Anonymous	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	0.64	0.62	3.17	0% - 20%
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.64	0.62	3.17	0% - 20%
		EA029: Liming Rate	----	1	kg CaCO3/t	30	29	3.39	0% - 20%
		EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	30	29	3.39	0% - 20%
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	397	386	2.81	0% - 20%
		EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	397	386	2.81	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1438058)									
EB1804028-001	BH14_0.0_00.5	EA055: Moisture Content	----	1	%	31.0	31.4	1.24	0% - 20%
EB1804349-070	Anonymous	EA055: Moisture Content	----	1	%	15.5	15.4	1.08	0% - 50%
EG005-SD: Total Metals in Sediments by ICP-AES (QC Lot: 1438197)									
EB1804028-001	BH14_0.0_00.5	EG005-SD: Aluminium	7429-90-5	50	mg/kg	5940	5970	0.528	0% - 20%
		EG005-SD: Iron	7439-89-6	50	mg/kg	10400	9220	11.8	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1438198)									
EB1804028-001	BH14_0.0_00.5	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.2	0.2	0.00	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	<0.50	0.00	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	5.8	5.2	11.4	0% - 50%
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	4.02	3.65	9.66	No Limit
		EG020-SD: Chromium	7440-47-3	1	mg/kg	8.5	8.4	0.00	No Limit
		EG020-SD: Copper	7440-50-8	1	mg/kg	13.0	10.5	21.3	0% - 50%
		EG020-SD: Lead	7439-92-1	1	mg/kg	3.2	3.3	0.00	No Limit
		EG020-SD: Nickel	7440-02-0	1	mg/kg	5.5	5.4	0.00	No Limit
		EG020-SD: Zinc	7440-66-6	1	mg/kg	22.4	21.0	6.44	0% - 20%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	104	69	39.7	0% - 50%
		EG020-SD: Vanadium	7440-62-2	2	mg/kg	28.2	25.6	9.78	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1438199)									
EB1804028-001	BH14_0.0_00.5	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	0.00	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 1438187)									
EB1804028-001	BH14_0.0_00.5	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 1438186)									
EB1804028-001	BH14_0.0_00.5	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 1438185)									
EB1804028-001	BH14_0.0_00.5	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	240	290	17.7	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 1438184)									
EB1804028-001	BH14_0.0_00.5	EK067G: Total Phosphorus as P	----	2	mg/kg	188	226	18.7	0% - 20%
EK255A SD: Ammonia in Sediment (QC Lot: 1441924)									
EB1804028-001	BH14_0.0_00.5	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	3.1	3.2	0.00	0% - 50%
EB1804131-011	Anonymous	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	166	171	2.65	0% - 20%
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 1462933)									
EB1804028-001	BH14_0.0_00.5	EP003: Total Organic Carbon	----	0.02	%	0.55	0.59	6.10	0% - 20%
EB1804488-008	Anonymous	EP003: Total Organic Carbon	----	0.02	%	0.52	0.52	0.00	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1438056)									
EB1804028-005	TRIPBLANK01	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1438056)									
EB1804028-005	TRIPBLANK01	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 1438056)									
EB1804028-005	TRIPBLANK01	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1438055)									
EB1804028-001	BH14_0.0_00.5	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1438183)									
EB1804028-001	BH14_0.0_00.5	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1438055)									
EB1804028-001	BH14_0.0_00.5	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1438183)									
EB1804028-001	BH14_0.0_00.5	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD: BTEXN (QC Lot: 1438055)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080-SD: BTEXN (QC Lot: 1438055) - continued									
EB1804028-001	BH14_0.0_00.5	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
			106-42-3						
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP090: Organotin Compounds (QC Lot: 1446310)									
EB1804028-001	BH14_0.0_00.5	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.00	No Limit
		EP090: Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	0.00	No Limit
		EP090: Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	0.00	No Limit
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1438426)									
EB1804028-001	BH14_0.0_00.5	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1449684)									
EB1804028-003	TRIP_1B	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit

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 Work Order : EB1804028
 Client : AURECON AUSTRALASIA PTY LTD
 Project : 237374



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1449684) - continued									
EB1804028-003	TRIP_1B	EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit		
EP131A: Organochlorine Pesticides (QC Lot: 1438428)									
EB1804028-001	BH14_0.0_00.5	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131A: Organochlorine Pesticides (QC Lot: 1449686)									
EB1804028-003	TRIP_1B	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1438427)									
EB1804028-001	BH14_0.0_00.5	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1449685)									
EB1804028-003	TRIP_1B	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	<5.0	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1449685) - continued									
EB1804028-003	TRIP_1B	EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1438429)									
EB1804028-001	BH14_0.0_00.5	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	<4	0.00	No Limit
		205-82-3							
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenzo(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1449696)									
EB1804028-002	TRIP_1A	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	<4	0.00	No Limit
		205-82-3							
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1449696) - continued									
EB1804028-002	TRIP_1A	EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1,2,3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit		
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1438213)									
EB1804220-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.032	0.033	0.00	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.078	0.080	3.74	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.025	0.028	12.7	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	0.34	0.29	13.6	No Limit
EB1804025-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.070	0.070	0.00	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.030	0.030	0.00	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.006	0.006	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.00	No Limit

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 Work Order : EB1804028
 Client : AURECON AUSTRALASIA PTY LTD
 Project : 237374



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1438217)									
EB1804025-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EB1804220-004	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1446472)									
EB1804028-006	RIN01	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EB1804676-009	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1446472)									
EB1804028-006	RIN01	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EB1804676-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1446472)									
EB1804028-006	RIN01	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EB1804676-009	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	8	9	15.5	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)
				Concentration		LCS	Low	High
EA029-A: pH Measurements (QCLot: 1456381)								
EA029: pH KCl (23A)	----	0.1	pH Unit	<0.1	4.6 pH Unit	100	70	130
EA029: pH OX (23B)	----	0.1	pH Unit	<0.1	4.3 pH Unit	102	70	130
EA029-B: Acidity Trail (QCLot: 1456381)								
EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	17.7 mole H+ / t	91.5	70	130
EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	35.2 mole H+ / t	106	70	130
EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	----	----	----	----
EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029-C: Sulfur Trail (QCLot: 1456381)								
EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.020	0.052 % S	90.6	70	130
EA029: Peroxide Sulfur (23De)	----	0.02	% S	<0.020	0.158 % S	87.6	70	130
EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.020	----	----	----	----
EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	----	----	----	----
EA029-D: Calcium Values (QCLot: 1456381)								
EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	<0.020	0.097 % Ca	102	70	130
EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	<0.020	0.22 % Ca	94.3	70	130
EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.020	----	----	----	----
EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.020	----	----	----	----
EA029-E: Magnesium Values (QCLot: 1456381)								
EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	<0.020	0.25 % Mg	74.6	70	130
EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	<0.020	0.234 % Mg	93.1	70	130
EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.020	----	----	----	----
EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	<0.020	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity (QCLot: 1456381)								
EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	<0.020	----	----	----	----
EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	<0.020	----	----	----	----
EA029-H: Acid Base Accounting (QCLot: 1456381)								
EA029: ANC Fineness Factor	----	0.5	-	<0.5	----	----	----	----
EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA029-H: Acid Base Accounting (QCLot: 1456381) - continued								
EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	----	----	----	----
EG005-SD: Total Metals in Sediments by ICP-AES (QCLot: 1438197)								
EG005-SD: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005-SD: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1438198)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1	mg/kg	<1.00	116.3 mg/kg	101	80	124
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	1.43 mg/kg	97.5	87	122
EG020-SD: Chromium	7440-47-3	1	mg/kg	<1.0	20.5 mg/kg	83.8	79	129
EG020-SD: Copper	7440-50-8	1	mg/kg	<1.0	52.9 mg/kg	101	85	118
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	----	----	----	----
EG020-SD: Lead	7439-92-1	1	mg/kg	<1.0	66.3 mg/kg	102	86	119
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	----	----	----	----
EG020-SD: Nickel	7440-02-0	1	mg/kg	<1.0	14.72 mg/kg	101	77	123
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	----	----	----	----
EG020-SD: Zinc	7440-66-6	1	mg/kg	<1.0	182.3 mg/kg	108	71	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1438199)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.0555 mg/kg	90.0	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1438187)								
EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	2.5 mg/kg	92.4	83	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1438186)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	94.2	86	115
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 1438185)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20	877 mg/kg	91.0	70	110
				<20	3644 mg/kg	82.5	70	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1438184)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2	766 mg/kg	89.6	70	110
				<2	1200 mg/kg	92.3	70	110
EK255A SD: Ammonia in Sediment (QCLot: 1441924)								
EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	<0.2	1 mg/kg	82.4	79	121
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 1462933)								



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 1462933) - continued								
EP003: Total Organic Carbon	----	0.02	%	<0.02	17.61 %	96.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1438056)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	85.4	72	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1438056)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	85.9	70	119
EP080: BTEXN (QCLot: 1438056)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	86.4	69	118
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	92.1	73	123
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	88.6	73	115
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	89.5	75	115
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	93.2	75	115
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	89.9	71	113
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1438055)								
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	16 mg/kg	83.7	66	120
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1438183)								
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	159 mg/kg	91.0	43	126
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	266 mg/kg	99.6	66	140
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1438055)								
EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	18.5 mg/kg	84.6	66	119
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1438183)								
EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	214 mg/kg	95.6	40	134
EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	198 mg/kg	97.9	66	136
EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD: BTEXN (QCLot: 1438055)								
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	85.9	73	105
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	1 mg/kg	88.0	73	105
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	1 mg/kg	86.4	67	104
EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	2 mg/kg	87.3	66	106
	106-42-3							
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	1 mg/kg	85.6	68	105
EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	1 mg/kg	91.7	72	115



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP090: Organotin Compounds (QCLot: 1446310)								
EP090: Monobutyltin	78763-54-9	1	µgSn/kg	<1	1.25 µgSn/kg	111	36	128
EP090: Dibutyltin	1002-53-5	1	µgSn/kg	<1	1.25 µgSn/kg	112	42	132
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	1.25 µgSn/kg	104	52	139
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1438426)								
EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	50 µg/kg	71.7	49	117
EP130: Carbophenothion	786-19-6	10	µg/kg	<10	50 µg/kg	70.0	54	104
EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	5 µg/kg	76.4	48	156
EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	50 µg/kg	75.6	53	119
EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	50 µg/kg	73.4	54	112
EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	50 µg/kg	74.9	52	108
EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	50 µg/kg	74.2	51	109
EP130: Diazinon	333-41-5	10	µg/kg	<10	50 µg/kg	71.4	57	121
EP130: Dichlorvos	62-73-7	10	µg/kg	<10	50 µg/kg	72.8	48	104
EP130: Dimethoate	60-51-5	10	µg/kg	<10	50 µg/kg	83.8	52	120
EP130: Ethion	563-12-2	10	µg/kg	<10	50 µg/kg	74.1	51	121
EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	50 µg/kg	76.0	50	120
EP130: Fenthion	55-38-9	10	µg/kg	<10	50 µg/kg	73.8	48	112
EP130: Malathion	121-75-5	10	µg/kg	<10	50 µg/kg	77.4	51	121
EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	50 µg/kg	77.7	45	127
EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	50 µg/kg	80.3	48	128
EP130: Parathion	56-38-2	10	µg/kg	<10	50 µg/kg	73.8	49	125
EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	50 µg/kg	73.7	51	119
EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	50 µg/kg	71.0	48	120
EP130: Prothiofos	34643-46-4	10	µg/kg	<10	50 µg/kg	72.4	51	117
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1449684)								
EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	50 µg/kg	88.5	49	117
EP130: Carbophenothion	786-19-6	10	µg/kg	<10	50 µg/kg	75.2	54	104
EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	5 µg/kg	101	48	156
EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	50 µg/kg	97.0	53	119
EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	50 µg/kg	93.5	54	112
EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	50 µg/kg	96.2	52	108
EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	50 µg/kg	80.6	51	109
EP130: Diazinon	333-41-5	10	µg/kg	<10	50 µg/kg	93.5	57	121
EP130: Dichlorvos	62-73-7	10	µg/kg	<10	50 µg/kg	78.3	48	104
EP130: Dimethoate	60-51-5	10	µg/kg	<10	50 µg/kg	81.0	52	120
EP130: Ethion	563-12-2	10	µg/kg	<10	50 µg/kg	98.2	51	121
EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	50 µg/kg	101	50	120
EP130: Fenthion	55-38-9	10	µg/kg	<10	50 µg/kg	85.8	48	112
EP130: Malathion	121-75-5	10	µg/kg	<10	50 µg/kg	94.7	51	121



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1449684) - continued								
EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	50 µg/kg	76.6	45	127
EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	50 µg/kg	84.0	48	128
EP130: Parathion	56-38-2	10	µg/kg	<10	50 µg/kg	83.1	49	125
EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	50 µg/kg	87.0	51	119
EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	50 µg/kg	86.5	48	120
EP130: Prothiofos	34643-46-4	10	µg/kg	<10	50 µg/kg	97.0	51	117
EP131A: Organochlorine Pesticides (QCLot: 1438428)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	96.0	38	139
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	85.1	18	136
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	103	31	131
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	88.7	37	140
EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	93.6	26	141
EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	60.2	35	129
EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	5 µg/kg	97.0	23	138
EP131A: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	5 µg/kg	94.0	30	140
EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	5 µg/kg	80.7	38	140
EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	5 µg/kg	91.9	32	152
EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	5 µg/kg	94.8	36	155
EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	5 µg/kg	119	26	158
EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	5 µg/kg	83.1	20	118
EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	5 µg/kg	95.0	13	135
EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	5 µg/kg	92.1	39	155
EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	5 µg/kg	90.9	34	148
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	5 µg/kg	98.8	26	152
EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	5 µg/kg	87.6	31	137
EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	5 µg/kg	97.5	36	152
EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	5 µg/kg	87.2	36	142
EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	5 µg/kg	94.1	30	138
EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	----	----	----	----
EP131A: Organochlorine Pesticides (QCLot: 1449686)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	86.5	38	139
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	78.7	18	136
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	104	31	131
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	81.0	37	140
EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	96.5	26	141
EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	85.1	35	129

Method Blank (MB) Report

Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
	LCS	Low	High

[illegible]



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1438429) - continued								
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	80.1	63	129
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	84.1	64	128
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	76.3	65	129
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	80.2	68	132
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	82.6	68	124
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	80.1	64	134
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	79.7	65	131
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	76.1	64	130
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	79.0	67	133
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	77.9	62	130
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	84.4	65	133
EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	77.4	68	120
	205-82-3							
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	76.1	61	133
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	78.3	63	127
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	76.9	66	118
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	74.8	69	119
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	77.5	66	120
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	79.4	64	122
EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	74.5	64	120
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	76.3	68	136
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1449696)								
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	97.8	63	129
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	91.7	64	128
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	83.9	65	129
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	80.6	68	132
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	81.0	68	124
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	81.2	64	134
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	80.7	65	131
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	79.6	64	130
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	81.1	67	133
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	81.9	62	130
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	84.9	65	133
EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	81.0	68	120
	205-82-3							
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	83.9	61	133
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	82.5	63	127
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	85.0	66	118



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)	
						Concentration	LCS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1449696) - continued									
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	80.0	69	119	
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	84.0	66	120	
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	83.8	64	122	
EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	79.5	64	120	
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	81.2	68	136	
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----	

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020T: Total Metals by ICP-MS (QCLot: 1438213)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	88.8	88	112
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	108	81	119
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.5 mg/L	83.9	70	130
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	88.4	88	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	89.5	89	115
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	89.9	89	115
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.2 mg/L	88.1	88	116
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	112	89	112
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	91.0	88	114
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	88.6	88	116
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	104	79	111
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	88.7	87	114
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.2 mg/L	84.9	84	114
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	113	82	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1438217)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	102	84	118
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1441880)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	83.2	55	131
EP068A: Organochlorine Pesticides (OC) (QCLot: 1441881)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	100	45	125
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	88.1	41	121
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	95.2	39	122
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	96.4	42	119
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	84.6	53	112
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	91.0	45	118
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	85.0	52	123
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	82.4	52	124
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	81.6	48	125



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit						
EP068A: Organochlorine Pesticides (OC) (QCLot: 1441881) - continued								
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	86.3	54	128
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	78.0	51	125
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	81.4	50	124
EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	74.0	56	122
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	78.1	47	129
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	78.6	50	126
EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	87.9	52	124
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	79.1	49	131
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	83.1	37	124
EP068: 4,4'-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	74.4	35	131
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	78.3	45	129
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	93.8	32	135
EP068: Total Chlordane (sum)	----	0.5	µg/L	<0.5	----	----	----	----
EP068: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.5	µg/L	<0.5	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60- 57-1	0.5	µg/L	<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1441881)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	94.0	49	115
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	106	44	118
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	# 5.87	16	49
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	88.0	41	111
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	91.0	44	129
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	88.6	50	118
EP068: Parathion-methyl	298-00-0	----	µg/L	----	5 µg/L	82.9	50	118
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	80.5	51	122
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	82.8	49	121
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	87.3	54	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	77.0	43	123
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	76.1	52	126
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	74.1	50	127
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	77.6	52	124
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	62.5	43	121
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	76.6	53	126
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	76.3	50	127
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	76.0	48	128
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	84.7	44	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1441879)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	10 µg/L	65.6	47	101



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1441879) - continued								
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	10 µg/L	77.0	46	109
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	10 µg/L	72.4	50	104
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	10 µg/L	78.2	50	114
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	10 µg/L	84.6	49	114
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	10 µg/L	88.9	48	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	10 µg/L	90.2	48	120
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	10 µg/L	89.0	48	119
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	10 µg/L	83.1	48	125
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	10 µg/L	93.1	45	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	10 µg/L	68.9	43	130
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	10 µg/L	94.2	46	130
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	10 µg/L	70.1	49	125
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	10 µg/L	81.3	40	132
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	10 µg/L	78.4	42	140
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	10 µg/L	79.6	39	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1441882)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	1211 µg/L	83.0	38	114
EP071: C15 - C28 Fraction	----	100	µg/L	<100	2103 µg/L	113	50	132
EP071: C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1446472)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	160 µg/L	85.4	76	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1441882)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	1696 µg/L	92.3	43	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	1496 µg/L	118	49	134
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1446472)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	185 µg/L	78.0	75	123
EP080: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
	X							
EP080: BTEXN (QCLot: 1446472)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	87.1	77	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	89.0	78	122
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	86.7	78	119
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	20 µg/L	84.9	77	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	86.5	76	121
EP080: Total Xylenes	----	2	µg/L	<2	----	----	----	----

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 Work Order : EB1804028
 Client : AURECON AUSTRALASIA PTY LTD
 Project : 237374



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080: BTEXN (QCLot: 1446472) - continued								
EP080: Sum of BTEX	----	1	µg/L	<1	----	----	----	----
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	98.4	75	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1438198)							
EB1804028-002	TRIP_1A	EG020-SD: Arsenic	7440-38-2	50 mg/kg	104	70	130
		EG020-SD: Cadmium	7440-43-9	25 mg/kg	102	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	98.3	70	130
		EG020-SD: Copper	7440-50-8	50 mg/kg	112	70	130
		EG020-SD: Cobalt	7440-48-4	50 mg/kg	110	70	130
		EG020-SD: Lead	7439-92-1	50 mg/kg	106	70	130
		EG020-SD: Manganese	7439-96-5	50 mg/kg	121	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	107	70	130
		EG020-SD: Vanadium	7440-62-2	50 mg/kg	116	70	130
		EG020-SD: Zinc	7440-66-6	50 mg/kg	110	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1438199)							
EB1804028-002	TRIP_1A	EG035T-LL: Mercury	7439-97-6	0.5 mg/kg	76.4	70	130
EK255A SD: Ammonia in Sediment (QCLot: 1441924)							
EB1804028-001	BH14_0.0_00.5	EK255A: Ammonia as N	7664-41-7	0.5 mg/kg	# Not Determined	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1438055)							
EB1804028-002	TRIP_1A	EP080-SD: C6 - C9 Fraction	----	8 mg/kg	78.4	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1438183)							
EB1804028-002	TRIP_1A	EP071-SD: C10 - C14 Fraction	----	159 mg/kg	89.0	70	130
		EP071-SD: C15 - C28 Fraction	----	266 mg/kg	96.6	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1438055)							
EB1804028-002	TRIP_1A	EP080-SD: C6 - C10 Fraction	C6_C10	8 mg/kg	80.9	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1438183)							
EB1804028-002	TRIP_1A	EP071-SD: >C10 - C16 Fraction	----	214 mg/kg	93.2	70	130
		EP071-SD: >C16 - C34 Fraction	----	198 mg/kg	92.7	70	130



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080-SD: BTEXN (QCLot: 1438055)							
EB1804028-002	TRIP_1A	EP080-SD: Benzene	71-43-2	2 mg/kg	80.4	70	130
		EP080-SD: Toluene	108-88-3	2 mg/kg	85.0	70	130
EP090: Organotin Compounds (QCLot: 1446310)							
EB1804028-002	TRIP_1A	EP090: Monobutyltin	78763-54-9	1.25 µgSn/kg	# 14.4	35	130
		EP090: Dibutyltin	1002-53-5	1.25 µgSn/kg	62.2	20	130
		EP090: Tributyltin	56573-85-4	1.25 µgSn/kg	66.9	20	130
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1438426)							
EB1804028-001	BH14_0.0_00.5	EP130: Bromophos-ethyl	4824-78-6	50 µg/kg	65.5	36	144
		EP130: Carbophenothion	786-19-6	50 µg/kg	79.1	38	120
		EP130: Chlorfenvinphos (E)	18708-86-6	5 µg/kg	122	49	157
		EP130: Chlorfenvinphos (Z)	18708-87-7	50 µg/kg	70.1	53	145
		EP130: Chlorpyrifos	2921-88-2	50 µg/kg	70.1	60	140
		EP130: Chlorpyrifos-methyl	5598-13-0	50 µg/kg	66.9	56	126
		EP130: Demeton-S-methyl	919-86-8	50 µg/kg	86.7	10	148
		EP130: Diazinon	333-41-5	50 µg/kg	66.7	60	122
		EP130: Dichlorvos	62-73-7	50 µg/kg	77.2	33	123
		EP130: Dimethoate	60-51-5	50 µg/kg	92.3	36	142
		EP130: Ethion	563-12-2	50 µg/kg	69.4	48	136
		EP130: Fenamiphos	22224-92-6	50 µg/kg	74.5	42	136
		EP130: Fenthion	55-38-9	50 µg/kg	62.8	35	131
		EP130: Malathion	121-75-5	50 µg/kg	74.4	55	141
		EP130: Azinphos Methyl	86-50-0	50 µg/kg	83.2	24	132
		EP130: Monocrotophos	6923-22-4	50 µg/kg	78.9	35	153
		EP130: Parathion	56-38-2	50 µg/kg	79.4	57	147
		EP130: Parathion-methyl	298-00-0	50 µg/kg	67.1	48	140
		EP130: Pirimphos-ethyl	23505-41-1	50 µg/kg	73.6	45	137
		EP130: Prothiofos	34643-46-4	50 µg/kg	75.3	51	137
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1449684)							
EB1804028-003	TRIP_1B	EP130: Bromophos-ethyl	4824-78-6	50 µg/kg	51.7	36	144
		EP130: Carbophenothion	786-19-6	50 µg/kg	52.5	38	120
		EP130: Chlorfenvinphos (E)	18708-86-6	5 µg/kg	58.8	49	157
		EP130: Chlorfenvinphos (Z)	18708-87-7	50 µg/kg	56.1	53	145
		EP130: Chlorpyrifos	2921-88-2	50 µg/kg	60.1	60	140
		EP130: Chlorpyrifos-methyl	5598-13-0	50 µg/kg	58.1	56	126
		EP130: Demeton-S-methyl	919-86-8	50 µg/kg	59.9	10	148
		EP130: Diazinon	333-41-5	50 µg/kg	60.7	60	122
		EP130: Dichlorvos	62-73-7	50 µg/kg	52.8	33	123
		EP130: Dimethoate	60-51-5	50 µg/kg	54.8	36	142



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1449684) - continued							
EB1804028-003	TRIP_1B	EP130: Ethion	563-12-2	50 µg/kg	55.9	48	136
		EP130: Fenamiphos	22224-92-6	50 µg/kg	54.3	42	136
		EP130: Fenthion	55-38-9	50 µg/kg	51.8	35	131
		EP130: Malathion	121-75-5	50 µg/kg	56.2	55	141
		EP130: Azinphos Methyl	86-50-0	50 µg/kg	53.5	24	132
		EP130: Monocrotophos	6923-22-4	50 µg/kg	55.6	35	153
		EP130: Parathion	56-38-2	50 µg/kg	58.1	57	147
		EP130: Parathion-methyl	298-00-0	50 µg/kg	62.1	48	140
		EP130: Pirimphos-ethyl	23505-41-1	50 µg/kg	63.5	45	137
		EP130: Prothiofos	34643-46-4	50 µg/kg	63.9	51	137
EP131A: Organochlorine Pesticides (QCLot: 1438428)							
EB1804028-001	BH14_0.0_00.5	EP131A: Aldrin	309-00-2	5 µg/kg	81.6	23	153
		EP131A: alpha-BHC	319-84-6	5 µg/kg	110	18	156
		EP131A: beta-BHC	319-85-7	5 µg/kg	110	25	153
		EP131A: delta-BHC	319-86-8	5 µg/kg	99.5	25	147
		EP131A: 4.4'-DDD	72-54-8	5 µg/kg	95.4	26	150
		EP131A: 4.4'-DDE	72-55-9	5 µg/kg	62.3	31	125
		EP131A: 4.4'-DDT	50-29-3	5 µg/kg	58.8	23	163
		EP131A: Dieldrin	60-57-1	5 µg/kg	97.7	30	140
		EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	72.7	29	135
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	89.6	23	141
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	68.1	16	156
		EP131A: Endrin	72-20-8	5 µg/kg	119	18	162
		EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	87.3	20	116
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	68.4	13	151
		EP131A: Heptachlor	76-44-8	5 µg/kg	85.3	24	170
		EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	99.6	28	140
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	103	18	144
		EP131A: gamma-BHC	58-89-9	5 µg/kg	62.1	22	158
		EP131A: Methoxychlor	72-43-5	5 µg/kg	70.8	24	158
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	94.8	27	139
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	106	30	138
EP131A: Organochlorine Pesticides (QCLot: 1449686)							
EB1804028-003	TRIP_1B	EP131A: Aldrin	309-00-2	5 µg/kg	43.4	23	153
		EP131A: alpha-BHC	319-84-6	5 µg/kg	46.2	18	156
		EP131A: beta-BHC	319-85-7	5 µg/kg	42.0	25	153
		EP131A: delta-BHC	319-86-8	5 µg/kg	37.8	25	147
		EP131A: 4.4'-DDD	72-54-8	5 µg/kg	42.1	26	150
		EP131A: 4.4'-DDE	72-55-9	5 µg/kg	47.4	31	125



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 1449686) - continued							
EB1804028-003	TRIP_1B	EP131A: 4,4'-DDT	50-29-3	5 µg/kg	41.5	23	163
		EP131A: Dieldrin	60-57-1	5 µg/kg	46.8	30	140
		EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	48.3	29	135
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	44.0	23	141
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	44.0	16	156
		EP131A: Endrin	72-20-8	5 µg/kg	54.7	18	162
		EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	51.8	20	116
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	43.3	13	151
		EP131A: Heptachlor	76-44-8	5 µg/kg	41.3	24	170
		EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	39.8	28	140
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	40.7	18	144
		EP131A: gamma-BHC	58-89-9	5 µg/kg	40.7	22	158
		EP131A: Methoxychlor	72-43-5	5 µg/kg	37.9	24	158
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	47.8	27	139
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	45.9	30	138
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1438427)							
EB1804028-001	BH14_0.0_00.5	EP131B: Total Polychlorinated biphenyls	----	50 µg/kg	102	44	136
		EP131B: Aroclor 1254	11097-69-1	50 µg/kg	102	44	136
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1449685)							
EB1804028-003	TRIP_1B	EP131B: Total Polychlorinated biphenyls	----	50 µg/kg	70.0	44	136
		EP131B: Aroclor 1254	11097-69-1	50 µg/kg	70.0	44	136
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1438429)							
EB1804028-001	BH14_0.0_00.5	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	82.8	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	79.5	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	82.7	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	81.1	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	83.6	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	87.4	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	85.3	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	81.4	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	80.3	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	83.5	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	83.4	70	130
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	25 µg/kg	80.5	70	130
			205-82-3				
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	84.2	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	82.4	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	86.8	70	130



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1438429) - continued							
EB1804028-001	BH14_0.0_00.5	EP132B-SD: Perylene	198-55-0	25 µg/kg	83.6	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	84.2	70	130
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	84.0	70	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	84.3	70	130
		EP132B-SD: Coronene	191-07-1	25 µg/kg	80.9	70	130
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1449696)							
EB1804028-002	TRIP_1A	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	108	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	96.6	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	121	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	100	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	106	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	100	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	107	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	101	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	97.8	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	108	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	96.8	70	130
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	25 µg/kg	96.5	70	130
			205-82-3				
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	93.4	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	93.9	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	105	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	100	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	100.0	70	130
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	102	70	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	103	70	130
		EP132B-SD: Coronene	191-07-1	25 µg/kg	96.8	70	130

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1438213)							
EB1804025-005	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	107	70	130
		EG020A-T: Beryllium	7440-41-7	0.1 mg/L	109	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	117	70	130
		EG020A-T: Cadmium	7440-43-9	0.5 mg/L	105	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	110	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	114	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	106	70	130



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1438213) - continued							
EB1804025-005	Anonymous	EG020A-T: Lead	7439-92-1	1 mg/L	116	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	111	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	102	70	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	106	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	102	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1438217)							
EB1804025-005	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	101	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1446472)							
EB1804469-001	Anonymous	EP080: C6 - C9 Fraction	----	40 µg/L	79.5	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1446472)							
EB1804469-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	40 µg/L	76.9	70	130
EP080: BTEXN (QCLot: 1446472)							
EB1804469-001	Anonymous	EP080: Benzene	71-43-2	10 µg/L	79.3	70	130
		EP080: Toluene	108-88-3	10 µg/L	79.0	70	130



please tick ☐

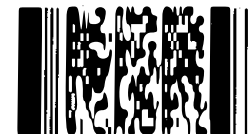
please tick ☐

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS			CONTAINER INFORMATION			ANALYSIS REQUIRED (including SUITES (ND - Note Containers must be labeled to match suite name))										Additional Information
	MATRIX: SOLID (S) WATER (W)						Where Metals are required, specify Total (inflated bottle required) or Dissolved (acid filtered bottle required).										
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <i>(codes below)</i>	<i>(refer to)</i>	TOTAL CONTAINERS	TRI-BTEX, PAH, COPP, PCB, 10 metals	Nutrients (nitrate, nitrite, total phosphorous and total nitrogen), ammonia	Total organic carbon	SPOCAS	Field pH (pH/pH-tox)	Particle size distribution	Dioxins	TRI-STX	HQLO	Comments on likely contaminant levels, violations or samples requiring specific QC analysis etc.	
1	BH01_0_0_5	13/02/2018	S	2x250mL, PSD bag, ASS bag, 150mL		5	X	X	X	X		X	X				
2	ASS_DUP1	13/02/2018	S	ASS Bag		1				X							
3	BH01_0_5_1	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X							
4	BH01_1_0_2.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X		X	X					
5	BH01_2_0_3	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
6	BH01_3_0_3.5	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X		X						
7	BH02_0_0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag, 150mL		5	X	X	X	X		X	X				
8	BH02_0_5_1.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X							
9	BH02_1_0_1.4	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
10	BH12_0_0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
11	BH12_0_5_1.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X							
12	BH12_1_0_2.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
13	ASS_DUP4	13/02/2018	S	ASS Bag		1				X							
14	BH13_1_0_1.8	13/02/2018	S	2x250mL, PSD bag, ASS bag		4									X		
15	BH15_0_0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag, 150mL		5	X	X	X	X		X	X				
16	BH16_0_0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
17	BH20_0_0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag, 150mL		5	X	X	X	X		X					
18	BH21_0_0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
19	BH11_0_0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag, 150mL		5	X	X	X	X		X	X				
20	BH11_0_5_1.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X							
21	BH11_1_0_2.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X		X	X					
22	BH11_2_0_2.7	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
23	ASS_DUP2	13/02/2018	S	ASS Bag		1				X							
24	TRIP_1	13/02/2018	S	Trip Blank		1								X			
25	ASS_DUP3	13/02/2018	S	ASS Bag		1				X							

Water Container Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, GRC = Nitric Preserved GRC, SH = Sodium Hydroxide Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, AP = Air-tight Unpreserved Plastic, V = VOA Val-HCl Preserved, VD = VOA Val Sodium Bisulfate Preserved, VS = VOA Val Sulfuric Preserved, AV = Air-tight Impressed Vial SG = Sulfuric Preserved Amber Glass, H = HCl preserved Plastic, HS = HCl Impressed Specimen bottle, SP = Sulfuric Preserved Plastic, F = Fluoropolymer Preserved and Cooled, Z = Zinc Acetate Preserved Cottle, E = EDTA Preserved Bottles, ST = Sterile Bottles, AS = Plastic Bag for Acid Splash Kits, U = Unpreserved Bag

Environmental Division
Brisbane
Work Order Reference
EB1804131



Telephone : + 61-7-3243 7222

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EB1804131**

Client : AURECON AUSTRALASIA PTY LTD
Contact : MS GEORGINA KERR
Address : LOCKED BAG 331 32 TURBOT STREET
BRISBANE QLD, AUSTRALIA 4001

Laboratory : Environmental Division Brisbane
Contact : John Pickering
Address : 2 Byth Street Stafford QLD Australia 4053

E-mail : georgina.kerr@aurecongroup.com
Telephone : +61 07 3173 8396
Facsimile : +61 07 3173 8001

E-mail : john.pickering@alsglobal.com
Telephone : +61-7-3243 7222
Facsimile : +61-7-3243 7218

Project : 237374
Order number : ----
C-O-C number : ----
Site : ----
Sampler : KAITLIN MULCAHY

Page : 1 of 3
Quote number : EB2018CONWAG0001 (BN/004/18)
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 15-Feb-2018 09:50
Client Requested Due Date : 01-Mar-2018

Issue Date : 15-Feb-2018
Scheduled Reporting Date : **21-Feb-2018**

Delivery Details

Mode of Delivery : Carrier
No. of coolers/boxes : 5
Receipt Detail : MEDIUM ESKY

Security Seal : Intact.
Temperature : 2.1<->7.4°C - Ice present
No. of samples received / analysed : 25 / 23

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **Particle Size Distribution analysis will be conducted by ALS Environmental, Newcastle, NATA accreditation no. 825, Site No. 1656.**
- **Specialty Organics analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA150H/EA152 Particle Sizing with Hydrometer + Soil Particle	SOIL - EK255A SD Ammonia in Sediment by FIA	SOIL - NT-11S Total N + Total P	SOIL - NT-4S NO2 and NO3	SOIL - SD-02 OC/OP/PCB/PAH ultra trace	SOIL - SD-03 Metals by ICPMS (15 metals + low level Hg)
EB1804131-001	13-Feb-2018 00:00	BH01_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804131-003	13-Feb-2018 00:00	BH01_0.5_1.0	✓		✓	✓	✓	✓	✓
EB1804131-004	13-Feb-2018 00:00	BH01_1.0_2.0	✓	✓	✓	✓	✓	✓	✓
EB1804131-005	13-Feb-2018 00:00	BH01_2.0_3.0	✓	✓	✓	✓	✓	✓	✓
EB1804131-006	13-Feb-2018 00:00	BH01_3.0_3.5	✓		✓	✓	✓	✓	✓
EB1804131-007	13-Feb-2018 00:00	BH02_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804131-008	13-Feb-2018 00:00	BH02_0.5_1.0	✓		✓	✓	✓	✓	✓
EB1804131-009	13-Feb-2018 00:00	BH02_1.0_1.4	✓	✓	✓	✓	✓	✓	✓
EB1804131-010	13-Feb-2018 00:00	BH12_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804131-011	13-Feb-2018 00:00	BH12_0.5_1.0	✓		✓	✓	✓	✓	✓
EB1804131-012	13-Feb-2018 00:00	BH12_1.0_2.0	✓	✓	✓	✓	✓	✓	✓
EB1804131-015	13-Feb-2018 00:00	BH15_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804131-016	13-Feb-2018 00:00	BH16_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804131-017	13-Feb-2018 00:00	BH20_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804131-018	13-Feb-2018 00:00	BH21_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804131-019	13-Feb-2018 00:00	BH11_0.0-0.5	✓	✓	✓	✓	✓	✓	✓
EB1804131-020	13-Feb-2018 00:00	BH11_0.5-1.0	✓		✓	✓	✓	✓	✓
EB1804131-021	13-Feb-2018 00:00	BH11_1.0-2.0	✓	✓	✓	✓	✓	✓	✓
EB1804131-022	13-Feb-2018 00:00	BH11_2.0-2.7	✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA029 SPOCAS	SOIL - EA037 ASS Field Screening Analysis	SOIL - EP071 - SD TRH ultra trace in sediments	SOIL - EP080-SD TRH(V)/BTEXN in Sediments
EB1804131-001	13-Feb-2018 00:00	BH01_0.0_0.5		✓		✓	✓
EB1804131-002	13-Feb-2018 00:00	ASS_DUP1		✓			
EB1804131-003	13-Feb-2018 00:00	BH01_0.5_1.0		✓		✓	✓
EB1804131-004	13-Feb-2018 00:00	BH01_1.0_2.0			✓	✓	✓
EB1804131-005	13-Feb-2018 00:00	BH01_2.0_3.0		✓		✓	✓



			(On Hold) SOIL No analysis requested	SOIL - EA029 SPOCAS	SOIL - EA037 ASS Field Screening Analysis	SOIL - EP071 - SD TRH ultra trace in sediments	SOIL - EP080-SD TRH(V)/BTEXN in Sediments
EB1804131-006	13-Feb-2018 00:00	BH01_3.0_3.5			✓	✓	✓
EB1804131-007	13-Feb-2018 00:00	BH02_0.0_0.5		✓		✓	✓
EB1804131-008	13-Feb-2018 00:00	BH02_0.5_1.0		✓		✓	✓
EB1804131-009	13-Feb-2018 00:00	BH02_1.0_1.4		✓		✓	✓
EB1804131-010	13-Feb-2018 00:00	BH12_0.0_0.5		✓		✓	✓
EB1804131-011	13-Feb-2018 00:00	BH12_0.5_1.0		✓		✓	✓
EB1804131-012	13-Feb-2018 00:00	BH12_1.0_2.0		✓		✓	✓
EB1804131-013	13-Feb-2018 00:00	ASS_DUP4		✓			
EB1804131-014	13-Feb-2018 00:00	BH13_1.0_1.8	✓				
EB1804131-015	13-Feb-2018 00:00	BH15_0.0_0.5		✓		✓	✓
EB1804131-016	13-Feb-2018 00:00	BH16_0.0_0.5		✓		✓	✓
EB1804131-017	13-Feb-2018 00:00	BH20_0.0_0.5		✓		✓	✓
EB1804131-018	13-Feb-2018 00:00	BH21_0.0_0.5		✓		✓	✓
EB1804131-019	13-Feb-2018 00:00	BH11_0.0-0.5		✓		✓	✓
EB1804131-020	13-Feb-2018 00:00	BH11_0.5-1.0		✓		✓	✓
EB1804131-021	13-Feb-2018 00:00	BH11_1.0-2.0			✓	✓	✓
EB1804131-022	13-Feb-2018 00:00	BH11_2.0-2.7		✓		✓	✓
EB1804131-023	13-Feb-2018 00:00	ASS_DUP2		✓			
EB1804131-024	13-Feb-2018 00:00	TRIP_1	✓				
EB1804131-025	13-Feb-2018 00:00	ASS_DUP3		✓			

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)

Email creditors@aurecongroup.com

EQUIS REPORTING

- EDI Format - EQUIS_AURECON (EQUIS_AURECON)

Email Aurecon.equis@aurecongroup.com

GEORGINA KERR

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Attachment - Report (SUBCO)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS_AURECON (EQUIS_AURECON)
- EDI Format - XTab (XTAB)

Email georgina.kerr@aurecongroup.com
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Email georgina.kerr@aurecongroup.com

JOHN PICKERING

- Chain of Custody (CoC) (COC)

Email john.pickering@alsglobal.com

CERTIFICATE OF ANALYSIS

Work Order : **EB1804131**
Client : **AURECON AUSTRALASIA PTY LTD**
Contact : **MS GEORGINA KERR**
Address : **LOCKED BAG 331 32 TURBOT STREET**
BRISBANE QLD, AUSTRALIA 4001
Telephone : **+61 07 3173 8396**
Project : **237374**
Order number : **----**
C-O-C number : **----**
Sampler : **KAITLIN MULCAHY**
Site : **----**
Quote number : **BN/004/18**
No. of samples received : **25**
No. of samples analysed : **23**

Page : 1 of 38
Laboratory : Environmental Division Brisbane
Contact : John Pickering
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 15-Feb-2018 09:50
Date Analysis Commenced : 16-Feb-2018
Issue Date : 26-Feb-2018 14:06



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	Position	Accreditation Category
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Dianne Blane	Laboratory Coordinator (2IC)	Newcastle - Inorganics, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils, Stafford, QLD
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Inorganics, Stafford, QLD



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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP080-SD: The LOR for particular samples has been raised due to high moisture content.
- EG020-SD (Total Metals in Sediments by ICP-MS): Sample EB1804131-019 (BH11_0.0-0.5) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EK067G (Total Phosphorous as P): Sample EB1804131_020 shows poor spike recovery due to sample heterogeneity. This has been confirmed by visual inspection.
- EP071: Sample BH11_0.5-1.0 shows poor matrix spike recovery due to matrix interference. Confirmed by re-extraction and re-analysis.
- EP090 Organotin: Sample 'BH01_0.5_1.0' shows poor matrix spike recovery for MBT due to matrix interference.
- **Specialty Organics analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- ASS: EA029 (SPOCAS): Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- ASS: EA029 (SPOCAS): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO₃) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from kg/t dry weight to kg/m³ in-situ soil, multiply reported results x wet bulk density of soil in t/m³.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_0.0_0.5	ASS_DUP1	BH01_0.5_1.0	BH01_1.0_2.0	BH01_2.0_3.0
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-001	EB1804131-002	EB1804131-003	EB1804131-004	EB1804131-005
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.4	8.6	8.5	----	8.3
pH OX (23B)	----	0.1	pH Unit		8.3	7.9	6.2	----	7.0
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	----	<2
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	<2	17	----	<2
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	<2	17	----	<2
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	----	<0.020
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		<0.020	<0.020	0.027	----	<0.020
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		<0.020	<0.020	0.027	----	<0.020
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.114	0.105	0.097	----	0.060
Peroxide Sulfur (23De)	----	0.020	% S		0.654	0.692	0.755	----	0.530
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		0.540	0.587	0.658	----	0.470
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		336	366	411	----	293
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.272	0.239	0.228	----	0.183
Peroxide Calcium (23Wh)	----	0.020	% Ca		2.42	1.04	0.600	----	0.430
Acid Reacted Calcium (23X)	----	0.020	% Ca		2.15	0.798	0.372	----	0.248
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		1070	398	186	----	124
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		1.72	0.638	0.298	----	0.198
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.167	0.138	0.143	----	0.137
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.428	0.277	0.268	----	0.315
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.261	0.139	0.125	----	0.177
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		215	114	103	----	146
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.345	0.183	0.165	----	0.234
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		5.18	1.48	----	----	0.748
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		1040	296	----	----	150
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		1.66	0.474	----	----	0.239

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_0.0_0.5	ASS_DUP1	BH01_0.5_1.0	BH01_1.0_2.0	BH01_2.0_3.0
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804131-001	EB1804131-002	EB1804131-003	EB1804131-004	EB1804131-005	
				Result	Result	Result	Result	Result	
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	----	1.5	
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.24	----	<0.02	
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	148	----	<10	
Liming Rate	----	1	kg CaCO3/t	<1	<1	11	----	<1	
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.54	0.59	0.24	----	0.47	
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	336	366	148	----	293	
Liming Rate excluding ANC	----	1	kg CaCO3/t	25	27	11	----	22	
EA037: Ass Field Screening Analysis									
ø pH (F)	----	0.1	pH Unit	----	----	----	8.2	----	
ø pH (Fox)	----	0.1	pH Unit	----	----	----	4.4	----	
ø Reaction Rate	----	1	-	----	----	----	3	----	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	41.7	----	45.0	42.8	41.2	
EA150: Particle Sizing									
+75µm	----	1	%	11	----	----	3	5	
+150µm	----	1	%	6	----	----	<1	<1	
+300µm	----	1	%	5	----	----	<1	<1	
+425µm	----	1	%	4	----	----	<1	<1	
+600µm	----	1	%	3	----	----	<1	<1	
+1180µm	----	1	%	2	----	----	<1	<1	
+2.36mm	----	1	%	<1	----	----	<1	<1	
+4.75mm	----	1	%	<1	----	----	<1	<1	
+9.5mm	----	1	%	<1	----	----	<1	<1	
+19.0mm	----	1	%	<1	----	----	<1	<1	
+37.5mm	----	1	%	<1	----	----	<1	<1	
+75.0mm	----	1	%	<1	----	----	<1	<1	
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%	46	----	----	50	49	
Silt (2-60 µm)	----	1	%	35	----	----	42	40	
Sand (0.06-2.00 mm)	----	1	%	18	----	----	8	11	
Gravel (>2mm)	----	1	%	1	----	----	<1	<1	
Cobbles (>6cm)	----	1	%	<1	----	----	<1	<1	
EA152: Soil Particle Density									

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_0.0_0.5	ASS_DUP1	BH01_0.5_1.0	BH01_1.0_2.0	BH01_2.0_3.0
Client sampling date / time				13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	
Compound	CAS Number	LOR	Unit	EB1804131-001	EB1804131-002	EB1804131-003	EB1804131-004	EB1804131-005	
				Result	Result	Result	Result	Result	
EA152: Soil Particle Density - Continued									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.57	----	----	2.65	2.53	
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	13200	----	16400	13700	15000	
Iron	7439-89-6	50	mg/kg	25300	----	30800	23400	27700	
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg	<0.50	----	<0.50	<0.50	<0.50	
Arsenic	7440-38-2	1.00	mg/kg	11.3	----	14.7	12.3	10.4	
Cadmium	7440-43-9	0.1	mg/kg	<0.1	----	<0.1	<0.1	<0.1	
Chromium	7440-47-3	1.0	mg/kg	20.2	----	24.4	22.1	21.6	
Copper	7440-50-8	1.0	mg/kg	20.0	----	32.9	23.9	29.9	
Cobalt	7440-48-4	0.5	mg/kg	12.2	----	16.8	12.8	13.4	
Lead	7439-92-1	1.0	mg/kg	8.4	----	9.4	9.5	9.1	
Manganese	7439-96-5	10	mg/kg	260	----	354	289	607	
Nickel	7440-02-0	1.0	mg/kg	11.2	----	15.0	12.2	13.0	
Selenium	7782-49-2	0.1	mg/kg	0.5	----	0.6	0.5	0.6	
Silver	7440-22-4	0.1	mg/kg	<0.1	----	<0.1	<0.1	0.4	
Vanadium	7440-62-2	2.0	mg/kg	51.1	----	67.5	54.4	56.8	
Zinc	7440-66-6	1.0	mg/kg	37.9	----	51.3	40.4	45.1	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg	0.01	----	0.02	0.01	0.01	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	----	<0.1	<0.1	<0.1	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	<0.1	----	<0.1	<0.1	<0.1	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	----	<0.1	<0.1	<0.1	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg	470	----	540	490	530	
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg	470	----	540	490	530	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	220	----	281	288	450	
EK255A SD: Ammonia in Sediment									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_0.0_0.5	ASS_DUP1	BH01_0.5_1.0	BH01_1.0_2.0	BH01_2.0_3.0
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-001	EB1804131-002	EB1804131-003	EB1804131-004	EB1804131-005
					Result	Result	Result	Result	Result
EK255A SD: Ammonia in Sediment - Continued									
Ammonia as N	7664-41-7	0.2	mg/kg		11.0	----	18.9	41.0	80.0
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	----	<3	<3	<3
>C16 - C34 Fraction	----	3	mg/kg		<3	----	<3	<3	<3
>C34 - C40 Fraction	----	5	mg/kg		<5	----	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	----	<3	<3	<3
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	----	<3	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	----	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg		<3	----	<3	<3	<3
C15 - C28 Fraction	----	3	mg/kg		<3	----	<3	<3	<3
C29 - C36 Fraction	----	5	mg/kg		<5	----	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	----	<3	<3	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	----	<3	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	----	<3.0	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	----	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg		<1	----	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	<0.5	<0.5	<0.5
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	----	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	----	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH01_0.0_0.5	ASS_DUP1	BH01_0.5_1.0	BH01_1.0_2.0	BH01_2.0_3.0
Client sampling date / time				13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804131-001	EB1804131-002	EB1804131-003	EB1804131-004	EB1804131-005
				Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg	<10.0	----	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	----	<10	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg	<10	----	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	----	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg	<10	----	<10	<10	<10
Diazinon	333-41-5	10	µg/kg	<10	----	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg	<10	----	<10	<10	<10
Dimethoate	60-51-5	10	µg/kg	<10	----	<10	<10	<10
Ethion	563-12-2	10	µg/kg	<10	----	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg	<10	----	<10	<10	<10
Fenthion	55-38-9	10	µg/kg	<10	----	<10	<10	<10
Malathion	121-75-5	10	µg/kg	<10	----	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg	<10	----	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg	<10	----	<10	<10	<10
Parathion	56-38-2	10	µg/kg	<10	----	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg	<10	----	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	----	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg	<10	----	<10	<10	<10
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
4,4`-DDD	72-54-8	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
4,4`-DDE	72-55-9	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
4,4`-DDT	50-29-3	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH01_0.0_0.5	ASS_DUP1	BH01_0.5_1.0	BH01_1.0_2.0	BH01_2.0_3.0
Client sampling date / time				13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804131-001	EB1804131-002	EB1804131-003	EB1804131-004	EB1804131-005
				Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued								
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	----	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	----	<0.25	<0.25	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	----	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg	<0.25	----	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	----	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	----	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	----	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	----	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	----	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	----	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	----	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	----	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	----	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	----	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	----	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg	<4	----	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg	<4	----	<4	<4	<4
Fluorene	86-73-7	4	µg/kg	<4	----	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg	<4	----	<4	<4	<4
Anthracene	120-12-7	4	µg/kg	<4	----	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg	<4	----	<4	<4	<4
Pyrene	129-00-0	4	µg/kg	<4	----	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg	<4	----	<4	<4	<4
Chrysene	218-01-9	4	µg/kg	<4	----	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	----	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	----	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	----	<4	<4	<4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_0.0_0.5	ASS_DUP1	BH01_0.5_1.0	BH01_1.0_2.0	BH01_2.0_3.0
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-001	EB1804131-002	EB1804131-003	EB1804131-004	EB1804131-005
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	----	<4	<4	<4
Perylene	198-55-0	4	µg/kg		<4	----	10	8	7
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	----	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	----	<4	<4	<4
Indeno(1,2,3-cd)pyrene	193-39-5	4	µg/kg		<4	----	<4	<4	<4
Coronene	191-07-1	5	µg/kg		<5	----	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		<4	----	10	8	7
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		111	----	105	117	112
Toluene-D8	2037-26-5	0.2	%		87.4	----	87.9	88.6	88.9
4-Bromofluorobenzene	460-00-4	0.2	%		94.4	----	95.6	96.3	97.6
EP090S: Organotin Surrogate									
Tripopyltin	----	0.5	%		95.0	----	106	99.1	92.8
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		55.5	----	65.5	79.3	47.7
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		87.4	----	125	127	118
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		77.8	----	110	121	88.7
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		85.9	----	110	86.8	83.0
Anthracene-d10	1719-06-8	10	%		94.9	----	120	98.0	96.8
4-Terphenyl-d14	1718-51-0	10	%		95.6	----	124	95.3	93.3



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_3.0_3.5	BH02_0.0_0.5	BH02_0.5_1.0	BH02_1.0_1.4	BH12_0.0_0.5
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-006	EB1804131-007	EB1804131-008	EB1804131-009	EB1804131-010
				Result	Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit	----	8.5	8.5	7.0	8.5	
pH OX (23B)	----	0.1	pH Unit	----	5.8	3.9	7.0	7.8	
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t	----	<2	<2	<2	<2	
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t	----	11	86	<2	<2	
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	11	86	<2	<2	
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S	----	<0.020	<0.020	<0.020	<0.020	
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S	----	<0.020	0.137	<0.020	<0.020	
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S	----	<0.020	0.137	<0.020	<0.020	
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S	----	0.112	0.086	0.026	0.122	
Peroxide Sulfur (23De)	----	0.020	% S	----	0.778	0.658	0.042	0.399	
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S	----	0.666	0.572	<0.020	0.277	
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	416	357	10	173	
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca	----	0.238	0.206	0.076	0.256	
Peroxide Calcium (23Wh)	----	0.020	% Ca	----	0.704	0.448	0.108	1.09	
Acid Reacted Calcium (23X)	----	0.020	% Ca	----	0.465	0.242	0.032	0.833	
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	232	120	16	416	
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S	----	0.372	0.193	0.026	0.666	
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg	----	0.153	0.126	0.120	0.208	
Peroxide Magnesium (23Tm)	----	0.020	% Mg	----	0.261	0.216	0.163	0.312	
Acid Reacted Magnesium (23U)	----	0.020	% Mg	----	0.108	0.090	0.043	0.104	
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	88	74	35	85	
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S	----	0.142	0.118	0.056	0.137	
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3	----	----	----	0.420	2.24	
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	84	447	
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S	----	----	----	0.134	0.716	

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_3.0_3.5	BH02_0.0_0.5	BH02_0.5_1.0	BH02_1.0_1.4	BH12_0.0_0.5
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804131-006	EB1804131-007	EB1804131-008	EB1804131-009	EB1804131-010	
				Result	Result	Result	Result	Result	
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-	----	1.5	1.5	1.5	1.5	
Net Acidity (sulfur units)	----	0.02	% S	----	0.23	0.28	<0.02	<0.02	
Net Acidity (acidity units)	----	10	mole H+ / t	----	146	176	<10	<10	
Liming Rate	----	1	kg CaCO3/t	----	11	13	<1	<1	
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	0.23	0.28	<0.02	0.28	
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	146	176	10	173	
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	11	13	<1	13	
EA037: Ass Field Screening Analysis									
ø pH (F)	----	0.1	pH Unit	8.5	----	----	----	----	
ø pH (Fox)	----	0.1	pH Unit	3.6	----	----	----	----	
ø Reaction Rate	----	1	-	4	----	----	----	----	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	42.3	43.1	18.7	23.0	55.2	
EA150: Particle Sizing									
+75µm	----	1	%	----	18	----	2	20	
+150µm	----	1	%	----	13	----	1	9	
+300µm	----	1	%	----	5	----	<1	3	
+425µm	----	1	%	----	4	----	<1	2	
+600µm	----	1	%	----	3	----	<1	1	
+1180µm	----	1	%	----	2	----	<1	<1	
+2.36mm	----	1	%	----	<1	----	<1	<1	
+4.75mm	----	1	%	----	<1	----	<1	<1	
+9.5mm	----	1	%	----	<1	----	<1	<1	
+19.0mm	----	1	%	----	<1	----	<1	<1	
+37.5mm	----	1	%	----	<1	----	<1	<1	
+75.0mm	----	1	%	----	<1	----	<1	<1	
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%	----	42	----	60	39	
Silt (2-60 µm)	----	1	%	----	37	----	37	36	
Sand (0.06-2.00 mm)	----	1	%	----	20	----	3	25	
Gravel (>2mm)	----	1	%	----	1	----	<1	<1	
Cobbles (>6cm)	----	1	%	----	<1	----	<1	<1	
EA152: Soil Particle Density									

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_3.0_3.5	BH02_0.0_0.5	BH02_0.5_1.0	BH02_1.0_1.4	BH12_0.0_0.5
Client sampling date / time				13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	
Compound	CAS Number	LOR	Unit	EB1804131-006	EB1804131-007	EB1804131-008	EB1804131-009	EB1804131-010	
				Result	Result	Result	Result	Result	
EA152: Soil Particle Density - Continued									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	2.55	----	2.67	2.44	
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	14100	14600	8410	10400	14600	
Iron	7439-89-6	50	mg/kg	26700	28600	12600	11600	32400	
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	
Arsenic	7440-38-2	1.00	mg/kg	11.8	9.73	2.69	1.39	15.9	
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium	7440-47-3	1.0	mg/kg	21.2	20.6	10.2	10.8	23.2	
Copper	7440-50-8	1.0	mg/kg	26.4	28.9	57.9	21.0	29.0	
Cobalt	7440-48-4	0.5	mg/kg	13.2	12.9	5.0	4.7	15.9	
Lead	7439-92-1	1.0	mg/kg	9.7	8.6	5.0	4.7	9.1	
Manganese	7439-96-5	10	mg/kg	565	430	111	36	442	
Nickel	7440-02-0	1.0	mg/kg	12.2	12.4	5.8	6.0	15.0	
Selenium	7782-49-2	0.1	mg/kg	0.5	0.5	0.8	0.7	0.6	
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Vanadium	7440-62-2	2.0	mg/kg	61.2	59.2	41.3	27.5	71.6	
Zinc	7440-66-6	1.0	mg/kg	40.8	45.3	25.3	33.9	54.9	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg	0.01	0.01	<0.01	<0.01	0.02	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg	560	780	140	200	940	
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg	560	780	140	200	940	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	300	320	84	172	366	
EK255A SD: Ammonia in Sediment									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_3.0_3.5	BH02_0.0_0.5	BH02_0.5_1.0	BH02_1.0_1.4	BH12_0.0_0.5
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-006	EB1804131-007	EB1804131-008	EB1804131-009	EB1804131-010
				Result	Result	Result	Result	Result	Result
EK255A SD: Ammonia in Sediment - Continued									
Ammonia as N	7664-41-7	0.2	mg/kg		98.8	8.2	5.7	6.4	23.2
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
>C16 - C34 Fraction	----	3	mg/kg		<3	9	<3	<3	17
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	8
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	9	<3	<3	25
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	<4
C10 - C14 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C15 - C28 Fraction	----	3	mg/kg		<3	6	<3	<3	11
C29 - C36 Fraction	----	5	mg/kg		<5	5	<5	<5	11
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	11	<3	<3	22
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<4
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.4
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

Client sampling date / time				BH01_3.0_3.5	BH02_0.0_0.5	BH02_0.5_1.0	BH02_1.0_1.4	BH12_0.0_0.5
				13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804131-006	EB1804131-007	EB1804131-008	EB1804131-009	EB1804131-010
				Result	Result	Result	Result	Result

EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued

Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg	<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg	<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg	<10	<10	<10	<10	<10
Dimethoate	60-51-5	10	µg/kg	<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg	<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg	<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg	<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg	<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg	<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg	<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg	<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg	<10	<10	<10	<10	<10

EP131A: Organochlorine Pesticides

Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4`-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4`-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4`-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH01_3.0_3.5	BH02_0.0_0.5	BH02_0.5_1.0	BH02_1.0_1.4	BH12_0.0_0.5
Client sampling date / time				13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804131-006	EB1804131-007	EB1804131-008	EB1804131-009	EB1804131-010
				Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued								
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg	<4	<4	<4	<4	<5
Acenaphthene	83-32-9	4	µg/kg	<4	<4	<4	<4	<5
Fluorene	86-73-7	4	µg/kg	<4	<4	<4	<4	<5
Phenanthrene	85-01-8	4	µg/kg	<4	<4	<4	<4	<5
Anthracene	120-12-7	4	µg/kg	<4	<4	<4	<4	<5
Fluoranthene	206-44-0	4	µg/kg	<4	<4	<4	<4	<5
Pyrene	129-00-0	4	µg/kg	<4	<4	<4	<4	<5
Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	<4	<4	<5
Chrysene	218-01-9	4	µg/kg	<4	<4	<4	<4	<5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	<4	<4	<4	<5
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	<4	<4	<5
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	<4	<4	<5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH01_3.0_3.5	BH02_0.0_0.5	BH02_0.5_1.0	BH02_1.0_1.4	BH12_0.0_0.5
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-006	EB1804131-007	EB1804131-008	EB1804131-009	EB1804131-010
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	<5
Perylene	198-55-0	4	µg/kg		7	<4	<4	<4	<5
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	<5
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<5
Indeno(1,2,3-cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<5
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		7	<4	<4	<4	<5
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		98.2	112	112	111	94.6
Toluene-D8	2037-26-5	0.2	%		78.8	92.5	94.3	92.4	79.8
4-Bromofluorobenzene	460-00-4	0.2	%		91.5	102	104	102	88.4
EP090S: Organotin Surrogate									
Tripopyltin	----	0.5	%		91.9	89.4	63.5	51.4	91.5
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		62.1	52.9	65.4	62.8	80.4
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		88.4	79.9	77.0	75.8	104
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		73.9	74.3	82.1	71.8	85.2
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		84.1	99.0	112	88.4	90.8
Anthracene-d10	1719-06-8	10	%		97.9	108	117	103	118
4-Terphenyl-d14	1718-51-0	10	%		94.8	104	118	100	114



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH12_0.5_1.0	BH12_1.0_2.0	ASS_DUP4	BH15_0.0_0.5	BH16_0.0_0.5
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-011	EB1804131-012	EB1804131-013	EB1804131-015	EB1804131-016
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.4	8.7	8.2	9.1	8.8
pH OX (23B)	----	0.1	pH Unit		6.4	8.7	7.5	7.8	8.2
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		7	<2	<2	<2	<2
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		7	<2	<2	<2	<2
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	<0.020
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	<0.020
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	<0.020
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.049	0.031	0.129	0.023	0.100
Peroxide Sulfur (23De)	----	0.020	% S		0.463	0.041	0.452	0.031	0.229
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		0.415	<0.020	0.323	<0.020	0.129
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		259	<10	201	<10	80
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.241	0.171	0.258	0.111	0.213
Peroxide Calcium (23Wh)	----	0.020	% Ca		0.359	0.293	0.871	0.255	1.05
Acid Reacted Calcium (23X)	----	0.020	% Ca		0.118	0.121	0.613	0.144	0.834
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		59	61	306	72	416
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		0.095	0.097	0.490	0.116	0.668
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.245	0.108	0.227	0.040	0.152
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.360	0.152	0.354	0.069	0.241
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.115	0.044	0.126	0.030	0.089
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		94	36	104	24	73
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.151	0.057	0.166	0.039	0.117
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		----	1.42	1.92	0.996	2.81
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		----	284	383	199	562
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		----	0.455	0.614	0.319	0.900



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH12_0.5_1.0	BH12_1.0_2.0	ASS_DUP4	BH15_0.0_0.5	BH16_0.0_0.5
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-011	EB1804131-012	EB1804131-013	EB1804131-015	EB1804131-016
					Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S		0.14	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t		91	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t		7	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		0.14	<0.02	0.32	<0.02	0.13
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		91	<10	201	<10	80
Liming Rate excluding ANC	----	1	kg CaCO3/t		7	<1	15	<1	6
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		54.0	21.9	----	22.7	44.4
EA150: Particle Sizing									
+75µm	----	1	%		----	33	----	90	57
+150µm	----	1	%		----	23	----	88	53
+300µm	----	1	%		----	13	----	84	34
+425µm	----	1	%		----	8	----	78	23
+600µm	----	1	%		----	4	----	66	13
+1180µm	----	1	%		----	2	----	36	4
+2.36mm	----	1	%		----	<1	----	20	1
+4.75mm	----	1	%		----	<1	----	13	<1
+9.5mm	----	1	%		----	<1	----	7	<1
+19.0mm	----	1	%		----	<1	----	4	<1
+37.5mm	----	1	%		----	<1	----	<1	<1
+75.0mm	----	1	%		----	<1	----	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		----	34	----	7	22
Silt (2-60 µm)	----	1	%		----	29	----	3	19
Sand (0.06-2.00 mm)	----	1	%		----	36	----	65	57
Gravel (>2mm)	----	1	%		----	1	----	25	2
Cobbles (>6cm)	----	1	%		----	<1	----	<1	<1
EA152: Soil Particle Density									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		----	2.68	----	2.61	2.60
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		15700	6830	----	3580	9060
Iron	7439-89-6	50	mg/kg		32100	14200	----	9430	20600



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH12_0.5_1.0	BH12_1.0_2.0	ASS_DUP4	BH15_0.0_0.5	BH16_0.0_0.5
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-011	EB1804131-012	EB1804131-013	EB1804131-015	EB1804131-016
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	----	<0.50	<0.50
Arsenic	7440-38-2	1.00	mg/kg		15.0	3.47	----	6.17	9.98
Cadmium	7440-43-9	0.1	mg/kg		<0.1	<0.1	----	<0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg		22.7	13.2	----	6.5	13.6
Copper	7440-50-8	1.0	mg/kg		32.4	13.0	----	7.1	19.4
Cobalt	7440-48-4	0.5	mg/kg		16.5	7.4	----	6.2	11.3
Lead	7439-92-1	1.0	mg/kg		9.0	5.5	----	2.6	5.3
Manganese	7439-96-5	10	mg/kg		816	332	----	396	350
Nickel	7440-02-0	1.0	mg/kg		15.2	7.0	----	4.3	9.5
Selenium	7782-49-2	0.1	mg/kg		0.6	0.4	----	0.2	0.4
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	----	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg		72.1	32.3	----	25.1	50.3
Zinc	7440-66-6	1.0	mg/kg		54.8	30.2	----	14.8	34.7
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		0.02	<0.01	----	<0.01	0.01
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg		<0.1	<0.1	----	<0.1	<0.1
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg		<0.1	<0.1	----	1.4	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.1	<0.1	----	1.4	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		1120	120	----	120	450
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		1120	120	----	120	450
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		428	254	----	155	284
EK255A SD: Ammonia in Sediment									
Ammonia as N	7664-41-7	0.2	mg/kg		166	4.0	----	2.2	5.1
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	----	<3	<3
>C16 - C34 Fraction	----	3	mg/kg		7	<3	----	3	6
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	----	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		7	<3	----	3	6



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH12_0.5_1.0	BH12_1.0_2.0	ASS_DUP4	BH15_0.0_0.5	BH16_0.0_0.5
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-011	EB1804131-012	EB1804131-013	EB1804131-015	EB1804131-016
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	----	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<5	<3	----	<3	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	----	<3	<3
C15 - C28 Fraction	----	3	mg/kg		5	<3	----	<3	4
C29 - C36 Fraction	----	5	mg/kg		<5	<5	----	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		5	<3	----	<3	4
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<4	<3	----	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	----	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.4	<0.2	----	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	----	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	----	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	----	<0.5	<0.5
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	----	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	----	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	----	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	----	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	----	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	----	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	----	<10	<10
Diazinon	333-41-5	10	µg/kg		<10	<10	----	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH12_0.5_1.0	BH12_1.0_2.0	ASS_DUP4	BH15_0.0_0.5	BH16_0.0_0.5
Client sampling date / time				13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804131-011	EB1804131-012	EB1804131-013	EB1804131-015	EB1804131-016
				Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
Dichlorvos	62-73-7	10	µg/kg	<10	<10	----	<10	<10
Dimethoate	60-51-5	10	µg/kg	<10	<10	----	<10	<10
Ethion	563-12-2	10	µg/kg	<10	<10	----	<10	<10
Fenamiphos	22224-92-6	10	µg/kg	<10	<10	----	<10	<10
Fenthion	55-38-9	10	µg/kg	<10	<10	----	<10	<10
Malathion	121-75-5	10	µg/kg	<10	<10	----	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	----	<10	<10
Monocrotophos	6923-22-4	10	µg/kg	<10	<10	----	<10	<10
Parathion	56-38-2	10	µg/kg	<10	<10	----	<10	<10
Parathion-methyl	298-00-0	10	µg/kg	<10	<10	----	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	----	<10	<10
Prothiofos	34643-46-4	10	µg/kg	<10	<10	----	<10	<10
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
4,4'-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
4,4'-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
4,4'-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	----	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	----	<0.50	<0.50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH12_0.5_1.0	BH12_1.0_2.0	ASS_DUP4	BH15_0.0_0.5	BH16_0.0_0.5
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-011	EB1804131-012	EB1804131-013	EB1804131-015	EB1804131-016
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
cis-Chlordane	5103-71-9	0.25	µg/kg		<0.25	<0.25	----	<0.25	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	<0.25	----	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	<0.25	----	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	----	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<5.0	<5.0	----	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg		<5.0	<5.0	----	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	<5.0	----	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg		<5.0	<5.0	----	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg		<5.0	<5.0	----	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg		<5.0	<5.0	----	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg		<5.0	<5.0	----	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg		<5.0	<5.0	----	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	----	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	----	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		<5	<4	----	<4	<4
Acenaphthene	83-32-9	4	µg/kg		<5	<4	----	<4	<4
Fluorene	86-73-7	4	µg/kg		<5	<4	----	<4	<4
Phenanthrene	85-01-8	4	µg/kg		<5	<4	----	<4	<4
Anthracene	120-12-7	4	µg/kg		<5	<4	----	<4	<4
Fluoranthene	206-44-0	4	µg/kg		<5	<4	----	<4	<4
Pyrene	129-00-0	4	µg/kg		<5	<4	----	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg		<5	<4	----	<4	<4
Chrysene	218-01-9	4	µg/kg		<5	<4	----	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<5	<4	----	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<5	<4	----	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<5	<4	----	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		<5	<4	----	<4	<4
Perylene	198-55-0	4	µg/kg		57	<4	----	<4	<4
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<5	<4	----	<4	<4
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<5	<4	----	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<5	<4	----	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	----	<5	<5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH12_0.5_1.0	BH12_1.0_2.0	ASS_DUP4	BH15_0.0_0.5	BH16_0.0_0.5
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-011	EB1804131-012	EB1804131-013	EB1804131-015	EB1804131-016
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of PAHs	----	4	µg/kg		57	<4	----	<4	<4
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		95.4	106	----	105	100
Toluene-D8	2037-26-5	0.2	%		78.7	90.1	----	85.2	83.3
4-Bromofluorobenzene	460-00-4	0.2	%		86.8	99.3	----	96.6	92.6
EP090S: Organotin Surrogate									
Tripopyltin	----	0.5	%		98.5	85.0	----	75.8	82.4
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		77.0	57.8	----	44.6	66.1
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		107	110	----	101	112
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		86.7	92.2	----	85.8	90.7
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		94.4	94.9	----	90.8	98.5
Anthracene-d10	1719-06-8	10	%		124	103	----	98.5	116
4-Terphenyl-d14	1718-51-0	10	%		109	100	----	95.9	112



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH20_0.0_0.5	BH21_0.0_0.5	BH11_0.0-0.5	BH11_0.5-1.0	BH11_1.0-2.0
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-017	EB1804131-018	EB1804131-019	EB1804131-020	EB1804131-021
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		9.4	9.3	8.7	9.0	----
pH OX (23B)	----	0.1	pH Unit		9.3	9.6	7.9	8.8	----
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	----
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	<2	<2	<2	----
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	<2	<2	<2	----
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	----
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	----
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	----
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.030	0.031	0.075	0.033	----
Peroxide Sulfur (23De)	----	0.020	% S		0.055	0.062	0.215	0.034	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		0.024	0.031	0.140	<0.020	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		15	19	88	<10	----
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.136	0.151	0.225	0.192	----
Peroxide Calcium (23Wh)	----	0.020	% Ca		3.86	6.53	1.38	0.198	----
Acid Reacted Calcium (23X)	----	0.020	% Ca		3.73	6.38	1.16	<0.020	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		1860	3180	576	<10	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		2.98	5.11	0.924	<0.020	----
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.040	0.053	0.127	0.077	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.116	0.170	0.205	0.081	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.076	0.118	0.078	<0.020	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		63	97	64	<10	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.100	0.155	0.103	<0.020	----
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		11.2	18.1	3.43	4.57	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		2250	3620	686	913	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		3.60	5.80	1.10	1.46	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH20_0.0_0.5	BH21_0.0_0.5	BH11_0.0-0.5	BH11_0.5-1.0	BH11_1.0-2.0
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804131-017	EB1804131-018	EB1804131-019	EB1804131-020	EB1804131-021	
				Result	Result	Result	Result	Result	
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	----	
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	----	
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	----	
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	----	
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	0.03	0.14	<0.02	----	
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	15	19	88	<10	----	
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	6	<1	----	
EA037: Ass Field Screening Analysis									
ø pH (F)	----	0.1	pH Unit	----	----	----	----	9.1	
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	8.9	
ø Reaction Rate	----	1	-	----	----	----	----	4	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	21.4	20.6	34.5	20.4	26.6	
EA150: Particle Sizing									
+75µm	----	1	%	95	25	48	----	40	
+150µm	----	1	%	94	22	34	----	5	
+300µm	----	1	%	62	20	22	----	4	
+425µm	----	1	%	46	19	17	----	3	
+600µm	----	1	%	32	18	13	----	2	
+1180µm	----	1	%	14	16	6	----	<1	
+2.36mm	----	1	%	5	12	3	----	<1	
+4.75mm	----	1	%	2	3	2	----	<1	
+9.5mm	----	1	%	<1	<1	<1	----	<1	
+19.0mm	----	1	%	<1	<1	<1	----	<1	
+37.5mm	----	1	%	<1	<1	<1	----	<1	
+75.0mm	----	1	%	<1	<1	<1	----	<1	
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%	2	45	28	----	22	
Silt (2-60 µm)	----	1	%	2	29	19	----	24	
Sand (0.06-2.00 mm)	----	1	%	88	13	49	----	54	
Gravel (>2mm)	----	1	%	8	13	4	----	<1	
Cobbles (>6cm)	----	1	%	<1	<1	<1	----	<1	
EA152: Soil Particle Density									

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH20_0.0_0.5	BH21_0.0_0.5	BH11_0.0-0.5	BH11_0.5-1.0	BH11_1.0-2.0
Client sampling date / time				13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	
Compound	CAS Number	LOR	Unit	EB1804131-017	EB1804131-018	EB1804131-019	EB1804131-020	EB1804131-021	
				Result	Result	Result	Result	Result	
EA152: Soil Particle Density - Continued									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.62	2.46	2.59	----	2.70	
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	2220	3940	11500	4640	9380	
Iron	7439-89-6	50	mg/kg	10500	10200	31400	13400	20500	
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	
Arsenic	7440-38-2	1.00	mg/kg	9.74	6.76	18.8	10.2	4.57	
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium	7440-47-3	1.0	mg/kg	4.9	6.4	20.8	8.6	21.0	
Copper	7440-50-8	1.0	mg/kg	4.9	7.9	18.4	6.0	11.4	
Cobalt	7440-48-4	0.5	mg/kg	7.4	5.8	34.3	9.2	9.7	
Lead	7439-92-1	1.0	mg/kg	2.0	3.3	8.4	4.2	4.0	
Manganese	7439-96-5	10	mg/kg	460	318	5510	874	938	
Nickel	7440-02-0	1.0	mg/kg	4.1	5.1	20.7	6.5	9.2	
Selenium	7782-49-2	0.1	mg/kg	0.2	0.2	0.4	0.2	0.3	
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Vanadium	7440-62-2	2.0	mg/kg	27.8	25.7	66.2	45.5	34.9	
Zinc	7440-66-6	1.0	mg/kg	13.4	16.1	44.1	20.7	36.4	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	0.02	<0.01	<0.01	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	3.0	<0.1	<0.1	<0.1	<0.1	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	3.0	<0.1	<0.1	<0.1	<0.1	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg	100	240	140	60	120	
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg	100	240	140	60	120	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	165	280	332	148	224	
EK255A SD: Ammonia in Sediment									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH20_0.0_0.5	BH21_0.0_0.5	BH11_0.0-0.5	BH11_0.5-1.0	BH11_1.0-2.0
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-017	EB1804131-018	EB1804131-019	EB1804131-020	EB1804131-021
					Result	Result	Result	Result	Result
EK255A SD: Ammonia in Sediment - Continued									
Ammonia as N	7664-41-7	0.2	mg/kg		3.7	6.6	5.8	3.1	4.4
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	3	<3	<3
>C16 - C34 Fraction	----	3	mg/kg		<3	3	6	<3	<3
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	3	9	<3	<3
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	3	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	3	<3	<3
C15 - C28 Fraction	----	3	mg/kg		<3	<3	6	<3	<3
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	<3	9	<3	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH20_0.0_0.5	BH21_0.0_0.5	BH11_0.0-0.5	BH11_0.5-1.0	BH11_1.0-2.0
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-017	EB1804131-018	EB1804131-019	EB1804131-020	EB1804131-021
					Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued									
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg		<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg		<10	<10	<10	<10	<10
Dimethoate	60-51-5	10	µg/kg		<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg		<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg		<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg		<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg		<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg		<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg		<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg		<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg		<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg		<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg		<10	<10	<10	<10	<10
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4,4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4,4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4,4`-DDT	50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH20_0.0_0.5	BH21_0.0_0.5	BH11_0.0-0.5	BH11_0.5-1.0	BH11_1.0-2.0
Client sampling date / time				13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804131-017	EB1804131-018	EB1804131-019	EB1804131-020	EB1804131-021
				Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued								
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg	<4	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg	<4	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg	<4	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg	<4	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg	<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg	<4	<4	<4	<4	<4
Pyrene	129-00-0	4	µg/kg	<4	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg	<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	<4	<4	<4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH20_0.0_0.5	BH21_0.0_0.5	BH11_0.0-0.5	BH11_0.5-1.0	BH11_1.0-2.0
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804131-017	EB1804131-018	EB1804131-019	EB1804131-020	EB1804131-021
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg		<4	<4	<4	<4	<4
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<4
Indeno(1,2,3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		<4	<4	<4	<4	<4
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		106	104	87.7	95.8	91.7
Toluene-D8	2037-26-5	0.2	%		87.8	87.0	84.7	90.5	88.8
4-Bromofluorobenzene	460-00-4	0.2	%		97.0	96.6	87.4	93.1	93.4
EP090S: Organotin Surrogate									
Tripopyltin	----	0.5	%		71.3	95.2	84.3	96.9	106
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		43.8	47.9	40.8	79.6	52.2
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		103	96.4	86.2	124	121
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		88.6	88.8	75.2	119	110
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		106	118	95.7	92.1	84.1
Anthracene-d10	1719-06-8	10	%		117	122	112	102	92.6
4-Terphenyl-d14	1718-51-0	10	%		115	118	108	102	92.6



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH11_2.0-2.7	ASS_DUP2	ASS_DUP3	----	----
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804131-022	EB1804131-023	EB1804131-025	-----	-----
				Result	Result	Result		----	----
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.9	9.4	9.0	----	----
pH OX (23B)	----	0.1	pH Unit		8.8	9.8	8.4	----	----
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	----	----
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	<2	<2	----	----
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	<2	<2	----	----
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	----	----
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	----	----
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	----	----
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.039	0.036	0.056	----	----
Peroxide Sulfur (23De)	----	0.020	% S		0.040	0.067	0.123	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		<0.020	0.031	0.067	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		<10	19	42	----	----
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.212	0.153	0.176	----	----
Peroxide Calcium (23Wh)	----	0.020	% Ca		1.18	3.92	1.47	----	----
Acid Reacted Calcium (23X)	----	0.020	% Ca		0.964	3.77	1.30	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		481	1880	646	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		0.771	3.02	1.04	----	----
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.110	0.042	0.089	----	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.141	0.126	0.180	----	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.032	0.084	0.091	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		26	69	75	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.042	0.110	0.120	----	----
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		3.44	9.83	4.07	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		688	1960	814	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		1.10	3.15	1.30	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH11_2.0-2.7	ASS_DUP2	ASS_DUP3	----	----
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804131-022	EB1804131-023	EB1804131-025	-----	-----
					Result	Result	Result	----	----
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	----	----
Net Acidity (sulfur units)	----	0.02	% S		<0.02	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t		<10	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t		<1	<1	<1	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		<0.02	0.03	0.07	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		<10	19	42	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t		<1	1	3	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		24.3	----	----	----	----
EA150: Particle Sizing									
+75µm	----	1	%		39	----	----	----	----
+150µm	----	1	%		4	----	----	----	----
+300µm	----	1	%		3	----	----	----	----
+425µm	----	1	%		2	----	----	----	----
+600µm	----	1	%		2	----	----	----	----
+1180µm	----	1	%		<1	----	----	----	----
+2.36mm	----	1	%		<1	----	----	----	----
+4.75mm	----	1	%		<1	----	----	----	----
+9.5mm	----	1	%		<1	----	----	----	----
+19.0mm	----	1	%		<1	----	----	----	----
+37.5mm	----	1	%		<1	----	----	----	----
+75.0mm	----	1	%		<1	----	----	----	----
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		21	----	----	----	----
Silt (2-60 µm)	----	1	%		24	----	----	----	----
Sand (0.06-2.00 mm)	----	1	%		55	----	----	----	----
Gravel (>2mm)	----	1	%		<1	----	----	----	----
Cobbles (>6cm)	----	1	%		<1	----	----	----	----
EA152: Soil Particle Density									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.69	----	----	----	----
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		7210	----	----	----	----
Iron	7439-89-6	50	mg/kg		18800	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH11_2.0-2.7	ASS_DUP2	ASS_DUP3	----	----
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804131-022	EB1804131-023	EB1804131-025	-----	-----
					Result	Result	Result	----	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	----	----	----	----
Arsenic	7440-38-2	1.00	mg/kg		5.08	----	----	----	----
Cadmium	7440-43-9	0.1	mg/kg		<0.1	----	----	----	----
Chromium	7440-47-3	1.0	mg/kg		13.6	----	----	----	----
Copper	7440-50-8	1.0	mg/kg		10.9	----	----	----	----
Cobalt	7440-48-4	0.5	mg/kg		9.0	----	----	----	----
Lead	7439-92-1	1.0	mg/kg		4.2	----	----	----	----
Manganese	7439-96-5	10	mg/kg		544	----	----	----	----
Nickel	7440-02-0	1.0	mg/kg		7.6	----	----	----	----
Selenium	7782-49-2	0.1	mg/kg		0.2	----	----	----	----
Silver	7440-22-4	0.1	mg/kg		<0.1	----	----	----	----
Vanadium	7440-62-2	2.0	mg/kg		28.9	----	----	----	----
Zinc	7440-66-6	1.0	mg/kg		32.2	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg		<0.1	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg		<0.1	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.1	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		80	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		80	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		202	----	----	----	----
EK255A SD: Ammonia in Sediment									
Ammonia as N	7664-41-7	0.2	mg/kg		4.8	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	----	----	----	----
>C16 - C34 Fraction	----	3	mg/kg		<3	----	----	----	----
>C34 - C40 Fraction	----	5	mg/kg		<5	----	----	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH11_2.0-2.7	ASS_DUP2	ASS_DUP3	----	----
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804131-022	EB1804131-023	EB1804131-025	-----	-----
				Result	Result	Result		----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	----	----	----	----
C10 - C14 Fraction	----	3	mg/kg		<3	----	----	----	----
C15 - C28 Fraction	----	3	mg/kg		<3	----	----	----	----
C29 - C36 Fraction	----	5	mg/kg		<5	----	----	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	----	----	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.2	mg/kg		<0.2	----	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	----	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	----	----	----	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	----	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	----	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	----	----	----
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	----	----	----	----
Carbophenothion	786-19-6	10	µg/kg		<10	----	----	----	----
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	----	----	----	----
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	----	----	----	----
Chlorpyrifos	2921-88-2	10	µg/kg		<10	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	----	----	----	----
Demeton-S-methyl	919-86-8	10	µg/kg		<10	----	----	----	----
Diazinon	333-41-5	10	µg/kg		<10	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH11_2.0-2.7	ASS_DUP2	ASS_DUP3	----	----
Client sampling date / time				13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1804131-022	EB1804131-023	EB1804131-025	-----	-----
				Result	Result	Result	----	----
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
Dichlorvos	62-73-7	10	µg/kg	<10	----	----	----	----
Dimethoate	60-51-5	10	µg/kg	<10	----	----	----	----
Ethion	563-12-2	10	µg/kg	<10	----	----	----	----
Fenamiphos	22224-92-6	10	µg/kg	<10	----	----	----	----
Fenthion	55-38-9	10	µg/kg	<10	----	----	----	----
Malathion	121-75-5	10	µg/kg	<10	----	----	----	----
Azinphos Methyl	86-50-0	10	µg/kg	<10	----	----	----	----
Monocrotophos	6923-22-4	10	µg/kg	<10	----	----	----	----
Parathion	56-38-2	10	µg/kg	<10	----	----	----	----
Parathion-methyl	298-00-0	10	µg/kg	<10	----	----	----	----
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	----	----	----	----
Prothiofos	34643-46-4	10	µg/kg	<10	----	----	----	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	<0.50	----	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	----	----	----	----
beta-BHC	319-85-7	0.50	µg/kg	<0.50	----	----	----	----
delta-BHC	319-86-8	0.50	µg/kg	<0.50	----	----	----	----
4,4'-DDD	72-54-8	0.50	µg/kg	<0.50	----	----	----	----
4,4'-DDE	72-55-9	0.50	µg/kg	<0.50	----	----	----	----
4,4'-DDT	50-29-3	0.50	µg/kg	<0.50	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg	<0.50	----	----	----	----
Dieldrin	60-57-1	0.50	µg/kg	<0.50	----	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	----	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	----	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	----	----	----	----
Endrin	72-20-8	0.50	µg/kg	<0.50	----	----	----	----
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	----	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	----	----	----	----
Heptachlor	76-44-8	0.50	µg/kg	<0.50	----	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	----	----	----	----
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	----	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH11_2.0-2.7	ASS_DUP2	ASS_DUP3	----	----
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804131-022	EB1804131-023	EB1804131-025	-----	-----
					Result	Result	Result	----	----
EP131A: Organochlorine Pesticides - Continued									
cis-Chlordane	5103-71-9	0.25	µg/kg		<0.25	----	----	----	----
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	----	----	----	----
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	----	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg		<5.0	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	----	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	----	----	----	----
Acenaphthylene	208-96-8	4	µg/kg		<4	----	----	----	----
Acenaphthene	83-32-9	4	µg/kg		<4	----	----	----	----
Fluorene	86-73-7	4	µg/kg		<4	----	----	----	----
Phenanthrene	85-01-8	4	µg/kg		<4	----	----	----	----
Anthracene	120-12-7	4	µg/kg		<4	----	----	----	----
Fluoranthene	206-44-0	4	µg/kg		<4	----	----	----	----
Pyrene	129-00-0	4	µg/kg		<4	----	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	----	----	----	----
Chrysene	218-01-9	4	µg/kg		<4	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	----	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	----	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	----	----	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	----	----	----	----
Perylene	198-55-0	4	µg/kg		<4	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	----	----	----	----
Coronene	191-07-1	5	µg/kg		<5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH11_2.0-2.7	ASS_DUP2	ASS_DUP3	----	----
Client sampling date / time					13-Feb-2018 00:00	13-Feb-2018 00:00	13-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804131-022	EB1804131-023	EB1804131-025	-----	-----
				Result	Result	Result		----	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of PAHs	----	4	µg/kg		<4	----	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		93.4	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		91.9	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		95.2	----	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		89.5	----	----	----	----
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		56.0	----	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		108	----	----	----	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		99.0	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		112	----	----	----	----
Anthracene-d10	1719-06-8	10	%		112	----	----	----	----
4-Terphenyl-d14	1718-51-0	10	%		113	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080-SD: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	145
Toluene-D8	2037-26-5	42	144
4-Bromofluorobenzene	460-00-4	58	142
EP090S: Organotin Surrogate			
Tripopyltin	----	35	130
EP130S: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	14	102
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	119
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	106
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	55	135
Anthracene-d10	1719-06-8	70	136
4-Terphenyl-d14	1718-51-0	57	127

Certificate of Analysis

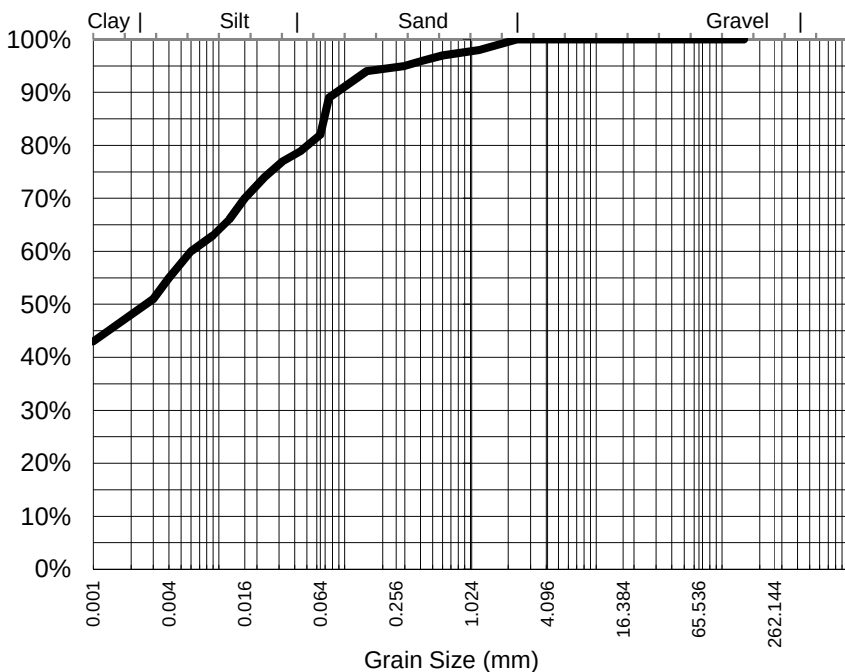
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samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Georgina Kerr **DATE REPORTED:** 23-Feb-2018
COMPANY: AURECON AUSTRALASIA PTY LTD **DATE RECEIVED:** 15-Feb-2018
ADDRESS: LOCKED BAG 331 **REPORT NO:** EB1804131-001 / PSD
32 TURBOT STREET
BRISBANE
PROJECT: 237374 **SAMPLE ID:** BH01_0.0_0.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
2.36	100%
1.18	98%
0.600	97%
0.425	96%
0.300	95%
0.150	94%
0.075	89%
Particle Size (microns)	
64	82%
45	79%
32	77%
16	70%
9	63%
4	55%
1	43%

Samples analysed as received.

Median Particle Size (mm)*	0.003

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Loss on Pretreatment NA

Sample Description: FINES, SAND

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) 2.57 g/cm3

NATA Accreditation: 825 Site: Newcastle
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Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

D Blane

Dianne Blane
Laboratory Coordinator
Authorised Signatory

Certificate of Analysis

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CLIENT: Georgina Kerr

DATE REPORTED: 23-Feb-2018

COMPANY: AURECON AUSTRALASIA PTY LTD

DATE RECEIVED: 15-Feb-2018

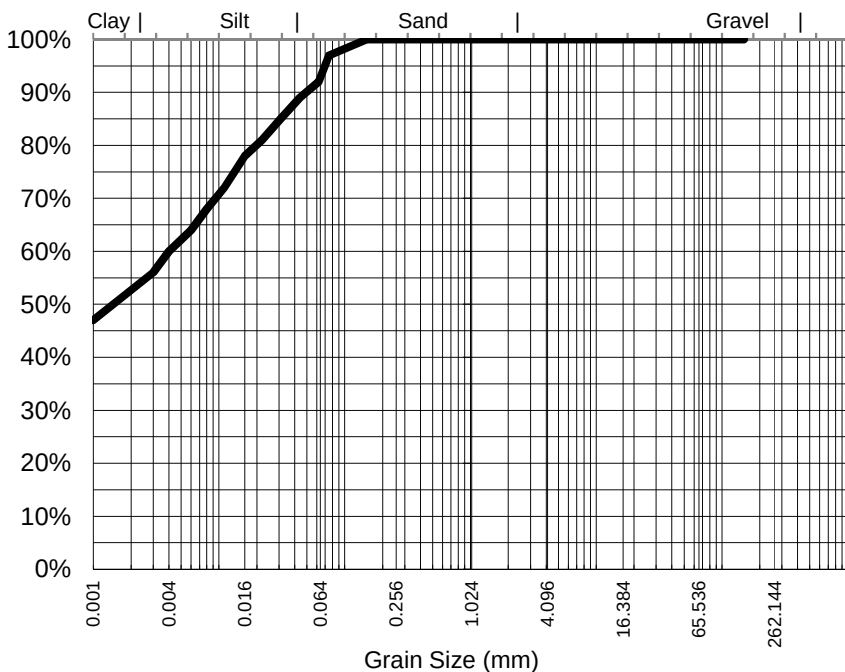
ADDRESS: LOCKED BAG 331
32 TURBOT STREET
BRISBANE

REPORT NO: EB1804131-004 / PSD

PROJECT: 237374

SAMPLE ID: BH01_1.0_2.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
0.150	100%
0.075	97%
Particle Size (microns)	
62	92%
44	89%
31	85%
16	78%
8	68%
4	60%
1	47%

Samples analysed as received.

Median Particle Size (mm)*	0.002

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-18

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: FINES, SAND

Dispersion Method Shaker

Test Method: AS1289.3.6.3 2003

Hydrometer Type ASTM E100

Soil Particle Density (<2.36mm) 2.65 g/cm3

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D Blane

Dianne Blane
Laboratory Coordinator
Authorised Signatory

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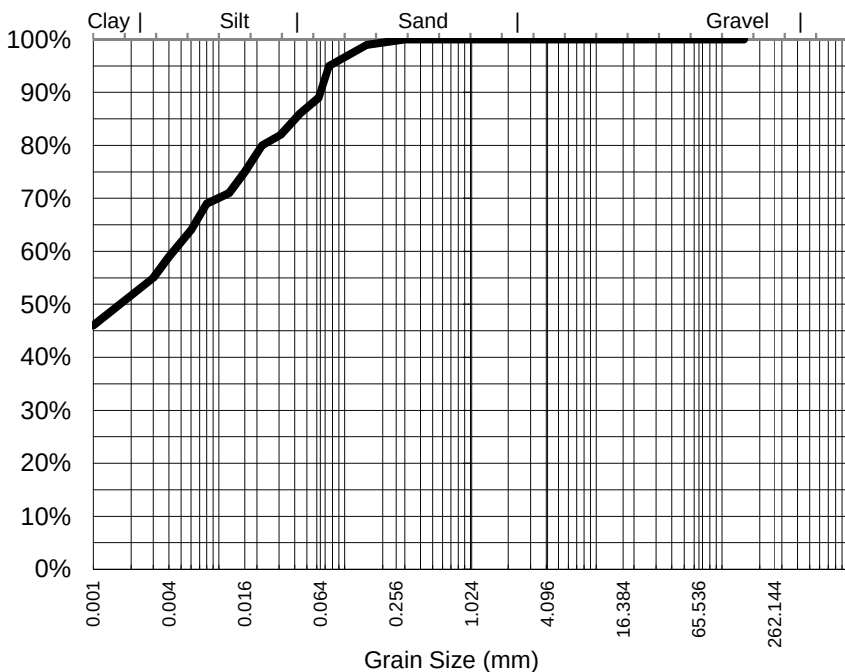
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ADDRESS: LOCKED BAG 331 **REPORT NO:** EB1804131-005 / PSD
32 TURBOT STREET
BRISBANE
PROJECT: 237374 **SAMPLE ID:** BH01_2.0_3.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
0.300	100%
0.150	99%
0.075	95%
Particle Size (microns)	
62	89%
44	86%
31	82%
16	75%
8	69%
4	59%
1	46%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Loss on Pretreatment NA

Sample Description: FINES, SAND

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) #N/A g/cm3

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Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Dianne Blane
Laboratory Coordinator
Authorised Signatory

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Newcastle, NSW



CLIENT: Georgina Kerr

DATE REPORTED: 23-Feb-2018

COMPANY: AURECON AUSTRALASIA PTY LTD

DATE RECEIVED: 15-Feb-2018

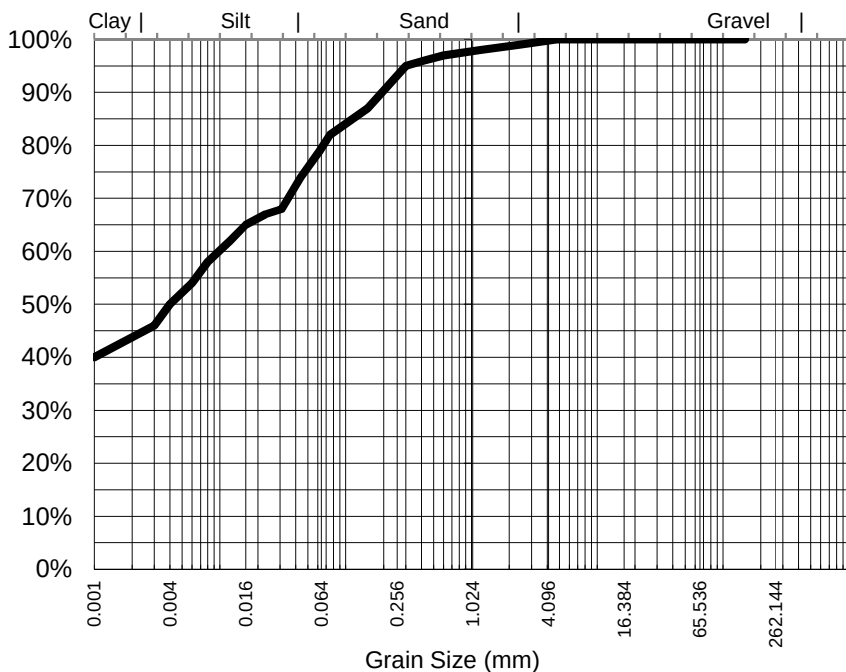
ADDRESS: LOCKED BAG 331
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BRISBANE

REPORT NO: EB1804131-007 / PSD

PROJECT: 237374

SAMPLE ID: BH02_0.0_0.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
4.75	100%
2.36	99%
1.18	98%
0.600	97%
0.425	96%
0.300	95%
0.150	87%
0.075	82%
Particle Size (microns)	
62	79%
44	74%
31	68%
16	65%
8	58%
4	50%
1	40%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Loss on Pretreatment NA

Sample Description: FINES, SAND

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) #N/A g/cm3

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Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

D Blane

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Laboratory Coordinator
Authorised Signatory

Certificate of Analysis

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CLIENT: Georgina Kerr

DATE REPORTED: 23-Feb-2018

COMPANY: AURECON AUSTRALASIA PTY LTD

DATE RECEIVED: 15-Feb-2018

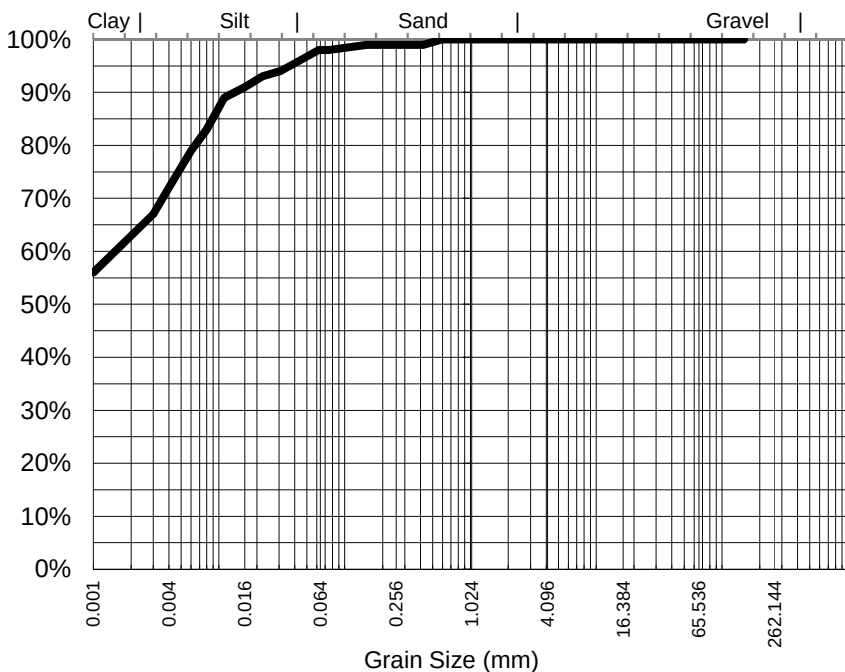
ADDRESS: LOCKED BAG 331
32 TURBOT STREET
BRISBANE

REPORT NO: EB1804131-009 / PSD

PROJECT: 237374

SAMPLE ID: BH02_1.0_1.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
0.600	100%
0.425	99%
0.300	99%
0.150	99%
0.075	98%
Particle Size (microns)	
62	98%
44	96%
31	94%
16	91%
8	83%
4	72%
1	56%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Median Particle Size (mm)*	<0.001

Sample Comments:

Analysed: 20-Feb-18

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: FINES, SAND

Dispersion Method Shaker

Test Method: AS1289.3.6.3 2003

Hydrometer Type ASTM E100

Soil Particle Density (<2.36mm) #N/A g/cm3

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Laboratory Coordinator
Authorised Signatory

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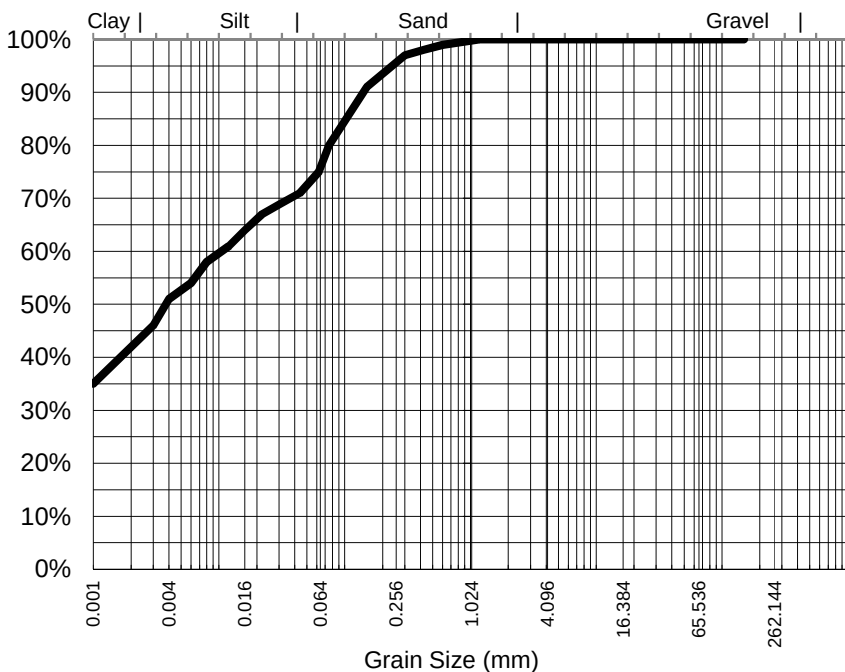
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ADDRESS: LOCKED BAG 331 **REPORT NO:** EB1804131-010 / PSD
32 TURBOT STREET
BRISBANE
PROJECT: 237374 **SAMPLE ID:** BH12_0.0_0.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
1.18	100%
0.600	99%
0.425	98%
0.300	97%
0.150	91%
0.075	80%
Particle Size (microns)	
62	75%
44	71%
31	69%
16	64%
8	58%
4	51%
1	35%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Loss on Pretreatment NA

Sample Description: FINES, SAND

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) #N/A g/cm3

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Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

D Blane

Dianne Blane
Laboratory Coordinator
Authorised Signatory

Certificate of Analysis

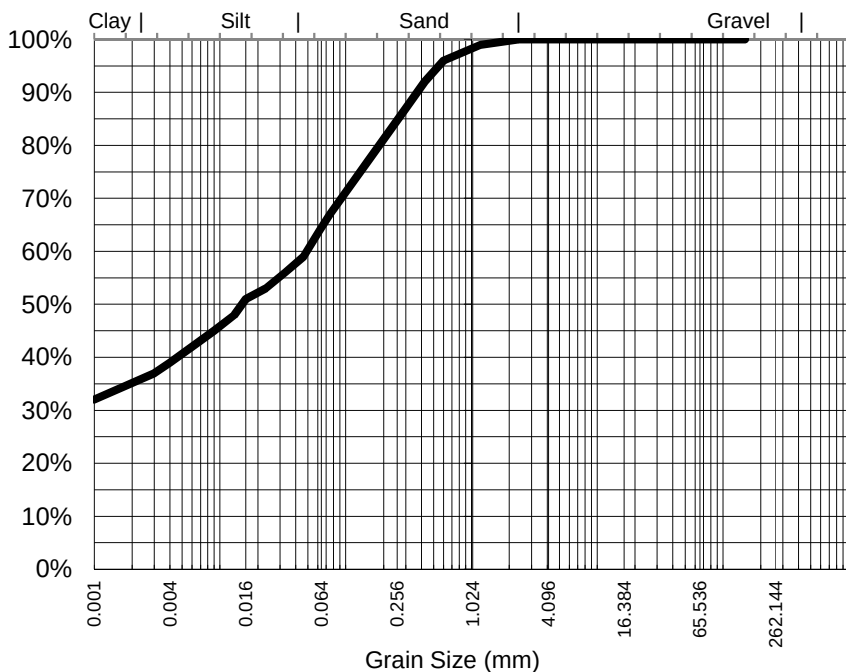
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fax 02 4968 0349
samples.newcastle@alsenviro.com

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Newcastle, NSW



CLIENT: Georgina Kerr **DATE REPORTED:** 23-Feb-2018
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ADDRESS: LOCKED BAG 331 **REPORT NO:** EB1804131-012 / PSD
32 TURBOT STREET
BRISBANE
PROJECT: 237374 **SAMPLE ID:** BH12_1.0_2.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
2.36	100%
1.18	99%
0.600	96%
0.425	92%
0.300	87%
0.150	77%
0.075	67%
Particle Size (microns)	
62	64%
46	59%
33	56%
16	51%
9	45%
4	39%
1	32%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Loss on Pretreatment NA

Sample Description: FINES, SAND

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) #N/A g/cm3

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Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

D Blane

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Laboratory Coordinator
Authorised Signatory

Certificate of Analysis

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samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Georgina Kerr

DATE REPORTED: 23-Feb-2018

COMPANY: AURECON AUSTRALASIA PTY LTD

DATE RECEIVED: 15-Feb-2018

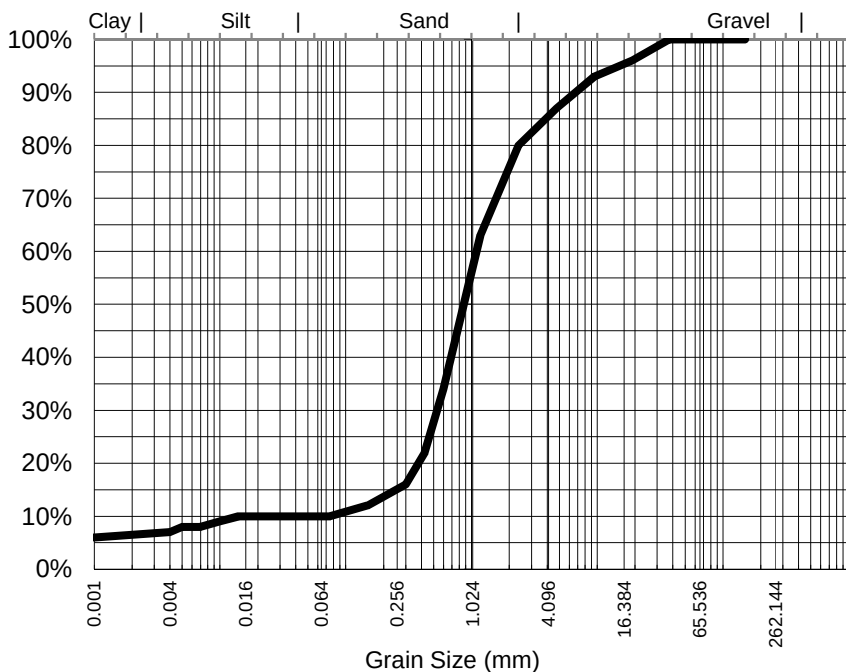
ADDRESS: LOCKED BAG 331
32 TURBOT STREET
BRISBANE

REPORT NO: EB1804131-015 / PSD

PROJECT: 237374

SAMPLE ID: BH15_0.0_0.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
37.5	100%
19.0	96%
9.50	93%
4.75	87%
2.36	80%
1.18	63%
0.600	34%
0.425	22%
0.300	16%
0.150	12%
0.075	10%
Particle Size (microns)	
75	10%
53	10%
38	10%
19	10%
10	9%
5	8%
1	6%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Loss on Pretreatment NA

Sample Description: FINES, SAND, STONE

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) #N/A g/cm3

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Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

D Blane

Dianne Blane
Laboratory Coordinator
Authorised Signatory

Certificate of Analysis

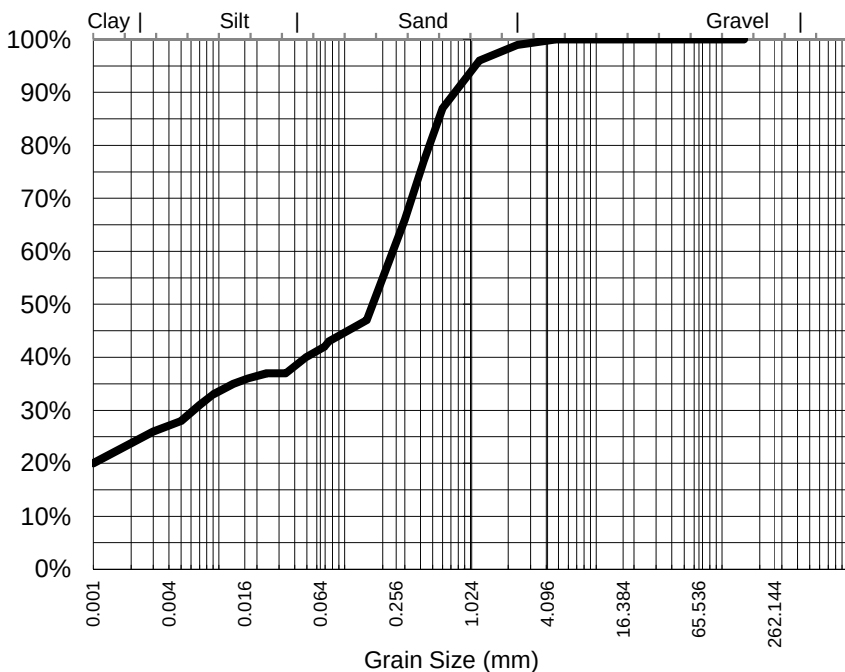
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5/585 Maitland Road
Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Georgina Kerr **DATE REPORTED:** 23-Feb-2018
COMPANY: AURECON AUSTRALASIA PTY LTD **DATE RECEIVED:** 15-Feb-2018
ADDRESS: LOCKED BAG 331 **REPORT NO:** EB1804131-016 / PSD
32 TURBOT STREET
BRISBANE
PROJECT: 237374 **SAMPLE ID:** BH16_0.0_0.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
4.75	100%
2.36	99%
1.18	96%
0.600	87%
0.425	77%
0.300	66%
0.150	47%
0.075	43%
Particle Size (microns)	
69	42%
49	40%
34	37%
17	36%
9	33%
5	28%
1	20%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Loss on Pretreatment NA

Sample Description: FINES, SAND

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) #N/A g/cm3

NATA Accreditation: 825 **Site:** Newcastle

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Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

D Blane

Dianne Blane
Laboratory Coordinator
Authorised Signatory

Certificate of Analysis

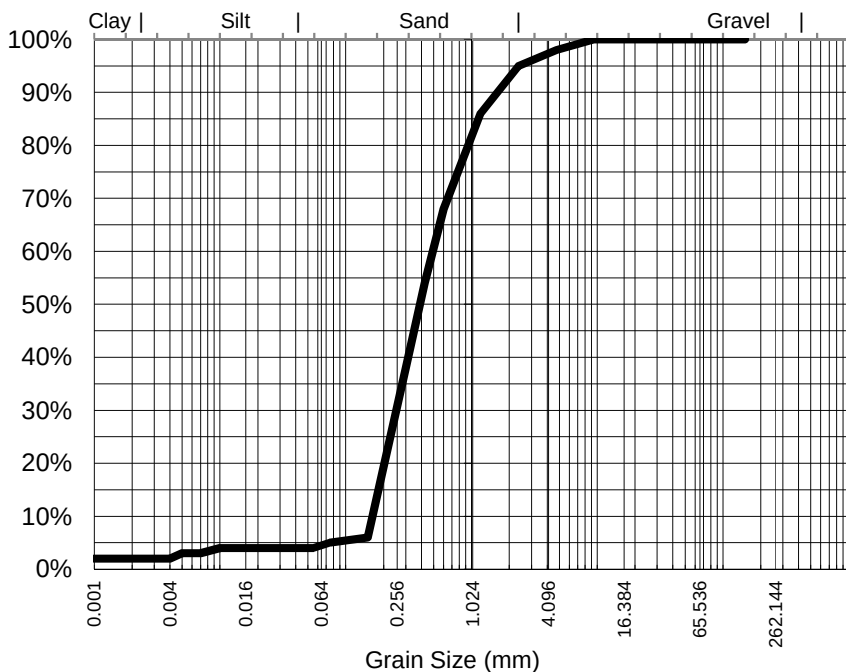
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Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Georgina Kerr **DATE REPORTED:** 23-Feb-2018
COMPANY: AURECON AUSTRALASIA PTY LTD **DATE RECEIVED:** 15-Feb-2018
ADDRESS: LOCKED BAG 331 **REPORT NO:** EB1804131-017 / PSD
32 TURBOT STREET
BRISBANE
PROJECT: 237374 **SAMPLE ID:** BH20_0.0_0.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
9.50	100%
4.75	98%
2.36	95%
1.18	86%
0.600	68%
0.425	54%
0.300	38%
0.150	6%
0.075	5%
Particle Size (microns)	
75	5%
55	4%
39	4%
20	4%
10	4%
5	3%
1	2%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments: AS1289.3.6.3 states that this method is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly

Loss on Pretreatment NA

Sample Description: FINES, SAND, STONE

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) #N/A g/cm3

NATA Accreditation: 825 Site: Newcastle
This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025. This document shall not be reproduced, except in full.



Median Particle Size (mm)* 0.394

Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

D Blane

Dianne Blane
Laboratory Coordinator
Authorised Signatory

Certificate of Analysis

ALS Laboratory Group Pty Ltd
5/585 Maitland Road
Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Georgina Kerr

DATE REPORTED: 23-Feb-2018

COMPANY: AURECON AUSTRALASIA PTY LTD

DATE RECEIVED: 15-Feb-2018

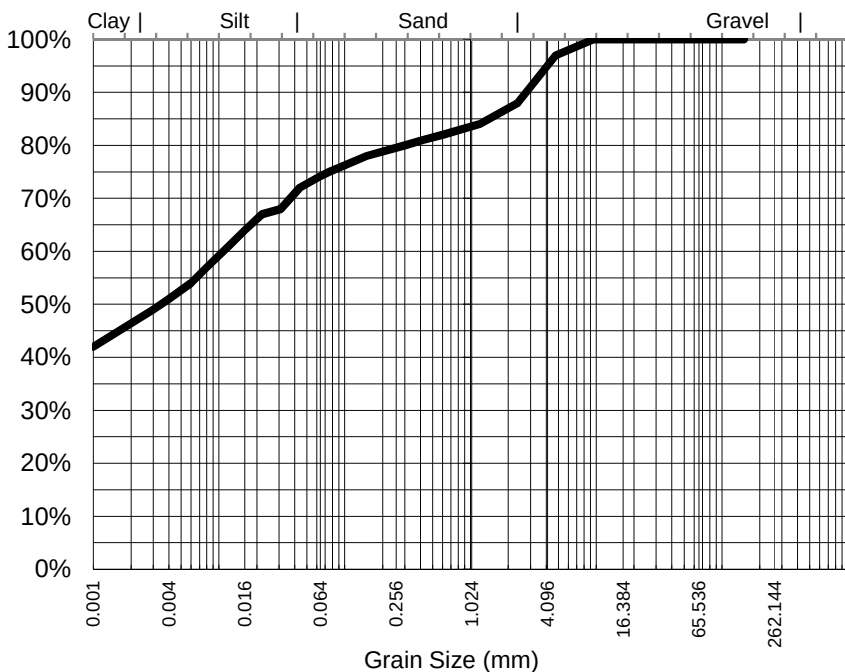
ADDRESS: LOCKED BAG 331
32 TURBOT STREET
BRISBANE

REPORT NO: EB1804131-018 / PSD

PROJECT: 237374

SAMPLE ID: BH21_0.0_0.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
9.50	100%
4.75	97%
2.36	88%
1.18	84%
0.600	82%
0.425	81%
0.300	80%
0.150	78%
0.075	75%
Particle Size (microns)	
62	74%
44	72%
31	68%
16	64%
8	57%
4	51%
1	42%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Loss on Pretreatment NA

Sample Description: FINES, SAND, STONE

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) #N/A g/cm3

NATA Accreditation: 825 Site: Newcastle

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Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

D Blane

Dianne Blane
Laboratory Coordinator
Authorised Signatory

Certificate of Analysis

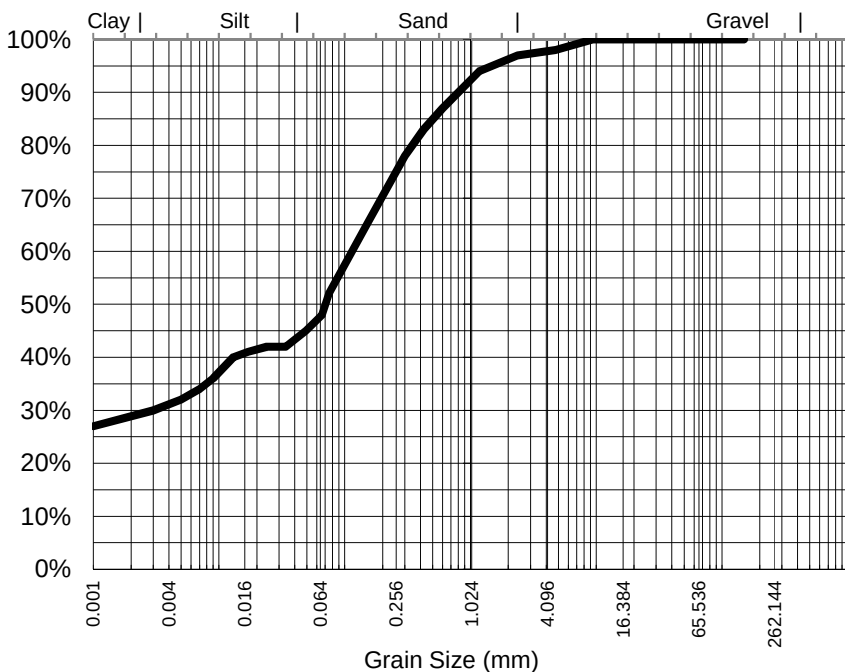
ALS Laboratory Group Pty Ltd
5/585 Maitland Road
Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Georgina Kerr **DATE REPORTED:** 23-Feb-2018
COMPANY: AURECON AUSTRALASIA PTY LTD **DATE RECEIVED:** 15-Feb-2018
ADDRESS: LOCKED BAG 331 **REPORT NO:** EB1804131-019 / PSD
32 TURBOT STREET
BRISBANE
PROJECT: 237374 **SAMPLE ID:** BH11_0.0-0.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
9.50	100%
4.75	98%
2.36	97%
1.18	94%
0.600	87%
0.425	83%
0.300	78%
0.150	65%
0.075	52%
Particle Size (microns)	
66	48%
49	45%
34	42%
17	41%
9	36%
5	32%
1	27%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Loss on Pretreatment NA

Sample Description: FINES, SAND, STONE

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) #N/A g/cm3

NATA Accreditation: 825 Site: Newcastle
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Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

D Blane

Dianne Blane
Laboratory Coordinator
Authorised Signatory

Certificate of Analysis

ALS Laboratory Group Pty Ltd
5/585 Maitland Road
Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
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ALS Environmental
Newcastle, NSW



CLIENT: Georgina Kerr

DATE REPORTED: 23-Feb-2018

COMPANY: AURECON AUSTRALASIA PTY LTD

DATE RECEIVED: 15-Feb-2018

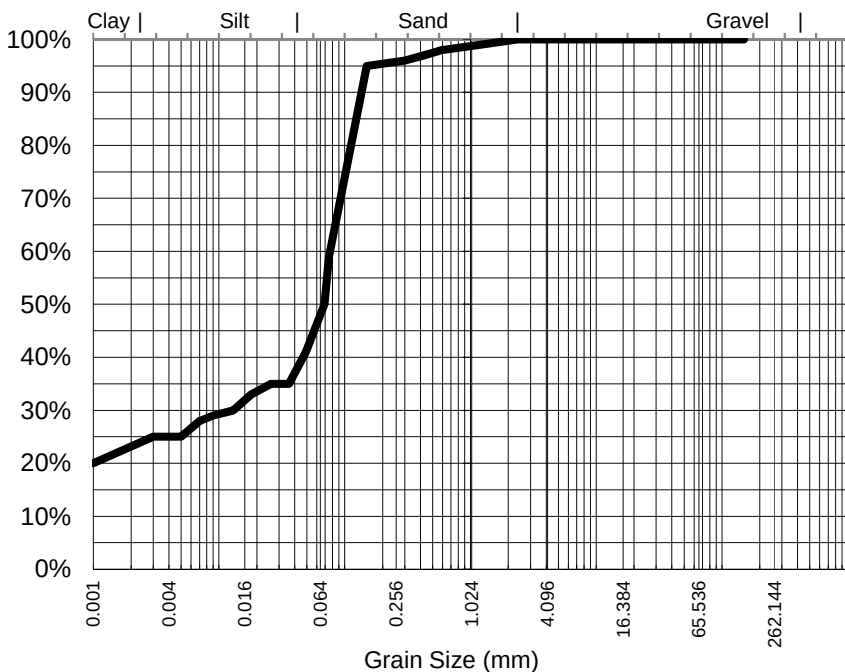
ADDRESS: LOCKED BAG 331
32 TURBOT STREET
BRISBANE

REPORT NO: EB1804131-021 / PSD

PROJECT: 237374

SAMPLE ID: BH11_1.0-2.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
2.36	100%
1.18	99%
0.600	98%
0.425	97%
0.300	96%
0.150	95%
0.075	59%
Particle Size (microns)	
69	50%
49	41%
36	35%
18	33%
9	29%
5	25%
1	20%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Loss on Pretreatment NA

Sample Description: FINES, SAND

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) #N/A g/cm3

NATA Accreditation: 825 **Site:** Newcastle

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Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

D Blane

Dianne Blane
Laboratory Coordinator
Authorised Signatory

Certificate of Analysis

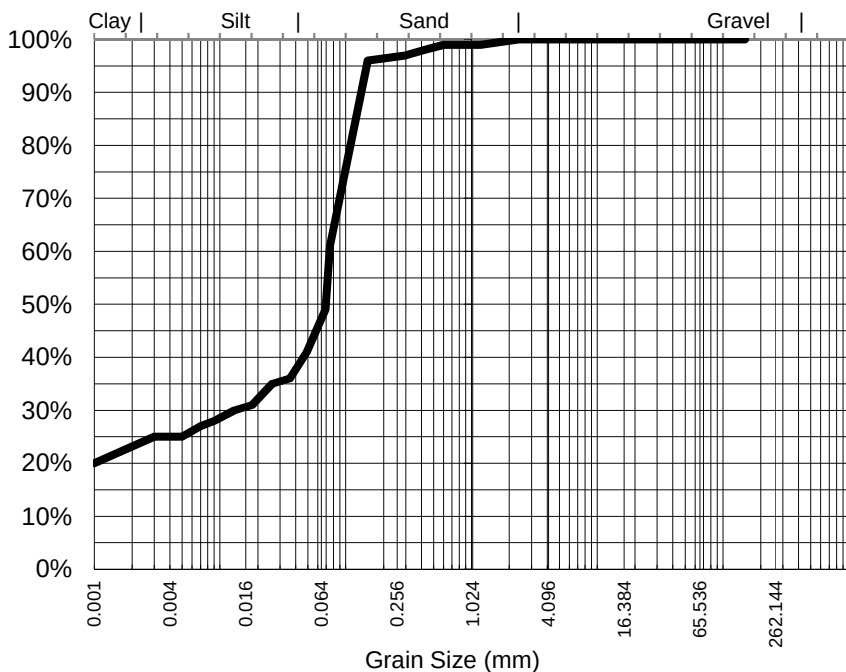
ALS Laboratory Group Pty Ltd
5/585 Maitland Road
Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW



CLIENT: Georgina Kerr **DATE REPORTED:** 23-Feb-2018
COMPANY: AURECON AUSTRALASIA PTY LTD **DATE RECEIVED:** 15-Feb-2018
ADDRESS: LOCKED BAG 331 **REPORT NO:** EB1804131-022 / PSD
32 TURBOT STREET
BRISBANE
PROJECT: 237374 **SAMPLE ID:** BH11_2.0-2.7

Particle Size Distribution



Particle Size (mm)	Percent Passing
2.36	100%
1.18	99%
0.600	99%
0.425	98%
0.300	97%
0.150	96%
0.075	61%
Particle Size (microns)	
69	49%
49	41%
36	36%
18	31%
9	28%
5	25%
1	20%

Samples analysed as received.

* Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1—2006 was not requested by the client. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Loss on Pretreatment NA

Sample Description: FINES, SAND

Test Method: AS1289.3.6.3 2003

Soil Particle Density (<2.36mm) #N/A g/cm3

NATA Accreditation: 825 **Site:** Newcastle

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Analysed: 20-Feb-18

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

D Blane

Dianne Blane
Laboratory Coordinator
Authorised Signatory

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EB1804131	Page	: 1 of 17
Client	: AURECON AUSTRALASIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MS GEORGINA KERR	Telephone	: +61-7-3243 7222
Project	: 237374	Date Samples Received	: 15-Feb-2018
Site	: ----	Issue Date	: 26-Feb-2018
Sampler	: KAITLIN MULCAHY	No. of samples received	: 25
Order number	: ----	No. of samples analysed	: 23

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Laboratory Control outliers occur.
- Duplicate outliers exist - please see following pages for full details.
- Matrix Spike outliers exist - please see following pages for full details.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG020-SD: Total Metals in Sediments by ICPMS	EB1804131--019	BH11_0.0-0.5	Cobalt	7440-48-4	74.8 %	0% - 20%	RPD exceeds LOR based limits
EG020-SD: Total Metals in Sediments by ICPMS	EB1804131--019	BH11_0.0-0.5	Manganese	7439-96-5	159 %	0% - 20%	RPD exceeds LOR based limits
EG020-SD: Total Metals in Sediments by ICPMS	EB1804131--019	BH11_0.0-0.5	Nickel	7440-02-0	52.8 %	0% - 20%	RPD exceeds LOR based limits
Matrix Spike (MS) Recoveries							
EG020-SD: Total Metals in Sediments by ICPMS	EB1804131--020	BH11_0.5-1.0	Manganese	7439-96-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK067G: Total Phosphorus as P by Discrete Analyser	EB1804131--020	BH11_0.5-1.0	Total Phosphorus as P	----	145 %	70-130%	Recovery greater than upper data quality objective
EK255A SD: Ammonia in Sediment	EB1804028--001	Anonymous	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons	EB1804131--020	BH11_0.5-1.0	C10 - C14 Fraction	----	60.5 %	70-130%	Recovery less than lower data quality objective
EP090: Organotin Compounds	EB1804131--003	BH01_0.5_1.0	Monobutyltin	78763-54-9	7.20 %	35-130%	Recovery less than lower data quality objective

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP131S: OC Pesticide Surrogate	EB1804131-003	BH01_0.5_1.0	Dibromo-DDE	21655-73-2	125 %	10-119 %	Recovery greater than upper data quality objective
EP131S: OC Pesticide Surrogate	EB1804131-004	BH01_1.0_2.0	Dibromo-DDE	21655-73-2	127 %	10-119 %	Recovery greater than upper data quality objective
EP131S: OC Pesticide Surrogate	EB1804131-020	BH11_0.5-1.0	Dibromo-DDE	21655-73-2	124 %	10-119 %	Recovery greater than upper data quality objective
EP131S: OC Pesticide Surrogate	EB1804131-021	BH11_1.0-2.0	Dibromo-DDE	21655-73-2	121 %	10-119 %	Recovery greater than upper data quality objective
EP131T: PCB Surrogate	EB1804131-003	BH01_0.5_1.0	Decachlorobiphenyl	2051-24-3	110 %	10-106 %	Recovery greater than upper data quality objective
EP131T: PCB Surrogate	EB1804131-004	BH01_1.0_2.0	Decachlorobiphenyl	2051-24-3	121 %	10-106 %	Recovery greater than upper data quality objective
EP131T: PCB Surrogate	EB1804131-020	BH11_0.5-1.0	Decachlorobiphenyl	2051-24-3	119 %	10-106 %	Recovery greater than upper data quality objective
EP131T: PCB Surrogate	EB1804131-021	BH11_1.0-2.0	Decachlorobiphenyl	2051-24-3	110 %	10-106 %	Recovery greater than upper data quality objective

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-A: pH Measurements								
Snap Lock Bag - frozen (EA029)		13-Feb-2018	22-Feb-2018	08-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
BH01_0.0_0.5,	ASS_DUP1,							
BH01_0.5_1.0,	BH01_2.0_3.0,							
BH02_0.0_0.5,	BH02_0.5_1.0,							
BH02_1.0_1.4,	BH12_0.0_0.5,							
BH12_0.5_1.0,	BH12_1.0_2.0,							
ASS_DUP4,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_2.0-2.7,							
ASS_DUP2,	ASS_DUP3							
EA029-B: Acidity Trail								
Snap Lock Bag - frozen (EA029)		13-Feb-2018	22-Feb-2018	08-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
BH01_0.0_0.5,	ASS_DUP1,							
BH01_0.5_1.0,	BH01_2.0_3.0,							
BH02_0.0_0.5,	BH02_0.5_1.0,							
BH02_1.0_1.4,	BH12_0.0_0.5,							
BH12_0.5_1.0,	BH12_1.0_2.0,							
ASS_DUP4,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_2.0-2.7,							
ASS_DUP2,	ASS_DUP3							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-C: Sulfur Trail								
Snap Lock Bag - frozen (EA029)		13-Feb-2018	22-Feb-2018	08-Nov-2020	✔	22-Feb-2018	23-May-2018	✔
BH01_0.0_0.5,	ASS_DUP1,							
BH01_0.5_1.0,	BH01_2.0_3.0,							
BH02_0.0_0.5,	BH02_0.5_1.0,							
BH02_1.0_1.4,	BH12_0.0_0.5,							
BH12_0.5_1.0,	BH12_1.0_2.0,							
ASS_DUP4,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_2.0-2.7,							
ASS_DUP2,	ASS_DUP3							
EA029-D: Calcium Values								
Snap Lock Bag - frozen (EA029)		13-Feb-2018	22-Feb-2018	08-Nov-2020	✔	22-Feb-2018	23-May-2018	✔
BH01_0.0_0.5,	ASS_DUP1,							
BH01_0.5_1.0,	BH01_2.0_3.0,							
BH02_0.0_0.5,	BH02_0.5_1.0,							
BH02_1.0_1.4,	BH12_0.0_0.5,							
BH12_0.5_1.0,	BH12_1.0_2.0,							
ASS_DUP4,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_2.0-2.7,							
ASS_DUP2,	ASS_DUP3							
EA029-E: Magnesium Values								
Snap Lock Bag - frozen (EA029)		13-Feb-2018	22-Feb-2018	08-Nov-2020	✔	22-Feb-2018	23-May-2018	✔
BH01_0.0_0.5,	ASS_DUP1,							
BH01_0.5_1.0,	BH01_2.0_3.0,							
BH02_0.0_0.5,	BH02_0.5_1.0,							
BH02_1.0_1.4,	BH12_0.0_0.5,							
BH12_0.5_1.0,	BH12_1.0_2.0,							
ASS_DUP4,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_2.0-2.7,							
ASS_DUP2,	ASS_DUP3							



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-F: Excess Acid Neutralising Capacity								
Snap Lock Bag - frozen (EA029)		13-Feb-2018	22-Feb-2018	08-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
BH01_0.0_0.5,	ASS_DUP1,							
BH01_0.5_1.0,	BH01_2.0_3.0,							
BH02_0.0_0.5,	BH02_0.5_1.0,							
BH02_1.0_1.4,	BH12_0.0_0.5,							
BH12_0.5_1.0,	BH12_1.0_2.0,							
ASS_DUP4,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_2.0-2.7,							
ASS_DUP2,	ASS_DUP3							
EA029-G: Retained Acidity								
Snap Lock Bag - frozen (EA029)		13-Feb-2018	22-Feb-2018	08-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
BH01_0.0_0.5,	ASS_DUP1,							
BH01_0.5_1.0,	BH01_2.0_3.0,							
BH02_0.0_0.5,	BH02_0.5_1.0,							
BH02_1.0_1.4,	BH12_0.0_0.5,							
BH12_0.5_1.0,	BH12_1.0_2.0,							
ASS_DUP4,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_2.0-2.7,							
ASS_DUP2,	ASS_DUP3							
EA029-H: Acid Base Accounting								
Snap Lock Bag - frozen (EA029)		13-Feb-2018	22-Feb-2018	08-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
BH01_0.0_0.5,	ASS_DUP1,							
BH01_0.5_1.0,	BH01_2.0_3.0,							
BH02_0.0_0.5,	BH02_0.5_1.0,							
BH02_1.0_1.4,	BH12_0.0_0.5,							
BH12_0.5_1.0,	BH12_1.0_2.0,							
ASS_DUP4,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_2.0-2.7,							
ASS_DUP2,	ASS_DUP3							
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)		13-Feb-2018	16-Feb-2018	12-Aug-2018	✓	16-Feb-2018	12-Aug-2018	✓
BH01_1.0_2.0,	BH01_3.0_3.5,							
BH11_1.0-2.0								



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		13-Feb-2018	----	----	----	16-Feb-2018	27-Feb-2018	✓
BH01_0.0_0.5,	BH01_0.5_1.0,							
BH01_1.0_2.0,	BH01_2.0_3.0,							
BH01_3.0_3.5,	BH02_0.0_0.5,							
BH02_0.5_1.0,	BH02_1.0_1.4,							
BH12_0.0_0.5,	BH12_0.5_1.0,							
BH12_1.0_2.0,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_1.0-2.0,							
BH11_2.0-2.7								
EA150: Particle Sizing								
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150H)		13-Feb-2018	----	----	----	22-Feb-2018	12-Aug-2018	✓
BH01_0.0_0.5,	BH01_1.0_2.0,							
BH01_2.0_3.0,	BH02_0.0_0.5,							
BH02_1.0_1.4,	BH12_0.0_0.5,							
BH12_1.0_2.0,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_1.0-2.0,	BH11_2.0-2.7							
EA150: Soil Classification based on Particle Size								
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150H)		13-Feb-2018	----	----	----	22-Feb-2018	12-Aug-2018	✓
BH01_0.0_0.5,	BH01_1.0_2.0,							
BH01_2.0_3.0,	BH02_0.0_0.5,							
BH02_1.0_1.4,	BH12_0.0_0.5,							
BH12_1.0_2.0,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_1.0-2.0,	BH11_2.0-2.7							
EA152: Soil Particle Density								
Snap Lock Bag - Friable Asbestos/PSD Bag (EA152)		13-Feb-2018	----	----	----	22-Feb-2018	12-Aug-2018	✓
BH01_0.0_0.5,	BH01_1.0_2.0,							
BH01_2.0_3.0,	BH02_0.0_0.5,							
BH02_1.0_1.4,	BH12_0.0_0.5,							
BH12_1.0_2.0,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_1.0-2.0,	BH11_2.0-2.7							



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005-SD: Total Metals in Sediments by ICP-AES								
Soil Glass Jar - Unpreserved (EG005-SD)								
BH11_0.0-0.5, BH11_1.0-2.0,	BH11_0.5-1.0, BH11_2.0-2.7	13-Feb-2018	16-Feb-2018	12-Aug-2018	✓	19-Feb-2018	12-Aug-2018	✓
Soil Glass Jar - Unpreserved (EG005-SD)								
BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5, BH21_0.0_0.5	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5,	13-Feb-2018	17-Feb-2018	12-Aug-2018	✓	19-Feb-2018	12-Aug-2018	✓
EG020-SD: Total Metals in Sediments by ICPMS								
Soil Glass Jar - Unpreserved (EG020-SD)								
BH11_0.0-0.5, BH11_1.0-2.0,	BH11_0.5-1.0, BH11_2.0-2.7	13-Feb-2018	16-Feb-2018	12-Aug-2018	✓	19-Feb-2018	12-Aug-2018	✓
Soil Glass Jar - Unpreserved (EG020-SD)								
BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5, BH21_0.0_0.5	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5,	13-Feb-2018	17-Feb-2018	12-Aug-2018	✓	19-Feb-2018	12-Aug-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T-LL)								
BH11_0.0-0.5, BH11_1.0-2.0,	BH11_0.5-1.0, BH11_2.0-2.7	13-Feb-2018	16-Feb-2018	13-Mar-2018	✓	19-Feb-2018	13-Mar-2018	✓
Soil Glass Jar - Unpreserved (EG035T-LL)								
BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5, BH21_0.0_0.5	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5,	13-Feb-2018	17-Feb-2018	13-Mar-2018	✓	19-Feb-2018	13-Mar-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK057G: Nitrite as N by Discrete Analyser								
Soil Glass Jar - Unpreserved (EK057G) BH11_0.0-0.5, BH11_1.0-2.0,	BH11_0.5-1.0, BH11_2.0-2.7	13-Feb-2018	19-Feb-2018	12-Aug-2018	✔	20-Feb-2018	12-Aug-2018	✔
Soil Glass Jar - Unpreserved (EK057G) BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5,	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5	13-Feb-2018	20-Feb-2018	12-Aug-2018	✔	21-Feb-2018	12-Aug-2018	✔
Soil Glass Jar - Unpreserved (EK057G) BH21_0.0_0.5		13-Feb-2018	20-Feb-2018	12-Aug-2018	✔	23-Feb-2018	12-Aug-2018	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Soil Glass Jar - Unpreserved (EK059G) BH11_0.0-0.5, BH11_1.0-2.0,	BH11_0.5-1.0, BH11_2.0-2.7	13-Feb-2018	19-Feb-2018	12-Aug-2018	✔	20-Feb-2018	12-Aug-2018	✔
Soil Glass Jar - Unpreserved (EK059G) BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5, BH21_0.0_0.5	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5,	13-Feb-2018	20-Feb-2018	12-Aug-2018	✔	21-Feb-2018	12-Aug-2018	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Soil Glass Jar - Unpreserved (EK061G) BH11_0.0-0.5, BH11_1.0-2.0,	BH11_0.5-1.0, BH11_2.0-2.7	13-Feb-2018	16-Feb-2018	12-Aug-2018	✔	19-Feb-2018	12-Aug-2018	✔
Soil Glass Jar - Unpreserved (EK061G) BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5, BH21_0.0_0.5	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5,	13-Feb-2018	17-Feb-2018	12-Aug-2018	✔	19-Feb-2018	12-Aug-2018	✔



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK067G: Total Phosphorus as P by Discrete Analyser								
Soil Glass Jar - Unpreserved (EK067G) BH11_0.0-0.5, BH11_1.0-2.0,	BH11_0.5-1.0, BH11_2.0-2.7	13-Feb-2018	16-Feb-2018	12-Aug-2018	✓	19-Feb-2018	12-Aug-2018	✓
Soil Glass Jar - Unpreserved (EK067G) BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5, BH21_0.0_0.5	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5,	13-Feb-2018	17-Feb-2018	12-Aug-2018	✓	19-Feb-2018	12-Aug-2018	✓
EK255A SD: Ammonia in Sediment								
Soil Glass Jar - Unpreserved (EK255A SD) BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5, BH21_0.0_0.5, BH11_0.5-1.0, BH11_2.0-2.7	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5, BH11_0.0-0.5, BH11_1.0-2.0,	13-Feb-2018	----	----	----	19-Feb-2018	12-Aug-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071-SD) BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5, BH21_0.0_0.5	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5,	13-Feb-2018	16-Feb-2018	27-Feb-2018	✓	19-Feb-2018	28-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP071-SD) BH11_0.0-0.5, BH11_1.0-2.0,	BH11_0.5-1.0, BH11_2.0-2.7	13-Feb-2018	21-Feb-2018	27-Feb-2018	✓	22-Feb-2018	02-Apr-2018	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080-SD)		13-Feb-2018	16-Feb-2018	27-Feb-2018	✓	19-Feb-2018	27-Feb-2018	✓
BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5, BH21_0.0_0.5, BH11_0.5-1.0, BH11_2.0-2.7	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5, BH11_0.0-0.5, BH11_1.0-2.0,							
Soil Glass Jar - Unpreserved (EP071-SD)		13-Feb-2018	21-Feb-2018	27-Feb-2018	✓	22-Feb-2018	02-Apr-2018	✓
BH11_0.0-0.5, BH11_1.0-2.0,	BH11_0.5-1.0, BH11_2.0-2.7							
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080-SD)		13-Feb-2018	16-Feb-2018	27-Feb-2018	✓	19-Feb-2018	27-Feb-2018	✓
BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5, BH21_0.0_0.5, BH11_0.5-1.0, BH11_2.0-2.7	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5, BH11_0.0-0.5, BH11_1.0-2.0,							
EP080-SD: BTEXN								
Soil Glass Jar - Unpreserved (EP080-SD)		13-Feb-2018	16-Feb-2018	27-Feb-2018	✓	19-Feb-2018	27-Feb-2018	✓
BH01_0.0_0.5, BH01_1.0_2.0, BH01_3.0_3.5, BH02_0.5_1.0, BH12_0.0_0.5, BH12_1.0_2.0, BH16_0.0_0.5, BH21_0.0_0.5, BH11_0.5-1.0, BH11_2.0-2.7	BH01_0.5_1.0, BH01_2.0_3.0, BH02_0.0_0.5, BH02_1.0_1.4, BH12_0.5_1.0, BH15_0.0_0.5, BH20_0.0_0.5, BH11_0.0-0.5, BH11_1.0-2.0,							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP090: Organotin Compounds								
Soil Glass Jar - Unpreserved (EP090)		13-Feb-2018	19-Feb-2018	27-Feb-2018	✔	22-Feb-2018	31-Mar-2018	✔
BH01_0.0_0.5,	BH01_0.5_1.0,							
BH01_1.0_2.0,	BH01_2.0_3.0,							
BH01_3.0_3.5,	BH02_0.0_0.5,							
BH02_0.5_1.0,	BH02_1.0_1.4,							
BH12_0.0_0.5,	BH12_0.5_1.0,							
BH12_1.0_2.0,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_1.0-2.0,							
BH11_2.0-2.7								
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Soil Glass Jar - Unpreserved (EP130)		13-Feb-2018	20-Feb-2018	27-Feb-2018	✔	21-Feb-2018	01-Apr-2018	✔
BH01_0.0_0.5,	BH01_0.5_1.0,							
BH01_1.0_2.0,	BH01_2.0_3.0,							
BH01_3.0_3.5,	BH02_0.0_0.5,							
BH02_0.5_1.0,	BH02_1.0_1.4,							
BH12_0.0_0.5,	BH12_0.5_1.0,							
BH12_1.0_2.0,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_1.0-2.0,							
BH11_2.0-2.7								
EP131A: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP131A)		13-Feb-2018	20-Feb-2018	27-Feb-2018	✔	21-Feb-2018	01-Apr-2018	✔
BH01_0.0_0.5,	BH01_0.5_1.0,							
BH01_1.0_2.0,	BH01_2.0_3.0,							
BH01_3.0_3.5,	BH02_0.0_0.5,							
BH02_0.5_1.0,	BH02_1.0_1.4,							
BH12_0.0_0.5,	BH12_0.5_1.0,							
BH12_1.0_2.0,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_1.0-2.0,							
BH11_2.0-2.7								



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP131B: Polychlorinated Biphenyls (as Aroclors)								
Soil Glass Jar - Unpreserved (EP131B)		13-Feb-2018	20-Feb-2018	27-Feb-2018	✔	21-Feb-2018	01-Apr-2018	✔
BH01_0.0_0.5,	BH01_0.5_1.0,							
BH01_1.0_2.0,	BH01_2.0_3.0,							
BH01_3.0_3.5,	BH02_0.0_0.5,							
BH02_0.5_1.0,	BH02_1.0_1.4,							
BH12_0.0_0.5,	BH12_0.5_1.0,							
BH12_1.0_2.0,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_1.0-2.0,							
BH11_2.0-2.7								
EP132B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP132B-SD)		13-Feb-2018	20-Feb-2018	27-Feb-2018	✔	20-Feb-2018	01-Apr-2018	✔
BH01_0.0_0.5,	BH01_0.5_1.0,							
BH01_1.0_2.0,	BH01_2.0_3.0,							
BH01_3.0_3.5,	BH02_0.0_0.5,							
BH02_0.5_1.0,	BH02_1.0_1.4,							
BH12_0.0_0.5,	BH12_0.5_1.0,							
BH12_1.0_2.0,	BH15_0.0_0.5,							
BH16_0.0_0.5,	BH20_0.0_0.5,							
BH21_0.0_0.5,	BH11_0.0-0.5,							
BH11_0.5-1.0,	BH11_1.0-2.0,							
BH11_2.0-2.7								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia in Sediments	EK255A SD	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
ASS Field Screening Analysis	EA037	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	5	41	12.20	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	3	22	13.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	3	22	13.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	3	19	15.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fe and Al in Sediments by ICPAES	EG005-SD	3	19	15.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	3	19	15.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	3	19	15.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	3	22	13.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	3	19	15.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	3	19	15.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia in Sediments	EK255A SD	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	4	19	21.05	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	4	22	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
TPH - Semivolatile Fraction	EP071-SD	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia in Sediments	EK255A SD	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fe and Al in Sediments by ICPAES	EG005-SD	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia in Sediments	EK255A SD	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	2	19	10.53	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	SOIL	In house: Referenced to Ahern et al 2004 - a suspension peroxide oxidation method following the 'sulfur trail' by determining the level of 1M KCL extractable sulfur and the sulfur level after oxidation of soil sulphides. The 'acidity trail' is followed by measurement of TAA, TPA and TSA. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Soil Particle Density	* EA152	SOIL	Soil Particle Density by AS 1289.3.5.1-2006 : Methods of testing soils for engineering purposes - Soil classification tests - Determination of the soil particle density of a soil - Standard method
Total Fe and Al in Sediments by ICPAES	EG005-SD	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3). LORs per NODG
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N - Soluble by Discrete Analyser	EK057G	SOIL	In house: Referenced to APHA 4500-NO ₃ - B. Nitrite in a water extract is determined by direct colourimetry by Discrete Analyser.
Nitrate as N - Soluble by Discrete Analyser	EK058G	SOIL	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate in the 1:5 soil:water extract is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N (NO _x)- Soluble by Discrete Analyser	EK059G	SOIL	In house: Thermo Scientific Method D08727 and NEMI (National Environmental Method Index) Method ID: 9171. This method covers the determination of total oxidised nitrogen (NO _x -N) and nitrate (NO ₃ -N) by calculation, Combined oxidised Nitrogen (NO ₂ +NO ₃) in a water extract is determined by direct colourimetry by Discrete Analyser.
TKN as N By Discrete Analyser	EK061G	SOIL	In house: Referenced to APHA 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Discrete Analyser.
Total Nitrogen as N (TKN + NO _x) By Discrete Analyser	EK062G	SOIL	In house: Referenced to APHA 4500 Norg/NO ₃ - Total Nitrogen is determined as the sum of TKN and Oxidised Nitrogen, each determined seperately as N.



Analytical Methods	Method	Matrix	Method Descriptions
Total Phosphorus By Discrete Analyser	EK067G	SOIL	In house: Referenced to APHA 4500 P-B&F This procedure involves sulfuric acid digestion and quantification using Discrete Analyser.
Ammonia in Sediments	EK255A SD	SOIL	In house: Referenced to Rayment and Higginson (1992) Method 7C1 and 7C2. This method measures exchangeable ammonium which is defined by the amount of ammonium released by shaking sediment with an un-buffered 2M potassium chloride solution.
TPH - Semivolatile Fraction	EP071-SD	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH Volatiles/BTEX in Sediments	EP080-SD	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Organotin Analysis	EP090	SOIL	In house: Referenced to USEPA SW 846 - 8270D Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quantified against an established calibration curve.
Organophosphorus Pesticides (Ultra-trace)	EP130	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup), 8141 (GC/FPD - Capillary Column) This technique is compliant with NEPM (2013) Schedule B(3).
Organochlorine Pesticides (Ultra-trace)	EP131A	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup), 3620 (Florisil), 8081/8082 (GC/ μ ECD/ μ ECD) This technique is compliant with NEPM (2013) Schedule B(3)
PCB's (Ultra-trace)	EP131B	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup), 3620 (Florisil), 8081/8082 (GC/ μ ECD/ μ ECD) This technique is compliant with NEPM (2013) Schedule B(3)
PAHs in Sediments by GCMS(SIM)	EP132B-SD	SOIL	In house: Referenced to USEPA 8270D GCMS Capillary column, SIM mode using large volume programmed temperature vaporisation injection.

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	SOIL	In house: Referenced to APHA 4500 Norg- D; APHA 4500 P - H. Macro Kjeldahl digestion.
Drying only	EN020D	SOIL	In house
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In house: Mechanical agitation (tumbler). 20g of sample, Na ₂ SO ₄ and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids for LVI (Non-concentrating)	ORG17D	SOIL	In house: 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 50mL 1:1 DCM/Acetone by end over end tumbling. An aliquot is concentrated by nitrogen blowdown to a reduced volume for analysis if required.

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Work Order : EB1804131
Client : AURECON AUSTRALASIA PTY LTD
Project : 237374



Preparation Methods	Method	Matrix	Method Descriptions
Organotin Sample Preparation	ORG35	SOIL	In house: 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.

QUALITY CONTROL REPORT

Work Order	: EB1804131	Page	: 1 of 23
Client	: AURECON AUSTRALASIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MS GEORGINA KERR	Contact	: John Pickering
Address	: LOCKED BAG 331 32 TURBOT STREET BRISBANE QLD, AUSTRALIA 4001	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3173 8396	Telephone	: +61-7-3243 7222
Project	: 237374	Date Samples Received	: 15-Feb-2018
Order number	: ----	Date Analysis Commenced	: 16-Feb-2018
C-O-C number	: ----	Issue Date	: 26-Feb-2018
Sampler	: KAITLIN MULCAHY		
Site	: ----		
Quote number	: BN/004/18		
No. of samples received	: 25		
No. of samples analysed	: 23		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
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Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
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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

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 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
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-A: pH Measurements (QC Lot: 1447182)									
EB1804131-001	BH01_0.0_0.5	EA029: pH KCl (23A)	----	0.1	pH Unit	8.4	8.5	1.18	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	8.3	8.3	0.00	0% - 20%
EB1804131-013	ASS_DUP4	EA029: pH KCl (23A)	----	0.1	pH Unit	8.2	8.4	2.41	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	7.5	7.4	0.00	0% - 20%
EA029-B: Acidity Trail (QC Lot: 1447182)									
EB1804131-001	BH01_0.0_0.5	EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	0.00	No Limit
EB1804131-013	ASS_DUP4	EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	0.00	No Limit
EA029-C: Sulfur Trail (QC Lot: 1447182)									
EB1804131-001	BH01_0.0_0.5	EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.114	0.115	0.879	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.654	0.652	0.272	0% - 20%
		EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.540	0.537	0.517	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-C: Sulfur Trail (QC Lot: 1447182) - continued									
EB1804131-001	BH01_0.0_0.5	EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	336	335	0.517	0% - 20%
EB1804131-013	ASS_DUP4	EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.129	0.137	6.06	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.452	0.475	4.89	0% - 20%
		EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.323	0.338	4.42	0% - 50%
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	201	210	4.42	0% - 20%
EA029-D: Calcium Values (QC Lot: 1447182)									
EB1804131-001	BH01_0.0_0.5	EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.272	0.275	1.05	0% - 50%
		EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	2.42	2.39	1.54	0% - 20%
		EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	2.15	2.11	1.87	0% - 20%
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	1.72	1.69	1.87	0% - 20%
		EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	1070	1050	1.87	0% - 20%
EB1804131-013	ASS_DUP4	EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.258	0.278	7.53	0% - 50%
		EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	0.871	0.864	0.795	0% - 20%
		EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	0.613	0.586	4.51	0% - 20%
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	0.490	0.469	4.51	0% - 20%
		EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	306	292	4.51	0% - 20%
EA029-E: Magnesium Values (QC Lot: 1447182)									
EB1804131-001	BH01_0.0_0.5	EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.167	0.168	0.852	No Limit
		EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.428	0.429	0.00	0% - 20%
		EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	0.261	0.261	0.00	0% - 50%
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.345	0.344	0.00	0% - 50%
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	215	215	0.00	0% - 20%
EB1804131-013	ASS_DUP4	EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.227	0.245	7.54	0% - 50%
		EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.354	0.364	2.87	0% - 50%
		EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	0.126	0.118	6.17	No Limit
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.166	0.156	6.17	No Limit
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	104	97	6.17	0% - 50%
EA029-F: Excess Acid Neutralising Capacity (QC Lot: 1447182)									
EB1804131-001	BH01_0.0_0.5	EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	5.18	5.04	2.81	0% - 20%
		EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	1.66	1.61	2.81	0% - 20%
		EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	1040	1010	2.81	0% - 20%
EB1804131-013	ASS_DUP4	EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	1.92	2.16	11.8	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-F: Excess Acid Neutralising Capacity (QC Lot: 1447182) - continued									
EB1804131-013	ASS_DUP4	EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	0.614	0.691	11.8	0% - 20%
		EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	383	431	11.8	0% - 20%
EA029-H: Acid Base Accounting (QC Lot: 1447182)									
EB1804131-001	BH01_0.0_0.5	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.54	0.54	0.00	0% - 20%
		EA029: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.00	No Limit
		EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	25	25	0.00	0% - 20%
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit
		EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	336	335	0.517	0% - 20%
EB1804131-013	ASS_DUP4	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.32	0.34	4.42	0% - 50%
		EA029: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.00	No Limit
		EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	15	16	0.00	0% - 50%
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit
		EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	201	210	4.42	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 1437842)									
EB1804131-004	BH01_1.0_2.0	EA037: pH (F)	----	0.1	pH Unit	8.2	8.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.4	4.4	0.00	0% - 20%
ES1804718-005	Anonymous	EA037: pH (F)	----	0.1	pH Unit	6.2	6.3	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.1	4.1	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1437986)									
EB1803956-033	Anonymous	EA055: Moisture Content	----	1	%	12.2	13.8	11.8	0% - 50%
EB1804131-006	BH01_3.0_3.5	EA055: Moisture Content	----	1	%	42.3	42.0	0.877	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1437987)									
EB1804131-018	BH21_0.0_0.5	EA055: Moisture Content	----	1	%	20.6	20.8	0.822	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1438034)									
EB1804131-019	BH11_0.0-0.5	EA055: Moisture Content	----	1	%	34.5	34.4	0.00	0% - 20%
EB1804205-005	Anonymous	EA055: Moisture Content	----	1	%	15.7	15.4	1.73	0% - 50%
EG005-SD: Total Metals in Sediments by ICP-AES (QC Lot: 1437970)									
EB1804131-001	BH01_0.0_0.5	EG005-SD: Aluminium	7429-90-5	50	mg/kg	13200	12500	5.16	0% - 20%
		EG005-SD: Iron	7439-89-6	50	mg/kg	25300	24500	3.28	0% - 20%
EB1804131-012	BH12_1.0_2.0	EG005-SD: Aluminium	7429-90-5	50	mg/kg	6830	7120	4.16	0% - 20%
		EG005-SD: Iron	7439-89-6	50	mg/kg	14200	16500	15.2	0% - 20%
EG005-SD: Total Metals in Sediments by ICP-AES (QC Lot: 1438005)									
EB1804131-019	BH11_0.0-0.5	EG005-SD: Aluminium	7429-90-5	50	mg/kg	11500	10300	10.9	0% - 20%

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Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005-SD: Total Metals in Sediments by ICP-AES (QC Lot: 1438005) - continued									
EB1804131-019	BH11_0.0-0.5	EG005-SD: Iron	7439-89-6	50	mg/kg	31400	30300	3.63	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1437971)									
EB1804131-001	BH01_0.0_0.5	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.5	0.5	0.00	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	<0.50	0.00	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	12.2	11.2	8.70	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	11.3	10.0	11.9	0% - 50%
		EG020-SD: Chromium	7440-47-3	1	mg/kg	20.2	19.8	2.41	0% - 20%
		EG020-SD: Copper	7440-50-8	1	mg/kg	20.0	18.9	5.91	0% - 20%
		EG020-SD: Lead	7439-92-1	1	mg/kg	8.4	8.4	0.00	No Limit
		EG020-SD: Nickel	7440-02-0	1	mg/kg	11.2	10.8	3.65	0% - 50%
		EG020-SD: Zinc	7440-66-6	1	mg/kg	37.9	35.7	6.05	0% - 20%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	260	253	2.73	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2	mg/kg	51.1	47.0	8.27	0% - 20%
EB1804131-012	BH12_1.0_2.0	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.4	0.5	30.8	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	<0.50	0.00	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	7.4	8.3	11.0	0% - 50%
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	3.47	4.49	25.6	No Limit
		EG020-SD: Chromium	7440-47-3	1	mg/kg	13.2	13.9	5.18	0% - 50%
		EG020-SD: Copper	7440-50-8	1	mg/kg	13.0	14.7	12.5	0% - 50%
		EG020-SD: Lead	7439-92-1	1	mg/kg	5.5	5.8	4.49	No Limit
		EG020-SD: Nickel	7440-02-0	1	mg/kg	7.0	8.0	12.8	No Limit
		EG020-SD: Zinc	7440-66-6	1	mg/kg	30.2	35.6	16.7	0% - 20%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	332	275	19.0	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2	mg/kg	32.3	34.4	6.24	0% - 50%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1438006)									
EB1804131-019	BH11_0.0-0.5	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.4	0.4	0.00	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	<0.50	0.00	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	34.3	# 15.6	74.8	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	18.8	15.7	17.8	0% - 50%
		EG020-SD: Chromium	7440-47-3	1	mg/kg	20.8	17.9	14.9	0% - 20%
		EG020-SD: Copper	7440-50-8	1	mg/kg	18.4	14.1	26.9	0% - 50%
		EG020-SD: Lead	7439-92-1	1	mg/kg	8.4	7.0	17.8	No Limit
		EG020-SD: Nickel	7440-02-0	1	mg/kg	20.7	# 12.1	52.8	0% - 20%
		EG020-SD: Zinc	7440-66-6	1	mg/kg	44.1	40.3	9.05	0% - 20%

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Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1438006) - continued									
EB1804131-019	BH11_0.0-0.5	EG020-SD: Manganese	7439-96-5	10	mg/kg	5510	# 626	159	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2	mg/kg	66.2	56.7	15.3	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1437972)									
EB1804131-001	BH01_0.0_0.5	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.01	0.01	0.00	0% - 20%
EB1804131-012	BH12_1.0_2.0	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	0.00	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1438007)									
EB1804131-019	BH11_0.0-0.5	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.02	<0.01	0.00	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 1437982)									
EB1804131-001	BH01_0.0_0.5	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1804131-012	BH12_1.0_2.0	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 1438015)									
EB1804131-019	BH11_0.0-0.5	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 1437981)									
EB1804131-001	BH01_0.0_0.5	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1804131-012	BH12_1.0_2.0	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 1438014)									
EB1804131-019	BH11_0.0-0.5	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	0.2	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 1437984)									
EB1804131-001	BH01_0.0_0.5	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	470	550	15.1	0% - 20%
EB1804131-012	BH12_1.0_2.0	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	120	110	10.9	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 1438013)									
EB1804131-019	BH11_0.0-0.5	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	140	160	8.03	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 1437983)									
EB1804131-001	BH01_0.0_0.5	EK067G: Total Phosphorus as P	----	2	mg/kg	220	234	6.62	0% - 20%
EB1804131-012	BH12_1.0_2.0	EK067G: Total Phosphorus as P	----	2	mg/kg	254	273	7.33	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 1438012)									
EB1804131-019	BH11_0.0-0.5	EK067G: Total Phosphorus as P	----	2	mg/kg	332	301	9.74	0% - 20%
EK255A SD: Ammonia in Sediment (QC Lot: 1441924)									
EB1804028-001	Anonymous	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	3.1	3.2	0.00	0% - 50%
EB1804131-011	BH12_0.5_1.0	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	166	171	2.65	0% - 20%
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1437974)									
EB1804131-001	BH01_0.0_0.5	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
EB1804131-011	BH12_0.5_1.0	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<5	<4	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1437985)									
EB1804131-001	BH01_0.0_0.5	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1437985) - continued									
EB1804131-011	BH12_0.5_1.0	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	5	4	0.00	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	5	4	22.2	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1438022)									
EB1804131-019	BH11_0.0-0.5	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	6	4	40.2	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	9	4	76.9	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1438023)									
EB1804131-019	BH11_0.0-0.5	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1437974)									
EB1804131-001	BH01_0.0_0.5	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	No Limit
EB1804131-011	BH12_0.5_1.0	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<4	<3	33.3	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1437985)									
EB1804131-001	BH01_0.0_0.5	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EB1804131-011	BH12_0.5_1.0	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	7	6	23.2	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	7	6	15.4	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1438022)									
EB1804131-019	BH11_0.0-0.5	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	6	4	55.9	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	9	4	76.9	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1438023)									
EB1804131-019	BH11_0.0-0.5	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD: BTEXN (QC Lot: 1437974)									
EB1804131-001	BH01_0.0_0.5	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
			106-42-3						
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080-SD: BTEXN (QC Lot: 1437974) - continued									
EB1804131-011	BH12_0.5_1.0	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.4	<0.4	0.00	No Limit
			106-42-3						
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP080-SD: BTEXN (QC Lot: 1438023)									
EB1804131-019	BH11_0.0-0.5	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
			106-42-3						
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP090: Organotin Compounds (QC Lot: 1441075)									
EB1804131-001	BH01_0.0_0.5	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.00	No Limit
		EP090: Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	0.00	No Limit
		EP090: Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	0.00	No Limit
EB1804131-012	BH12_1.0_2.0	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.00	No Limit
		EP090: Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	0.00	No Limit
		EP090: Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	0.00	No Limit
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1439331)									
EB1804131-001	BH01_0.0_0.5	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1439331) - continued									
EB1804131-001	BH01_0.0_0.5	EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EB1804131-012	BH12_1.0_2.0	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EP131A: Organochlorine Pesticides (QC Lot: 1439333)									
EB1804131-001	BH01_0.0_0.5	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131A: Organochlorine Pesticides (QC Lot: 1439333) - continued									
EB1804131-001	BH01_0.0_0.5	EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EB1804131-012	BH12_1.0_2.0	EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1439332)									
EB1804131-001	BH01_0.0_0.5	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	<5.0	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1439332) - continued									
EB1804131-001	BH01_0.0_0.5	EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
EB1804131-012	BH12_1.0_2.0	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1439343)									
EB1804131-001	BH01_0.0_0.5	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	<4	0.00	No Limit
			205-82-3						
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	4	0.00	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	4	0.00	No Limit
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit
EB1804131-012	BH12_1.0_2.0	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit

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 Work Order : EB1804131
 Client : AURECON AUSTRALASIA PTY LTD
 Project : 237374



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1439343) - continued									
EB1804131-012	BH12_1.0_2.0	EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	<4	0.00	No Limit
			205-82-3						
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High
EA029-A: pH Measurements (QCLot: 1447182)								
EA029: pH KCl (23A)	----	0.1	pH Unit	<0.1	4.6 pH Unit	100	70	130
EA029: pH OX (23B)	----	0.1	pH Unit	<0.1	4.3 pH Unit	101	70	130
EA029-B: Acidity Trail (QCLot: 1447182)								
EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	17.7 mole H+ / t	90.3	70	130
EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	35.2 mole H+ / t	99.6	70	130
EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	----	----	----	----
EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029-C: Sulfur Trail (QCLot: 1447182)								
EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.020	0.052 % S	93.1	70	130
EA029: Peroxide Sulfur (23De)	----	0.02	% S	<0.020	0.158 % S	95.8	70	130
EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.020	----	----	----	----
EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	----	----	----	----
EA029-D: Calcium Values (QCLot: 1447182)								
EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	<0.020	0.097 % Ca	113	70	130
EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	<0.020	0.22 % Ca	98.6	70	130
EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.020	----	----	----	----
EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.020	----	----	----	----
EA029-E: Magnesium Values (QCLot: 1447182)								
EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	<0.020	0.25 % Mg	97.2	70	130
EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	<0.020	0.234 % Mg	98.7	70	130
EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.020	----	----	----	----
EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	<0.020	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity (QCLot: 1447182)								
EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	<0.020	----	----	----	----
EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	<0.020	----	----	----	----
EA029-H: Acid Base Accounting (QCLot: 1447182)								
EA029: ANC Fineness Factor	----	0.5	-	<0.5	----	----	----	----
EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)	
						Concentration	LCS	Low	High
EA029-H: Acid Base Accounting (QCLot: 1447182) - continued									
EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----	
EA029: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----	
EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	----	----	----	----	
EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	----	----	----	----	
EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	----	----	----	----	
EG005-SD: Total Metals in Sediments by ICP-AES (QCLot: 1437970)									
EG005-SD: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----	
EG005-SD: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----	
EG005-SD: Total Metals in Sediments by ICP-AES (QCLot: 1438005)									
EG005-SD: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----	
EG005-SD: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1437971)									
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----	
EG020-SD: Arsenic	7440-38-2	1	mg/kg	<1.00	116.3 mg/kg	101	80	124	
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	1.43 mg/kg	99.9	87	122	
EG020-SD: Chromium	7440-47-3	1	mg/kg	<1.0	20.5 mg/kg	83.7	79	129	
EG020-SD: Copper	7440-50-8	1	mg/kg	<1.0	52.9 mg/kg	102	85	118	
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	----	----	----	----	
EG020-SD: Lead	7439-92-1	1	mg/kg	<1.0	66.3 mg/kg	107	86	119	
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	----	----	----	----	
EG020-SD: Nickel	7440-02-0	1	mg/kg	<1.0	14.72 mg/kg	97.4	77	123	
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----	
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----	
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	----	----	----	----	
EG020-SD: Zinc	7440-66-6	1	mg/kg	<1.0	182.3 mg/kg	106	71	127	
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1438006)									
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----	
EG020-SD: Arsenic	7440-38-2	1	mg/kg	<1.00	116.3 mg/kg	109	80	124	
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	1.43 mg/kg	105	87	122	
EG020-SD: Chromium	7440-47-3	1	mg/kg	<1.0	20.5 mg/kg	92.1	79	129	
EG020-SD: Copper	7440-50-8	1	mg/kg	<1.0	52.9 mg/kg	108	85	118	
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	----	----	----	----	
EG020-SD: Lead	7439-92-1	1	mg/kg	<1.0	66.3 mg/kg	109	86	119	
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	----	----	----	----	
EG020-SD: Nickel	7440-02-0	1	mg/kg	<1.0	14.72 mg/kg	106	77	123	
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----	
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----	
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	----	----	----	----	



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1438006) - continued								
EG020-SD: Zinc	7440-66-6	1	mg/kg	<1.0	182.3 mg/kg	112	71	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1437972)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.0555 mg/kg	93.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1438007)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.0555 mg/kg	104	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1437982)								
EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	2.5 mg/kg	98.4	83	111
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1438015)								
EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	2.5 mg/kg	98.1	83	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1437981)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	101	86	115
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1438014)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	99.3	86	115
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 1437984)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20 <20	877 mg/kg 3644 mg/kg	103 86.2	70 70	110 110
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 1438013)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20 <20	877 mg/kg 3644 mg/kg	90.5 91.1	70 70	110 110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1437983)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2 <2	766 mg/kg 1200 mg/kg	90.4 101	70 70	110 110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1438012)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2 <2	766 mg/kg 1200 mg/kg	74.6 103	70 70	110 110
EK255A SD: Ammonia in Sediment (QCLot: 1441924)								
EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	<0.2	1 mg/kg	82.4	79	121
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1437974)								
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	16 mg/kg	97.4	66	120
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1437985)								
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	159 mg/kg	87.9	43	126
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	266 mg/kg	94.4	66	140
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1438022)								
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	159 mg/kg	84.3	43	126
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	266 mg/kg	94.4	66	140



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1438022) - continued								
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1438023)								
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	16 mg/kg	94.2	66	120
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1437974)								
EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	18.5 mg/kg	95.1	66	119
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1437985)								
EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	214 mg/kg	91.2	40	134
EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	198 mg/kg	91.8	66	136
EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1438022)								
EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	214 mg/kg	89.6	40	134
EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	198 mg/kg	90.6	66	136
EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1438023)								
EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	18.5 mg/kg	93.0	66	119
EP080-SD: BTEXN (QCLot: 1437974)								
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	97.3	73	105
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	1 mg/kg	93.5	73	105
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	1 mg/kg	88.5	67	104
EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	2 mg/kg	90.1	66	106
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	1 mg/kg	90.8	68	105
EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	1 mg/kg	99.4	72	115
EP080-SD: BTEXN (QCLot: 1438023)								
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	91.5	73	105
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	1 mg/kg	95.0	73	105
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	1 mg/kg	90.6	67	104
EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	2 mg/kg	99.0	66	106
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	1 mg/kg	92.0	68	105
EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	1 mg/kg	101	72	115



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP090: Organotin Compounds (QCLot: 1441075)								
EP090: Monobutyltin	78763-54-9	1	µgSn/kg	<1	1.25 µgSn/kg	79.6	36	128
EP090: Dibutyltin	1002-53-5	1	µgSn/kg	<1	1.25 µgSn/kg	89.7	42	132
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	1.25 µgSn/kg	112	52	139
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1439331)								
EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	50 µg/kg	73.1	49	117
EP130: Carbophenothion	786-19-6	10	µg/kg	<10	50 µg/kg	92.6	54	104
EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	5 µg/kg	87.8	48	156
EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	50 µg/kg	74.2	53	119
EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	50 µg/kg	81.2	54	112
EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	50 µg/kg	98.6	52	108
EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	50 µg/kg	92.9	51	109
EP130: Diazinon	333-41-5	10	µg/kg	<10	50 µg/kg	97.6	57	121
EP130: Dichlorvos	62-73-7	10	µg/kg	<10	50 µg/kg	68.3	48	104
EP130: Dimethoate	60-51-5	10	µg/kg	<10	50 µg/kg	101	52	120
EP130: Ethion	563-12-2	10	µg/kg	<10	50 µg/kg	73.0	51	121
EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	50 µg/kg	81.1	50	120
EP130: Fenthion	55-38-9	10	µg/kg	<10	50 µg/kg	74.9	48	112
EP130: Malathion	121-75-5	10	µg/kg	<10	50 µg/kg	84.7	51	121
EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	50 µg/kg	98.7	45	127
EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	50 µg/kg	92.8	48	128
EP130: Parathion	56-38-2	10	µg/kg	<10	50 µg/kg	76.4	49	125
EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	50 µg/kg	97.3	51	119
EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	50 µg/kg	75.8	48	120
EP130: Prothiofos	34643-46-4	10	µg/kg	<10	50 µg/kg	69.8	51	117
EP131A: Organochlorine Pesticides (QCLot: 1439333)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	108	38	139
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	101	18	136
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	116	31	131
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	101	37	140
EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	94.7	26	141
EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	77.2	35	129
EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	5 µg/kg	99.2	23	138
EP131A: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	5 µg/kg	103	30	140
EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	5 µg/kg	91.3	38	140
EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	5 µg/kg	112	32	152
EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	5 µg/kg	104	36	155
EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	----	----	----	----



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP131A: Organochlorine Pesticides (QCLot: 1439333) - continued								
EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	5 µg/kg	132	26	158
EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	5 µg/kg	97.5	20	118
EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	5 µg/kg	99.6	13	135
EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	5 µg/kg	106	39	155
EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	5 µg/kg	102	34	148
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	5 µg/kg	116	26	152
EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	5 µg/kg	103	31	137
EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	5 µg/kg	105	36	152
EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	5 µg/kg	107	36	142
EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	5 µg/kg	103	30	138
EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1439332)								
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	50 µg/kg	79.6	45	115
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	79.6	45	115
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1439343)								
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	81.0	63	129
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	82.1	64	128
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	83.2	65	129
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	81.4	68	132
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	82.0	68	124
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	84.3	64	134
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	81.6	65	131
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	80.7	64	130
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	80.5	67	133
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	79.2	62	130
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	80.7	65	133
EP132B-SD: Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	25 µg/kg	81.9	68	120
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	83.1	61	133
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	82.7	63	127
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	78.5	66	118
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	81.7	69	119
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	84.5	66	120

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1437971)							
EB1804131-003	BH01_0.5_1.0	EG020-SD: Arsenic	7440-38-2	50 mg/kg	100	70	130
		EG020-SD: Cadmium	7440-43-9	25 mg/kg	101	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	94.7	70	130
		EG020-SD: Copper	7440-50-8	50 mg/kg	109	70	130
		EG020-SD: Cobalt	7440-48-4	50 mg/kg	108	70	130
		EG020-SD: Lead	7439-92-1	50 mg/kg	100	70	130
		EG020-SD: Manganese	7439-96-5	50 mg/kg	75.2	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	103	70	130
		EG020-SD: Vanadium	7440-62-2	50 mg/kg	102	70	130
		EG020-SD: Zinc	7440-66-6	50 mg/kg	106	70	130
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1438006)							
EB1804131-020	BH11_0.5-1.0	EG020-SD: Arsenic	7440-38-2	50 mg/kg	126	70	130
		EG020-SD: Cadmium	7440-43-9	25 mg/kg	105	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	105	70	130
		EG020-SD: Copper	7440-50-8	50 mg/kg	119	70	130
		EG020-SD: Cobalt	7440-48-4	50 mg/kg	128	70	130
		EG020-SD: Lead	7439-92-1	50 mg/kg	112	70	130
		EG020-SD: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	115	70	130
		EG020-SD: Vanadium	7440-62-2	50 mg/kg	126	70	130
		EG020-SD: Zinc	7440-66-6	50 mg/kg	124	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1437972)							
EB1804131-003	BH01_0.5_1.0	EG035T-LL: Mercury	7439-97-6	0.5 mg/kg	74.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1438007)							

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 Work Order : EB1804131
 Client : AURECON AUSTRALASIA PTY LTD
 Project : 237374



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1438007) - continued							
EB1804131-020	BH11_0.5-1.0	EG035T-LL: Mercury	7439-97-6	0.5 mg/kg	79.4	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1437982)							
EB1804131-003	BH01_0.5_1.0	EK057G: Nitrite as N (Sol.)	14797-65-0	2 mg/kg	103	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1438015)							
EB1804131-020	BH11_0.5-1.0	EK057G: Nitrite as N (Sol.)	14797-65-0	2 mg/kg	97.5	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1437981)							
EB1804131-003	BH01_0.5_1.0	EK059G: Nitrite + Nitrate as N (Sol.)	----	2 mg/kg	104	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1438014)							
EB1804131-020	BH11_0.5-1.0	EK059G: Nitrite + Nitrate as N (Sol.)	----	2 mg/kg	106	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 1437984)							
EB1804131-003	BH01_0.5_1.0	EK061G: Total Kjeldahl Nitrogen as N	----	500 mg/kg	94.0	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 1438013)							
EB1804131-020	BH11_0.5-1.0	EK061G: Total Kjeldahl Nitrogen as N	----	500 mg/kg	90.1	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1437983)							
EB1804131-003	BH01_0.5_1.0	EK067G: Total Phosphorus as P	----	100 mg/kg	88.8	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1438012)							
EB1804131-020	BH11_0.5-1.0	EK067G: Total Phosphorus as P	----	100 mg/kg	# 145	70	130
EK255A SD: Ammonia in Sediment (QCLot: 1441924)							
EB1804028-001	Anonymous	EK255A: Ammonia as N	7664-41-7	0.5 mg/kg	# Not Determined	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1437974)							
EB1804131-003	BH01_0.5_1.0	EP080-SD: C6 - C9 Fraction	----	8 mg/kg	78.9	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1437985)							
EB1804131-003	BH01_0.5_1.0	EP071-SD: C10 - C14 Fraction	----	159 mg/kg	87.0	70	130
		EP071-SD: C15 - C28 Fraction	----	266 mg/kg	92.2	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1438022)							
EB1804131-020	BH11_0.5-1.0	EP071-SD: C10 - C14 Fraction	----	159 mg/kg	# 60.5	70	130
		EP071-SD: C15 - C28 Fraction	----	266 mg/kg	95.1	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1438023)							
EB1804131-020	BH11_0.5-1.0	EP080-SD: C6 - C9 Fraction	----	8 mg/kg	82.8	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1437974)							
EB1804131-003	BH01_0.5_1.0	EP080-SD: C6 - C10 Fraction	C6_C10	8 mg/kg	79.3	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1437985)							
EB1804131-003	BH01_0.5_1.0						



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1437985) - continued							
EB1804131-003	BH01_0.5_1.0	EP071-SD: >C10 - C16 Fraction	----	214 mg/kg	90.2	70	130
		EP071-SD: >C16 - C34 Fraction	----	198 mg/kg	89.2	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1438022)							
EB1804131-020	BH11_0.5-1.0	EP071-SD: >C10 - C16 Fraction	----	214 mg/kg	73.3	70	130
		EP071-SD: >C16 - C34 Fraction	----	198 mg/kg	94.0	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1438023)							
EB1804131-020	BH11_0.5-1.0	EP080-SD: C6 - C10 Fraction	C6_C10	8 mg/kg	83.6	70	130
EP080-SD: BTEXN (QCLot: 1437974)							
EB1804131-003	BH01_0.5_1.0	EP080-SD: Benzene	71-43-2	2 mg/kg	72.8	70	130
		EP080-SD: Toluene	108-88-3	2 mg/kg	76.0	70	130
EP080-SD: BTEXN (QCLot: 1438023)							
EB1804131-020	BH11_0.5-1.0	EP080-SD: Benzene	71-43-2	2 mg/kg	85.5	70	130
		EP080-SD: Toluene	108-88-3	2 mg/kg	83.7	70	130
EP090: Organotin Compounds (QCLot: 1441075)							
EB1804131-003	BH01_0.5_1.0	EP090: Monobutyltin	78763-54-9	1.25 µgSn/kg	# 7.20	35	130
		EP090: Dibutyltin	1002-53-5	1.25 µgSn/kg	61.5	20	130
		EP090: Tributyltin	56573-85-4	1.25 µgSn/kg	110	20	130
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1439331)							
EB1804131-001	BH01_0.0_0.5	EP130: Bromophos-ethyl	4824-78-6	50 µg/kg	57.1	36	144
		EP130: Carbophenothion	786-19-6	50 µg/kg	72.2	38	120
		EP130: Chlorfenvinphos (E)	18708-86-6	5 µg/kg	113	49	157
		EP130: Chlorfenvinphos (Z)	18708-87-7	50 µg/kg	66.2	53	145
		EP130: Chlorpyrifos	2921-88-2	50 µg/kg	71.8	60	140
		EP130: Chlorpyrifos-methyl	5598-13-0	50 µg/kg	86.6	56	126
		EP130: Demeton-S-methyl	919-86-8	50 µg/kg	75.2	10	148
		EP130: Diazinon	333-41-5	50 µg/kg	91.8	60	122
		EP130: Dichlorvos	62-73-7	50 µg/kg	76.2	33	123
		EP130: Dimethoate	60-51-5	50 µg/kg	60.8	36	142
		EP130: Ethion	563-12-2	50 µg/kg	70.0	48	136
		EP130: Fenamiphos	22224-92-6	50 µg/kg	60.4	42	136
		EP130: Fenthion	55-38-9	50 µg/kg	61.1	35	131
		EP130: Malathion	121-75-5	50 µg/kg	63.1	55	141
		EP130: Azinphos Methyl	86-50-0	50 µg/kg	60.7	24	132
		EP130: Monocrotophos	6923-22-4	50 µg/kg	68.5	35	153
		EP130: Parathion	56-38-2	50 µg/kg	64.0	57	147
		EP130: Parathion-methyl	298-00-0	50 µg/kg	53.0	48	140
		EP130: Pirimphos-ethyl	23505-41-1	50 µg/kg	75.4	45	137



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1439331) - continued							
EB1804131-001	BH01_0.0_0.5	EP130: Prothiofos	34643-46-4	50 µg/kg	77.3	51	137
EP131A: Organochlorine Pesticides (QCLot: 1439333)							
EB1804131-001	BH01_0.0_0.5	EP131A: Aldrin	309-00-2	5 µg/kg	85.6	23	153
		EP131A: alpha-BHC	319-84-6	5 µg/kg	80.8	18	156
		EP131A: beta-BHC	319-85-7	5 µg/kg	90.0	25	153
		EP131A: delta-BHC	319-86-8	5 µg/kg	77.9	25	147
		EP131A: 4,4'-DDD	72-54-8	5 µg/kg	78.2	26	150
		EP131A: 4,4'-DDE	72-55-9	5 µg/kg	55.8	31	125
		EP131A: 4,4'-DDT	50-29-3	5 µg/kg	55.6	23	163
		EP131A: Dieldrin	60-57-1	5 µg/kg	74.1	30	140
		EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	58.6	29	135
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	70.5	23	141
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	51.9	16	156
		EP131A: Endrin	72-20-8	5 µg/kg	86.0	18	162
		EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	78.1	20	116
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	59.5	13	151
		EP131A: Heptachlor	76-44-8	5 µg/kg	79.9	24	170
		EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	67.2	28	140
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	96.3	18	144
		EP131A: gamma-BHC	58-89-9	5 µg/kg	76.2	22	158
		EP131A: Methoxychlor	72-43-5	5 µg/kg	64.3	24	158
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	63.4	27	139
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	61.9	30	138
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1439332)							
EB1804131-001	BH01_0.0_0.5	EP131B: Total Polychlorinated biphenyls	----	50 µg/kg	85.8	44	136
		EP131B: Aroclor 1254	11097-69-1	50 µg/kg	85.8	44	136
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1439343)							
EB1804131-001	BH01_0.0_0.5	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	81.7	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	81.1	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	79.4	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	76.7	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	75.8	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	78.3	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	77.8	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	73.0	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	73.8	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	71.8	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	76.7	70	130



Sub-Matrix: SOIL

Laboratory sample IDClient sample IDMethod: CompoundCAS Number				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1439343) - continued							
EB1804131-001	BH01_0.0_0.5	EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	25 µg/kg	79.1	70	130
			205-82-3				
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	74.7	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	77.4	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	73.1	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	85.0	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	83.7	70	130
		EP132B-SD: Dibenzo(a,h)anthracene	53-70-3	25 µg/kg	82.1	70	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	75.1	70	130
		EP132B-SD: Coronene	191-07-1	25 µg/kg	77.5	70	130



CHAIN OF CUSTODY
ALS Laboratory
please tick

CLIENT: Aurecon
OFFICE: Brisbane
PROJECT: 237374
ORDER NUMBER:
PROJECT MANAGER: Georgina Kerr
SAMPLER: Kaitlin O'Neill-Mulcahy
COC emailed to ALS? [YES / NO]
Email Reports to: (will default to PM if no other addresses are listed): georgina.kerr@aurecongroup.com
Email Invoice to: (will default to PM if no other addresses are listed): georgina.kerr@aurecongroup.com

TURNAROUND REQUIREMENTS:
Standard TAT may be longer for some tests (e.g. this from General)
ALB QUOTE NO.: BN004/18

FOR LABORATORY USE ONLY (Circle)
Ductility Seal (prior)? Yes No NA
Free ice / frozen ice blocks present upon receipt? Yes No NA
Random Sample Temperature on Receipt: °C
Other comment:

CONTACT PH: 07 3173 3305
SAMPLER MOBILE:
EDD FORMAT (or default):
RELINQUISHED BY: Tim Murphy
DATE/TIME: 13/2/18 18:10

CDC SEQUENCE NUMBER (Circle)
COC: 2 3 4 5 6 7
RECEIVED BY: K. Schaffer
DATE/TIME: 13/2/18 18:10

RELINQUISHED BY: K. Schaffer
DATE/TIME: 14-2-18 1600
RECEIVED BY: DM
DATE/TIME: 15-2-18 950

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION			ANALYSIS REQUIRED (including SELECTED) (NB: Run as Contingency for select in relevant suite prior to sample receipt - specify Total / individual (both requested as Discreet / Total (select both) as requested)										Additional information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (or other details)	OTHER VS	TOTAL CONTAINERS	TRI-STEIN PAH DCC-ORP PCR 10 Metals	Nickel Manganese Cadmium Chromium Copper Lead Mercury Selenium Silver Zinc	Total organic carbon	SPOCAS	Field pH (25-40°C)	Phosphate distribution	Thiobarbituric acid	TRI-STEIN	HOLD		Unusually low/high concentrations levels also note any anomalies - e.g. sample specific (PC 20-40°C etc)
1	BH01_0.0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag, 150mL		5	X	X	X	X		X					
	ASS_DUP1	13/02/2018	S	ASS Bag		1				X							
	BH01_0.5_1.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X							
	BH01_1.0_2.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
	BH01_2.0_3.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
	BH01_3.0_3.5	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
2	BH02_0.0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag, 150mL		5	X	X	X	X		X					
	BH02_0.5_1.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X							
	BH02_1.0_1.4	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
	BH12_0.0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
	BH12_0.5_1.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X							
	BH12_1.0_2.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
	ASS_DUP4	13/02/2018	S	ASS Bag		1				X							
	BH13_1.0_1.4	13/02/2018	S	2x250mL, PSD bag, ASS bag		4										X	
3	BH15_0.0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag, 150mL		5	X	X	X	X		X					
	BH16_0.0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
	BH20_0.0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag, 150mL		5	X	X	X	X		X					
	BH21_0.0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
4	BH11_0.0_0.5	13/02/2018	S	2x250mL, PSD bag, ASS bag, 150mL		5	X	X	X	X		X					
	BH11_0.5_1.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X							
	BH11_1.0_2.0	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
	BH11_2.0_2.7	13/02/2018	S	2x250mL, PSD bag, ASS bag		4	X	X	X	X		X					
	ASS_DUP2	13/02/2018	S	ASS Bag		1				X							
	TRIP_1	13/02/2018	S	1 x 150mL		1											
	ASS_DUP3	13/02/2018	S	ASS Bag		1				X							

Environmental Division
Brisbane
Work Order
EB1890011



Telephone : + 61-7-3243 7222

Water Container Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, CRC = Nitric Preserved CRC, SH = Sodium Hydroxide/Gel Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, AP = Airtight Unpreserved Plastic, V = VOA Vial HCl Preserved, VS = VOA Vial Sodium Bisulfate Preserved, AV = VOA Vial Sulfuric Preserved, AS = Airtight Unpreserved Amber Glass, H = HCl Preserved Plastic, HS = HCl Preserved Specimen bottle, SP = Sulfuric Preserved Plastic, F = Formaldehyde Preserved Glass, Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottle, SE = Sealed Bottle, ASS = Plastic bag for Acid Sulphate Soils, R = Unpreserved Bottle

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB1890011**

Client : **AURECON AUSTRALASIA PTY LTD**
 Contact : **MS GEORGINA KERR**
 Address : **LOCKED BAG 331**
32 TURBOT STREET
BRISBANE QLD, AUSTRALIA 4001

E-mail : **georgina.kerr@aurecongroup.com**
 Telephone : **+61 07 3173 8396**
 Facsimile : **+61 07 3173 8001**

Project : **237374**
 Order number : **----**
 C-O-C number : **----**
 Site : **----**
 Sampler : **K. O'NEIL-MULCAHY**

Laboratory : **Environmental Division Brisbane**
 Contact : **Customer Services Brisbane**
 Address : **2 Byth Street Stafford QLD Australia**
4053

E-mail : **ALSEnviro.Brisbane@alsglobal.com**
 Telephone : **+61 7 3243 7222**
 Facsimile : **+61 7 3243 7218**

Page : **1 of 2**
 Quote number : **EP2014CONWAG0374 (EN/057/14 BQ)**
 QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **15-FEB-2018**
 Client Requested Due Date : **01-MAR-2018**

Issue Date : **15-FEB-2018 13:18**
 Scheduled Reporting Date : **01-MAR-2018**

Delivery Details

Mode of Delivery : **Carrier**
 No. of coolers/boxes : **5**
 Security Seal : **Intact.**

Temperature : **2.1 <> 7.4°C - Ice present**
 No. of samples received : **4**
 No. of samples analysed : **4**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.**
- This work order has been created in order to report Dioxins and Furans only. All other analysis will be reported in EB1804131.**
- Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' etc. suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to John Pickering (Samples.Brisbane@alsglobal.com)
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958),
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - HRMS - Combined Dioxins and Furans (SOIL-S)
EB1890011-001	13-FEB-2018 15:00	BH01_0.0-0.5	✓
EB1890011-002	13-FEB-2018 15:00	BH02_0.0-0.5	✓
EB1890011-003	13-FEB-2018 15:00	BH15_0.0-0.5	✓
EB1890011-004	13-FEB-2018 15:00	BH11_0.0-0.5	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)

Email creditors@aurecongroup.com

MS GEORGINA KERR

- *AU Certificate of Analysis - NATA (COA)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- AU Certificate of Analysis - DIOXINS/HRMS (DIONA)
- AU QC Report - DIOXINS/HRMS (DQCNA)
- Chain of Custody (CoC) (COC)

Email georgina.kerr@aurecongroup.com
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Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com

CERTIFICATE OF ANALYSIS

Client	AURECON AUSTRALASIA PTY LTD	Laboratory :	Environmental Division Brisbane	1 of 5
Contact	MS GEORGINA KERR	Contact	CUSTOMER.SERVICES.EB	Work Order: EB1890011
Address:	LOCKED BAG 331 32 TURBOT STREET BRISBANE QLD, AUSTRALIA 4001	Address:	2 Byth Street Stafford QLD 4053 Australia	
Project	237374	Quote #	EN/057/14 BQ	Received: 14 Feb 2018
Order #	- Not provided -			Issued 28 Feb 2018
C-O-C #	- Not provided -			
Site	- Not provided -			
E-mail	georgina.kerr@aurecongroup.com	E-mail	ALSEnviro.Brisbane@alsglobal.com	Number of Samples
Phone	3173 8396	Phone	+61-7-3243 7222	Received: 4
Fax	3173 8001	Fax	+61-7-3243 7218	Analysed: 4

Notes

LOR = Limit of reporting

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

Samples analysed 'as received', results reported on 'dry weight' basis.

- 1 I -TEQ_(zero) and WHO-TEQ_(zero) calculated treating <LOR as zero concentration
- 2 I -TEQ_(0.5 LOR) and WHO-TEQ_(0.5 zero) calculated treating <LOR as 0.5 LoR concentration
- 3 I-TEQ_(LOR) and WHO-TEQ_(LOR) calculated treating <LOR as LoR concentration
- 4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
- 5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

ALSE - Excellence in Analytical Testing



NATA Accredited Laboratory - 825

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Accredited for compliance with ISO/IEC 17025

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

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890011
ALS Quote Reference : EN/057/14 BQ



ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890011001
Client Sample ID: BH01_0.0-0.5

Qc Lot Number: 4529906
Sample Matrix: SOIL

Date Sampled: 13-Feb-2018
Date Extracted: 20-Feb-2018
Date Analysed: 20-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ ₁ (zero)	WHO-TEQ ₂ (0.5 LOR)	WHO-TEQ ₃ (LOR)	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	68.1
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.50	0.5	0.00	0.63	1.25	112.3
123478-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	64.9
123678-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	68.9
123789-HxCDD	5.5	2.5	0.1	0.55	0.55	0.55	0.1	0.55	0.55	0.55	-
1234678-HpCDD	63.9	2.5	0.01	0.64	0.64	0.64	0.01	0.64	0.64	0.64	69.0
OCDD	1030.0	10.0	0.0003	0.31	0.31	0.31	0.001	1.03	1.03	1.03	45.7
2378-TCDF	<0.5	0.5	0.1	0.00	0.03	0.05	0.1	0.00	0.03	0.05	96.6
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.08	0.05	0.00	0.06	0.13	109.9
23478-PeCDF	<2.5	2.5	0.3	0.00	0.38	0.75	0.5	0.00	0.63	1.25	111.9
123478-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	69.5
123678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	84.4
234678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	70.1
123789-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	73.5
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	64.2
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	76.0
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.01	-
Total TEQ	-	-	-	1.50	4.21	6.92	-	2.22	4.58	6.95	-

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	80.3	3.5	7
Penta-Dioxins	146.0	12.5	5
Hexa-Dioxins	1160.0	15.0	6
Hepta-Dioxins	663.0	5.0	2
Octa-Dioxin	1030.0	10.0	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
S PCDD/Fs	3079.3		

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890011
ALS Quote Reference : EN/057/14 BQ



ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890011002
Client Sample ID: BH02_0.0-0.5

Qc Lot Number: 4529906
Sample Matrix: SOIL

Date Sampled: 13-Feb-2018
Date Extracted: 20-Feb-2018
Date Analysed: 20-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ ₁ (zero)	WHO-TEQ ₂ (0.5 LOR)	WHO-TEQ ₃ (LOR)	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	60.1
12378-PeCDD	<2.5	2.5	1	0.00	1.23	2.47	0.5	0.00	0.62	1.23	80.1
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	92.1
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	92.1
123789-HxCDD	4.4	2.5	0.1	0.44	0.44	0.44	0.1	0.44	0.44	0.44	-
1234678-HpCDD	78.8	2.5	0.01	0.79	0.79	0.79	0.01	0.79	0.79	0.79	67.8
OCDD	1040.0	9.9	0.0003	0.31	0.31	0.31	0.001	1.04	1.04	1.04	35.9
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	74.2
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	79.4
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.23	75.0
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	106.3
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	109.8
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	93.3
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	57.2
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	78.0
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	53.1
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	1.54	4.22	6.89	-	2.27	4.60	6.93	-

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	129.0	3.9	8
Penta-Dioxins	158.0	9.9	4
Hexa-Dioxins	1060.0	14.8	6
Hepta-Dioxins	884.0	4.9	2
Octa-Dioxin	1040.0	9.9	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<4.9	4.9	1
S PCDD/Fs	3271.0		

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890011
ALS Quote Reference : EN/057/14 BQ



ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890011003
Client Sample ID: BH15_0.0-0.5

Qc Lot Number: 4529906
Sample Matrix: SOIL

Date Sampled: 13-Feb-2018
Date Extracted: 20-Feb-2018
Date Analysed: 20-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ ₁ (zero)	WHO-TEQ ₂ (0.5 LOR)	WHO-TEQ ₃ (LOR)	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	66.8
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.50	0.5	0.00	0.62	1.25	72.5
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	77.5
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	82.7
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	22.9	2.5	0.01	0.23	0.23	0.23	0.01	0.23	0.23	0.23	87.8
OCDD	393.0	10.0	0.0003	0.12	0.12	0.12	0.001	0.39	0.39	0.39	65.9
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	65.7
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	79.7
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.75	0.5	0.00	0.62	1.25	73.5
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	84.9
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	91.4
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	83.8
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	74.3
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	86.6
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	78.5
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	0.35	3.18	6.01	-	0.62	3.11	5.59	-

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	10.8	10.0	4
Hexa-Dioxins	101.0	15.0	6
Hepta-Dioxins	115.0	5.0	2
Octa-Dioxin	393.0	10.0	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
S PCDD/Fs	619.8		

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890011
ALS Quote Reference : EN/057/14 BQ



ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890011004
Client Sample ID: BH11_0.0-0.5

Qc Lot Number: 4529907
Sample Matrix: SOIL

Date Sampled: 13-Feb-2018
Date Extracted: 20-Feb-2018
Date Analysed: 20-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ ₁ (zero)	WHO-TEQ ₂ (0.5 LOR)	WHO-TEQ ₃ (LOR)	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	66.0
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.48	0.5	0.00	0.62	1.24	74.6
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	72.4
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	73.7
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	32.1	2.5	0.01	0.32	0.32	0.32	0.01	0.32	0.32	0.32	73.8
OCDD	735.0	9.9	0.0003	0.22	0.22	0.22	0.001	0.74	0.74	0.74	52.1
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	65.9
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	73.5
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.24	72.0
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	73.2
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.5
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	70.9
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	62.7
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	68.8
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	66.3
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	0.54	3.35	6.16	-	1.06	3.52	5.99	-

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	12.8	4.5	9
Penta-Dioxins	19.7	14.9	6
Hexa-Dioxins	139.0	19.8	8
Hepta-Dioxins	171.0	5.0	2
Octa-Dioxin	735.0	9.9	1
Tetra-Furans	<2.5	2.5	5
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
S PCDD/Fs	1077.5		

QUALITY CONTROL REPORT

Client	AURECON AUSTRALASIA PTY LTD	Laboratory :	Environmental Division Brisbane	1 of 5
Contact	MS GEORGINA KERR	Contact	CUSTOMER.SERVICES.EB	
Address:	LOCKED BAG 331 32 TURBOT STREET BRISBANE QLD, AUSTRALIA 4001	Address:	Stafford QLD 4053 Australia	Work Order: EB1890011

Project	237374	Quote #	EN/057/14 BQ	Received:	14 Feb 2018
Order #	- Not provided -			Issued	28 Feb 2018
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	georgina.kerr@aurecongroup.com	E-mail	ALSEnviro.Brisbane@alsglobal.c	Number of Samples	
Phone	3173 8396	Phone	+61-7-3243 7222	Received:	4
Fax	3173 8001	Fax	+61-7-3243 7218	Analysed:	5

Samples analysed 'as received', results reported on 'dry weight' basis.

ALSE - Excellence in Analytical Testing



NATA Accredited Laboratory - 825

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Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)



Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890011
ALS Quote Reference : EN/057/14 BQ



Quality Control Report Laboratory Duplicates (DUP)

Original Result		Duplicate Result	
Laboratory Sample Id :	EB1890010001	5572006-007	
Client Sample Id :	Anonymous	Anonymous	
Sample Mass (g) :	10.0	10.0	
Qc Lot Number :	4529907	4529907	
Moisture Content (%) :			

Compound	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
2378-TCDD	<0.5	0.5	<0.5	0.5	-
12378-PeCDD	<2.5	2.5	<2.5	2.5	-
123478-HxCDD	<2.5	2.5	<2.5	2.5	-
123678-HxCDD	<2.5	2.5	<2.5	2.5	-
123789-HxCDD	<2.5	2.5	<2.5	2.5	-
1234678-HpCDD	7.4	2.5	6.3	2.5	16.1
OCDD	160.0	10.0	146.0	10.0	9.2
2378-TCDF	<0.5	0.5	<0.5	0.5	-
12378-PeCDF	<2.5	2.5	<2.5	2.5	-
23478-PeCDF	<2.5	2.5	<2.5	2.5	-
123478-HxCDF	<2.5	2.5	<2.5	2.5	-
123678-HxCDF	<2.5	2.5	<2.5	2.5	-
234678-HxCDF	<2.5	2.5	<2.5	2.5	-
123789-HxCDF	<2.5	2.5	<2.5	2.5	-
1234678-HpCDF	<2.5	2.5	<2.5	2.5	-
1234789-HpCDF	<2.5	2.5	<2.5	2.5	-
OCDF	<5.0	5.0	<5.0	5.0	-

Group Totals	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
Tetra-Dioxins	<0.5	0.5	<0.5	0.5	-
Penta-Dioxins	<2.5	2.5	<2.5	2.5	-
Hexa-Dioxins	19.4	2.5	17.6	2.5	9.7
Hepta-Dioxins	28.2	5.0	25.7	5.0	9.3
Octa-Dioxin	160.0	10.0	146.0	10.0	9.2
Tetra-Furans	<0.5	0.5	<0.5	0.5	-
Penta-Furans	<2.5	2.5	<2.5	2.5	-
Hexa-Furans	<2.5	2.5	<2.5	2.5	-
Hepta-Furans	<2.5	2.5	<2.5	2.5	-
Octa-Furan	<5.0	5.0	<5.0	5.0	-
Σ PCDD/Fs	207.6		189.3		9.2

Notes

LOR = Limit of reporting

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated debenzo-p-dioxin

CDF, furan = chlorinated debenzofuran

RPD = relative per cent difference

Permitted ranges for RPD are dependant upon the magnitude of the result in comparison to the LOR.

Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%

- = Where results are less than the LOR, no RPD is reported.

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890011
ALS Quote Reference : EN/057/14 BQ



Quality Control Report Laboratory Duplicates (DUP)

Original Result		Duplicate Result	
Laboratory Sample Id :	EB1890011001	5572055-002	
Client Sample Id :	BH01_0.0-0.5	BH01_0.0-0.5	
Sample Mass (g) :	10.0	10.0	
Qc Lot Number :	4529907	4529907	
Moisture Content (%) :			

Compound	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
2378-TCDD	<0.5	0.5	<0.5	0.5	-
12378-PeCDD	<2.5	2.5	<2.5	2.5	-
123478-HxCDD	<2.5	2.5	<2.5	2.5	-
123678-HxCDD	<2.5	2.5	<2.5	2.5	-
123789-HxCDD	5.5	2.5	4.6	2.5	17.8
1234678-HpCDD	63.9	2.5	64.2	2.5	0.5
OCDD	1030.0	10.0	993.0	10.0	3.7
2378-TCDF	<0.5	0.5	<0.5	0.5	-
12378-PeCDF	<2.5	2.5	<2.5	2.5	-
23478-PeCDF	<2.5	2.5	<2.5	2.5	-
123478-HxCDF	<2.5	2.5	<2.5	2.5	-
123678-HxCDF	<2.5	2.5	<2.5	2.5	-
234678-HxCDF	<2.5	2.5	<2.5	2.5	-
123789-HxCDF	<2.5	2.5	<2.5	2.5	-
1234678-HpCDF	<2.5	2.5	<2.5	2.5	-
1234789-HpCDF	<2.5	2.5	<2.5	2.5	-
OCDF	<5.0	5.0	<5.0	5.0	-

Group Totals	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
Tetra-Dioxins	80.3	3.5	84.1	5.5	4.6
Penta-Dioxins	146.0	12.5	153.0	20.0	4.7
Hexa-Dioxins	1160.0	15.0	1090.0	20.0	6.2
Hepta-Dioxins	663.0	5.0	619.0	5.0	6.9
Octa-Dioxin	1030.0	10.0	993.0	10.0	3.7
Tetra-Furans	<0.5	0.5	<0.5	0.5	-
Penta-Furans	<2.5	2.5	<2.5	2.5	-
Hexa-Furans	<2.5	2.5	<2.5	2.5	-
Hepta-Furans	<2.5	2.5	<2.5	2.5	-
Octa-Furan	<5.0	5.0	<5.0	5.0	-
Σ PCDD/Fs	3079.3		2939.1		4.7

Notes

LOR = Limit of reporting

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated debenzo-p-dioxin

CDF, furan = chlorinated debenzofuran

RPD = relative per cent difference

Permitted ranges for RPD are dependant upon the magnitude of the result in comparison to the LOR.

Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%

- = Where results are less than the LOR, no RPD is reported.

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890011
ALS Quote Reference : EN/057/14 BQ



Quality Control Results Laboratory Control Samples(LCS)

Laboratory Sample Id : 5572006-010
QC Lot Number : 4529907
Sample Name : BCR 529 Sandy soil

Compound	Conc pg/g	Lower 1 pg/g	Upper 1 pg/g	¹³ C ¹² Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	4280.0	3900	5100	69.8	25	164
12378-PeCDD	486.0	390	490	70.9	25	181
123478-HxCDD	1230.0	900	1500	83.4	32	141
123678-HxCDD	5130.0	4500	6300	73.3	28	130
123789-HxCDD	3300.0	2600	3400	-	-	-
2378-TCDF	70.7	65	91	59.2	24	169
12378-PeCDF	124.0	110	170	72.0	24	185
23478-PeCDF	410.0	290	430	68.8	21	178
123478-HxCDF	3420.0	2900	3900	78.4	26	152
123678-HxCDF	1210.0	940	1240	77.1	26	123
234678-HxCDF	371.0	330	410	76.6	28	136
123789-HxCDF	619.0	12	32	78.2	29	147

Notes

- Acceptable concentration limits are as quoted on the analytical certificate for the certified reference material
 - Acceptable recovery limits are derived from EPA1613 Revision B
- T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890011
ALS Quote Reference : EN/057/14 BQ



Quality Control Report Method Blank (MB)

Laboratory Sample ID: 5572006-001
Qc Lot Number : 4529907

Sample Matrix: SOIL
Date Extracted: 18-Feb-2018
Date Analysed: 18-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TE Q ₁	WHO-TE Q ₂	WHO-TE Q ₃	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	66.5
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.50	0.5	0.00	0.63	1.25	67.1
123478-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	75.5
123678-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	90.1
123789-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	-
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	71.5
OCDD	<10.0	10.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.01	0.01	49.4
2378-TCDF	<0.5	0.5	0.1	0.00	0.03	0.05	0.1	0.00	0.03	0.05	59.2
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.08	0.05	0.00	0.06	0.13	65.2
23478-PeCDF	<2.5	2.5	0.3	0.00	0.38	0.75	0.5	0.00	0.63	1.25	64.2
123478-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	78.6
123678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	92.7
234678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	77.0
123789-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	60.0
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	72.6
1234789-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	54.9
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.01	-
S TEQ _(WHO)				0.00	2.89	5.72	S TEQ _(I)	0.00	2.55	5.04	

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	<2.5	2.5	1
Hexa-Dioxins	<2.5	2.5	1
Hepta-Dioxins	<2.5	2.5	1
Octa-Dioxin	<10.0	10.0	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
S PCDD/Fs	0.00		

Notes

LOR = Limit of reporting

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence (pg/g)

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence (pg/g)

T = tetra

Pe = penta

Hx = hexa

Hp =hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

1 I-TEQ_(zero) and WHO-TEQ_(zero) calculated treating <LOR as zero concentration (pg/g)

2 I-TEQ_(0.5 LOR) and WHO-TEQ_(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/g)

3 I-TEQ_(LOR) and WHO-TEQ_(LOR) calculated treating <LOR as LoR concentration (pg/g)

4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound



CHAIN OF CUSTODY

ALS LABORATORY
1000-1000

CLIENT: Aurcon		TURNAROUND REQUIREMENTS: ☐ Standard TAT (LHM due 10AM) ☐ On-site TAT (not for sample collection) ☐ New Standard or Urgent TAT (Last due date)		FOR LABORATORY USE ONLY (Client)	
OFFICE: PROJECT: 20777		ALS QUOTE NO.: BH00416		COC SEQUENCE NUMBER: 16-100	
ORDER NUMBER:		CONTACT PH: 07 512 3200 (AED 557 89)		DATE RECEIVED: 14-2-18	
PROJECT MANAGER: Zephora King		SAMPLER MOBILE: 040604519		RECEIVED BY: K. Schaefer	
SAMPLER: Kaitia (Kaitia) Lany		RELINQUISHED BY: Tim Murphy		RECEIVED BY: K. Schaefer	
COC emailed to ALS? (YES / NO)		EOD FORMAT (or default)		DATE TIME: 14-2-18 10:00	
Email Report to: POC (email to POC or other notification email): p.poc@aurcon.co.nz		DATE TIME: 14-2-18 10:00		DATE TIME: 15-2-18 16:00	
Email Invoice to: POC (email to POC or other notification email): p.poc@aurcon.co.nz		DATE TIME: 14-2-18 10:00		DATE TIME: 16-2-18 10:00	
COMMENT/SPECIAL HANDLING/STORAGE OR DISPOSAL:					

ALS USE	SAMPLE DETAILS			CONTAINER INFORMATION			ANALYSIS REQUIRED (Indicate in SUTTER NO. 3 in Lock number field in client table only) If the Matrix is not listed, identify the matrix type in the 'Matrix' field and the 'Analysis' field.										Additional Information	
	MATRIX: SOLID (S) WATER (W)																	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (in 100cc pieces)	(Notes)	TOTAL CONTAINERS	1	2	3	4	5	6	7	8	9	10	11	12
1	BH13 0.0 0.5	14/02/2018	S	2x250ml, 150ml, PSD bag, ASS bag		6	X	X	X	X	X	X	X	X	X	X	X	
2	BH13 0.5 1.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
3	BH13 1.0 2.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
4	BH04 0.0 0.5	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
5	BH04 0.5 1.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
6	BH04 1.0 2.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
7	BH04 2.0 3.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
8	BH04 3.0 3.7	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
9	BH03 0.0 0.5	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
10	BH03 0.5 1.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
11	BH03 1.0 2.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
12	BH03 2.0 2.8	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
13	BH10 0.0 0.5	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
14	BH10 0.5 1.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
15	BH10 1.0 1.45	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
16	BH09 0.0 0.5	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
17	BH09 0.5 1.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
18	BH09 1.0 1.65	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
19	BH19 0.0 0.5	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
20	BH18 0.0 0.5	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
21	BH17 0.0 0.5	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
22	Triplicate 2A	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
23	Triplicate 2B	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
24	Triplicate 2C	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
25	BH05 0.0 0.5	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
26	BH05 0.5 1.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
27	BH05 1.0 2.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
28	BH05 2.0 3.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
29	BH05 3.0 4.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
30	BH05 4.0 4.3	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
31	BH06 0.0 0.5	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
32	BH06 0.5 1.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
33	BH06 1.0 2.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
34	BH06 2.0 3.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
35	BH06 3.0 4.0	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
36	ASS_DUP6	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
37	Duplicate 1A	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
38	Duplicate 1B	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
39	ASS_DUP5	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
40	Trip Blank 3	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
41	RIN02	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	
42	RIN03	14/02/2018	S	2x250ml, PSD bag, ASS bag		4	X	X	X	X	X	X	X	X	X	X	X	

SNR

Environmental Division
Brisbane
Work Order Reference
EB1804288



Telephone : + 61-7-3243 7222

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EB1804288**

Client	: AURECON AUSTRALASIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MS GEORGINA KERR	Contact	: John Pickering
Address	: P O BOX 1144 GLADSTONE QLD, AUSTRALIA 4680	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: georgina.kerr@aurecongroup.com	E-mail	: john.pickering@alsglobal.com
Telephone	: +61 07 3173 8396	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3173 8001	Facsimile	: +61-7-3243 7218
Project	: 237374	Page	: 1 of 4
Order number	: ----	Quote number	: EB2018CONWAG0001 (BN/004/18)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: KAITLIN MULCAHY		

Dates

Date Samples Received	: 16-Feb-2018 10:00	Issue Date	: 16-Feb-2018
Client Requested Due Date	: 23-Feb-2018	Scheduled Reporting Date	: 23-Feb-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 14	Temperature	: 1.8°C <-> 6.1°C - Ice present
Receipt Detail	: Medium esky	No. of samples received / analysed	: 41 / 40

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Dioxins and furans analysis will be reported separately as work order EB1890013.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **Ultratrace organics analysis (OC/OP/PCB + PAH) and ammonia analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA150H/EA152 Particle Sizing with Hydrometer + Soil Particle	SOIL - EK255A SD Ammonia in Sediment by FIA	SOIL - NT-11S Total N + Total P	SOIL - NT-4S NO2 and NO3	SOIL - SD-02 OC/OP/PCB/PAH ultra trace	SOIL - SD-03 Metals by ICPMS (15 metals + low level Hg)
EB1804288-001	14-Feb-2018 00:00	BH13_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804288-002	14-Feb-2018 00:00	BH13_0.5_1.0	✓		✓	✓	✓	✓	✓
EB1804288-003	14-Feb-2018 00:00	BH13_1.0_2.0	✓	✓	✓	✓	✓	✓	✓
EB1804288-004	14-Feb-2018 00:00	BH04_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804288-005	14-Feb-2018 00:00	BH04_0.5_1.0	✓	✓	✓	✓	✓	✓	✓
EB1804288-006	14-Feb-2018 00:00	BH04_1.0_2.0	✓		✓	✓	✓	✓	✓
EB1804288-007	14-Feb-2018 00:00	BH04_2.0_3.0	✓	✓	✓	✓	✓	✓	✓
EB1804288-008	14-Feb-2018 00:00	BH04_3.0_3.7	✓		✓	✓	✓	✓	✓
EB1804288-009	14-Feb-2018 00:00	BH03_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804288-010	14-Feb-2018 00:00	BH03_0.5_1.0	✓		✓	✓	✓	✓	✓
EB1804288-011	14-Feb-2018 00:00	BH03_1.0_2.0	✓	✓	✓	✓	✓	✓	✓
EB1804288-012	14-Feb-2018 00:00	BH03_2.0_2.8	✓		✓	✓	✓	✓	✓
EB1804288-013	14-Feb-2018 00:00	BH10_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804288-014	14-Feb-2018 00:00	BH10_0.5_1.0	✓		✓	✓	✓	✓	✓
EB1804288-015	14-Feb-2018 00:00	BH10_1.0_1.45	✓	✓	✓	✓	✓	✓	✓
EB1804288-016	14-Feb-2018 00:00	BH09_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804288-017	14-Feb-2018 00:00	BH09_0.5_1.0	✓		✓	✓	✓	✓	✓
EB1804288-018	14-Feb-2018 00:00	BH09_1.0_1.65	✓	✓	✓	✓	✓	✓	✓
EB1804288-019	14-Feb-2018 00:00	BH19_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804288-020	14-Feb-2018 00:00	BH18_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804288-021	14-Feb-2018 00:00	BH17_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804288-022	14-Feb-2018 00:00	Triplicate_2A	✓		✓	✓	✓	✓	✓
EB1804288-023	14-Feb-2018 00:00	Triplicate_2B	✓		✓	✓	✓	✓	✓
EB1804288-025	14-Feb-2018 00:00	BH05_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804288-026	14-Feb-2018 00:00	BH05_0.5_1.0	✓		✓	✓	✓	✓	✓
EB1804288-027	14-Feb-2018 00:00	BH05_1.0_2.0	✓	✓	✓	✓	✓	✓	✓
EB1804288-028	14-Feb-2018 00:00	BH05_2.0_3.0	✓		✓	✓	✓	✓	✓
EB1804288-029	14-Feb-2018 00:00	BH05_3.0_4.0	✓	✓	✓	✓	✓	✓	✓
EB1804288-030	14-Feb-2018 00:00	BH05_4.0_4.3	✓		✓	✓	✓	✓	✓
EB1804288-031	14-Feb-2018 00:00	BH06_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804288-032	14-Feb-2018 00:00	BH06_0.5_1.0	✓		✓	✓	✓	✓	✓
EB1804288-033	14-Feb-2018 00:00	BH06_1.0_2.0	✓	✓	✓	✓	✓	✓	✓
EB1804288-034	14-Feb-2018 00:00	BH06_2.0_3.0	✓		✓	✓	✓	✓	✓
EB1804288-035	14-Feb-2018 00:00	BH06_3.0_4.0	✓	✓	✓	✓	✓	✓	✓
EB1804288-037	14-Feb-2018 00:00	Duplicate_1A	✓		✓	✓	✓	✓	✓



Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA029 SPOCAS	SOIL - EA037 ASS Field Screening Analysis	SOIL - EP003 Total Organic Carbon (TOC) in Soil	SOIL - EP071 - SD TRH ultra trace in sediments	SOIL - EP080-SD TRH(V)/BTEXN in Sediments	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs
EB1804288-001	14-Feb-2018 00:00	BH13_0.0_0.5		✓		✓	✓	✓	
EB1804288-002	14-Feb-2018 00:00	BH13_0.5_1.0		✓		✓	✓	✓	
EB1804288-003	14-Feb-2018 00:00	BH13_1.0_2.0		✓		✓	✓	✓	
EB1804288-004	14-Feb-2018 00:00	BH04_0.0_0.5		✓		✓	✓	✓	
EB1804288-005	14-Feb-2018 00:00	BH04_0.5_1.0		✓		✓	✓	✓	
EB1804288-006	14-Feb-2018 00:00	BH04_1.0_2.0			✓	✓	✓	✓	
EB1804288-007	14-Feb-2018 00:00	BH04_2.0_3.0		✓		✓	✓	✓	
EB1804288-008	14-Feb-2018 00:00	BH04_3.0_3.7			✓	✓	✓	✓	
EB1804288-009	14-Feb-2018 00:00	BH03_0.0_0.5		✓		✓	✓	✓	
EB1804288-010	14-Feb-2018 00:00	BH03_0.5_1.0			✓	✓	✓	✓	
EB1804288-011	14-Feb-2018 00:00	BH03_1.0_2.0		✓		✓	✓	✓	
EB1804288-012	14-Feb-2018 00:00	BH03_2.0_2.8		✓		✓	✓	✓	
EB1804288-013	14-Feb-2018 00:00	BH10_0.0_0.5		✓		✓	✓	✓	
EB1804288-014	14-Feb-2018 00:00	BH10_0.5_1.0		✓		✓	✓	✓	
EB1804288-015	14-Feb-2018 00:00	BH10_1.0_1.45		✓		✓	✓	✓	
EB1804288-016	14-Feb-2018 00:00	BH09_0.0_0.5		✓		✓	✓	✓	
EB1804288-017	14-Feb-2018 00:00	BH09_0.5_1.0		✓		✓	✓	✓	
EB1804288-018	14-Feb-2018 00:00	BH09_1.0_1.65		✓		✓	✓	✓	
EB1804288-019	14-Feb-2018 00:00	BH19_0.0_0.5		✓		✓	✓	✓	
EB1804288-020	14-Feb-2018 00:00	BH18_0.0_0.5		✓		✓	✓	✓	
EB1804288-021	14-Feb-2018 00:00	BH17_0.0_0.5		✓		✓	✓	✓	
EB1804288-022	14-Feb-2018 00:00	Triplicate_2A				✓	✓	✓	
EB1804288-023	14-Feb-2018 00:00	Triplicate_2B				✓	✓	✓	
EB1804288-024	14-Feb-2018 00:00	Triplicate_2C	✓						
EB1804288-025	14-Feb-2018 00:00	BH05_0.0_0.5		✓		✓	✓	✓	
EB1804288-026	14-Feb-2018 00:00	BH05_0.5_1.0			✓	✓	✓	✓	
EB1804288-027	14-Feb-2018 00:00	BH05_1.0_2.0		✓		✓	✓	✓	
EB1804288-028	14-Feb-2018 00:00	BH05_2.0_3.0			✓	✓	✓	✓	
EB1804288-029	14-Feb-2018 00:00	BH05_3.0_4.0		✓		✓	✓	✓	
EB1804288-030	14-Feb-2018 00:00	BH05_4.0_4.3			✓	✓	✓	✓	
EB1804288-031	14-Feb-2018 00:00	BH06_0.0_0.5		✓		✓	✓	✓	
EB1804288-032	14-Feb-2018 00:00	BH06_0.5_1.0			✓	✓	✓	✓	
EB1804288-033	14-Feb-2018 00:00	BH06_1.0_2.0		✓		✓	✓	✓	
EB1804288-034	14-Feb-2018 00:00	BH06_2.0_3.0			✓	✓	✓	✓	
EB1804288-035	14-Feb-2018 00:00	BH06_3.0_4.0		✓		✓	✓	✓	
EB1804288-036	14-Feb-2018 00:00	ASS_DUP6		✓					
EB1804288-037	14-Feb-2018 00:00	Duplicate_1A				✓	✓	✓	
EB1804288-039	14-Feb-2018 00:00	ASS_DUP5		✓					
EB1804288-040	14-Feb-2018 00:00	Trip Blank 3							✓



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-03T 15 Metals (Total) (NEPM)	WATER - W-07 TRH/BTEXN/PAH	WATER - W-13 OC/OP/PCB
EB1804288-041	14-Feb-2018 00:00	RIN02	✓	✓	✓
EB1804288-042	14-Feb-2018 00:00	RIN03	✓	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)

Email creditors@arecongroup.com

EQUIS REPORTING

- EDI Format - EQUIS_AURECON (EQUIS_AURECON)

Email Aurecon.equis@arecongroup.com

GEORGINA KERR

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS_AURECON (EQUIS_AURECON)
- EDI Format - XTab (XTAB)

Email georgina.kerr@arecongroup.com
Email georgina.kerr@arecongroup.com
Email georgina.kerr@arecongroup.com
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Email georgina.kerr@arecongroup.com

JOHN PICKERING

- Chain of Custody (CoC) (COC)

Email john.pickering@alsglobal.com

CERTIFICATE OF ANALYSIS

Work Order : **EB1804288**
Client : **AURECON AUSTRALASIA PTY LTD**
Contact : **MS GEORGINA KERR**
Address : **P O BOX 1144**
GLADSTONE QLD, AUSTRALIA 4680
Telephone : **+61 07 3173 8396**
Project : **237374**
Order number : **----**
C-O-C number : **----**
Sampler : **KAITLIN MULCAHY**
Site : **----**
Quote number : **BN/004/18**
No. of samples received : **41**
No. of samples analysed : **40**

Page : 1 of 64
Laboratory : Environmental Division Brisbane
Contact : John Pickering
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 16-Feb-2018 10:00
Date Analysis Commenced : 19-Feb-2018
Issue Date : 27-Feb-2018 12:34



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Greg Vogel	Laboratory Manager	Brisbane Acid Sulphate Soils, Stafford, QLD
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD
Nathan Webb	Asbestos Identifier	Newcastle - Inorganics, Mayfield West, NSW
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils, Stafford, QLD



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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EG020-T (Total Metals by ICP-MS): Sample EB1804288-021 (BH17_0.0_0.5) shows poor duplicate results due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- EG005-SD (Total Fe and Al in Sediments by ICPAES): Sample EB1804288-021 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- **Ultratrace organics analysis (OC/OP/PCB + PAH) and ammonia analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- ASS: EA029 (SPOCAS): Retained Acidity not required because pH KCl greater than or equal to 4.5
- EP080: Poor matrix spike recoveries for sample 'Triplicate_2A' due to high moisture content.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- ASS: EA029 (SPOCAS): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO₃) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from kg/t dry weight to kg/m³ in-situ soil, multiply reported results x wet bulk density of soil in t/m³.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH13_0.0_0.5	BH13_0.5_1.0	BH13_1.0_2.0	BH04_0.0_0.5	BH04_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-001	EB1804288-002	EB1804288-003	EB1804288-004	EB1804288-005
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.5	8.5	8.7	8.5	8.5
pH OX (23B)	----	0.1	pH Unit		8.0	8.6	8.8	7.5	5.6
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	<2	<2	<2	12
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	<2	<2	<2	12
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	<0.020
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	<0.020
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	<0.020
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.097	0.071	0.051	0.105	0.100
Peroxide Sulfur (23De)	----	0.020	% S		0.477	0.145	0.071	0.702	0.848
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		0.380	0.074	<0.020	0.598	0.748
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		237	46	12	373	466
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.224	0.242	0.216	0.250	0.244
Peroxide Calcium (23Wh)	----	0.020	% Ca		1.75	1.16	0.580	1.17	0.787
Acid Reacted Calcium (23X)	----	0.020	% Ca		1.53	0.917	0.365	0.924	0.543
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		763	458	182	461	271
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		1.22	0.734	0.292	0.739	0.434
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.152	0.116	0.128	0.149	0.155
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.296	0.254	0.221	0.284	0.259
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.144	0.138	0.092	0.135	0.104
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		118	114	76	111	86
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.190	0.182	0.122	0.178	0.138
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		3.52	3.45	1.50	1.62	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		704	690	300	324	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		1.13	1.10	0.480	0.519	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH13_0.0_0.5	BH13_0.5_1.0	BH13_1.0_2.0	BH04_0.0_0.5	BH04_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-001	EB1804288-002	EB1804288-003	EB1804288-004	EB1804288-005
					Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S		<0.02	<0.02	<0.02	<0.02	0.26
Net Acidity (acidity units)	----	10	mole H+ / t		<10	<10	<10	<10	164
Liming Rate	----	1	kg CaCO3/t		<1	<1	<1	<1	12
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		0.38	0.07	<0.02	0.60	0.26
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		237	46	12	373	164
Liming Rate excluding ANC	----	1	kg CaCO3/t		18	3	<1	28	12
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		35.7	29.1	29.8	41.8	41.8
EA150: Particle Sizing									
+75µm	----	1	%		60	----	38	16	3
+150µm	----	1	%		50	----	33	13	1
+300µm	----	1	%		40	----	24	8	<1
+425µm	----	1	%		36	----	20	6	<1
+600µm	----	1	%		32	----	16	4	<1
+1180µm	----	1	%		25	----	9	3	<1
+2.36mm	----	1	%		21	----	5	2	<1
+4.75mm	----	1	%		18	----	2	<1	<1
+9.5mm	----	1	%		15	----	<1	<1	<1
+19.0mm	----	1	%		15	----	<1	<1	<1
+37.5mm	----	1	%		<1	----	<1	<1	<1
+75.0mm	----	1	%		<1	----	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		21	----	36	42	49
Silt (2-60 µm)	----	1	%		13	----	21	35	39
Sand (0.06-2.00 mm)	----	1	%		44	----	36	21	12
Gravel (>2mm)	----	1	%		22	----	7	2	<1
Cobbles (>6cm)	----	1	%		<1	----	<1	<1	<1
EA152: Soil Particle Density									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.69	----	2.72	2.67	2.71
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		8380	8520	9220	14200	12600
Iron	7439-89-6	50	mg/kg		23000	27600	36200	25000	24200



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH13_0.0_0.5	BH13_0.5_1.0	BH13_1.0_2.0	BH04_0.0_0.5	BH04_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-001	EB1804288-002	EB1804288-003	EB1804288-004	EB1804288-005
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	1.00	mg/kg		13.4	5.39	9.14	9.22	9.08
Cadmium	7440-43-9	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg		16.0	12.0	21.8	21.3	21.0
Copper	7440-50-8	1.0	mg/kg		14.4	37.1	18.0	22.5	21.9
Cobalt	7440-48-4	0.5	mg/kg		14.7	18.2	13.5	11.5	10.8
Lead	7439-92-1	1.0	mg/kg		6.4	15.9	11.0	9.0	9.5
Manganese	7439-96-5	10	mg/kg		362	1560	280	304	413
Nickel	7440-02-0	1.0	mg/kg		10.1	10.6	14.5	11.0	10.6
Selenium	7782-49-2	0.1	mg/kg		0.3	0.4	0.2	0.3	0.3
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg		53.3	118	59.4	49.8	46.5
Zinc	7440-66-6	1.0	mg/kg		33.5	32.6	49.0	37.2	35.6
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		0.02	0.01	0.01	0.02	0.02
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		480	260	200	480	500
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		480	260	200	480	500
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		346	342	261	226	239
EK255A SD: Ammonia in Sediment									
Ammonia as N	7664-41-7	0.2	mg/kg		8.8	7.9	5.1	7.1	13.0
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.85	0.37	0.10	0.71	0.68
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH13_0.0_0.5	BH13_0.5_1.0	BH13_1.0_2.0	BH04_0.0_0.5	BH04_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-001	EB1804288-002	EB1804288-003	EB1804288-004	EB1804288-005
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	3	mg/kg		<3	<3	<3	3	<3
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	<3	3	<3
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C15 - C28 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg		<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH13_0.0_0.5	BH13_0.5_1.0	BH13_1.0_2.0	BH04_0.0_0.5	BH04_0.5_1.0
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804288-001	EB1804288-002	EB1804288-003	EB1804288-004	EB1804288-005
				Result	Result	Result	Result	Result

EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued

Dimethoate	60-51-5	10	µg/kg	<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg	<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg	<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg	<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg	<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg	<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg	<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg	<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg	<10	<10	<10	<10	<10

EP131A: Organochlorine Pesticides

Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH13_0.0_0.5	BH13_0.5_1.0	BH13_1.0_2.0	BH04_0.0_0.5	BH04_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-001	EB1804288-002	EB1804288-003	EB1804288-004	EB1804288-005
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<4	<4	<4
Pyrene	129-00-0	4	µg/kg		<4	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg		<4	<4	<4	<4	<4
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		<4	<4	<4	<4	<4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH13_0.0_0.5	BH13_0.5_1.0	BH13_1.0_2.0	BH04_0.0_0.5	BH04_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-001	EB1804288-002	EB1804288-003	EB1804288-004	EB1804288-005
					Result	Result	Result	Result	Result
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		58.0	79.8	58.8	62.6	84.0
Toluene-D8	2037-26-5	0.2	%		64.2	123	63.4	71.3	96.3
4-Bromofluorobenzene	460-00-4	0.2	%		70.2	120	68.5	78.6	103
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		71.7	77.4	54.4	57.8	42.0
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		67.6	63.0	63.4	69.4	60.5
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		86.0	94.4	110	100	107
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		122	106	94.2	95.8	105
Anthracene-d10	1719-06-8	10	%		119	116	96.5	101	111
4-Terphenyl-d14	1718-51-0	10	%		111	114	94.5	100	106



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH04_1.0_2.0	BH04_2.0_3.0	BH04_3.0_3.7	BH03_0.0_0.5	BH03_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-006	EB1804288-007	EB1804288-008	EB1804288-009	EB1804288-010
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		----	8.2	----	8.7	----
pH OX (23B)	----	0.1	pH Unit		----	3.4	----	8.1	----
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		----	<2	----	<2	----
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		----	145	----	<2	----
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		----	145	----	<2	----
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		----	<0.020	----	<0.020	----
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		----	0.232	----	<0.020	----
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		----	0.232	----	<0.020	----
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		----	0.082	----	0.103	----
Peroxide Sulfur (23De)	----	0.020	% S		----	0.688	----	0.540	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		----	0.606	----	0.437	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		----	378	----	273	----
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		----	0.213	----	0.252	----
Peroxide Calcium (23Wh)	----	0.020	% Ca		----	0.336	----	2.78	----
Acid Reacted Calcium (23X)	----	0.020	% Ca		----	0.123	----	2.53	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		----	61	----	1260	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		----	0.098	----	2.03	----
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		----	0.158	----	0.144	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg		----	0.266	----	0.254	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg		----	0.108	----	0.110	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		----	89	----	90	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		----	0.143	----	0.145	----
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		----	----	----	6.34	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		----	----	----	1270	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		----	----	----	2.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH04_1.0_2.0	BH04_2.0_3.0	BH04_3.0_3.7	BH03_0.0_0.5	BH03_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804288-006	EB1804288-007	EB1804288-008	EB1804288-009	EB1804288-010	
				Result	Result	Result	Result	Result	
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-	----	1.5	----	1.5	----	
Net Acidity (sulfur units)	----	0.02	% S	----	0.36	----	<0.02	----	
Net Acidity (acidity units)	----	10	mole H+ / t	----	223	----	<10	----	
Liming Rate	----	1	kg CaCO3/t	----	17	----	<1	----	
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	0.36	----	0.44	----	
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	223	----	273	----	
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	17	----	20	----	
EA037: Ass Field Screening Analysis									
ø pH (F)	----	0.1	pH Unit	8.8	----	8.9	----	8.7	
ø pH (Fox)	----	0.1	pH Unit	5.6	----	2.1	----	2.6	
ø Reaction Rate	----	1	-	2	----	2	----	2	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	40.8	40.6	34.5	43.9	42.9	
EA150: Particle Sizing									
+75µm	----	1	%	----	3	----	7	----	
+150µm	----	1	%	----	<1	----	5	----	
+300µm	----	1	%	----	<1	----	2	----	
+425µm	----	1	%	----	<1	----	1	----	
+600µm	----	1	%	----	<1	----	1	----	
+1180µm	----	1	%	----	<1	----	<1	----	
+2.36mm	----	1	%	----	<1	----	<1	----	
+4.75mm	----	1	%	----	<1	----	<1	----	
+9.5mm	----	1	%	----	<1	----	<1	----	
+19.0mm	----	1	%	----	<1	----	<1	----	
+37.5mm	----	1	%	----	<1	----	<1	----	
+75.0mm	----	1	%	----	<1	----	<1	----	
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%	----	49	----	47	----	
Silt (2-60 µm)	----	1	%	----	40	----	37	----	
Sand (0.06-2.00 mm)	----	1	%	----	11	----	16	----	
Gravel (>2mm)	----	1	%	----	<1	----	<1	----	
Cobbles (>6cm)	----	1	%	----	<1	----	<1	----	
EA152: Soil Particle Density									

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH04_1.0_2.0	BH04_2.0_3.0	BH04_3.0_3.7	BH03_0.0_0.5	BH03_0.5_1.0
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	
Compound	CAS Number	LOR	Unit	EB1804288-006	EB1804288-007	EB1804288-008	EB1804288-009	EB1804288-010	
				Result	Result	Result	Result	Result	
EA152: Soil Particle Density - Continued									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	2.70	----	2.71	----	
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	11100	11400	10200	14900	14000	
Iron	7439-89-6	50	mg/kg	45300	22200	98600	26900	26300	
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	
Arsenic	7440-38-2	1.00	mg/kg	9.09	11.4	11.3	8.60	9.39	
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium	7440-47-3	1.0	mg/kg	18.0	18.7	16.8	22.8	20.9	
Copper	7440-50-8	1.0	mg/kg	21.7	23.4	18.8	24.4	24.9	
Cobalt	7440-48-4	0.5	mg/kg	10.8	11.9	11.7	11.4	12.2	
Lead	7439-92-1	1.0	mg/kg	8.8	9.9	8.0	9.4	9.6	
Manganese	7439-96-5	10	mg/kg	1270	383	813	254	457	
Nickel	7440-02-0	1.0	mg/kg	9.8	10.2	9.1	11.5	11.2	
Selenium	7782-49-2	0.1	mg/kg	0.3	0.3	0.3	0.3	0.3	
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Vanadium	7440-62-2	2.0	mg/kg	45.8	45.8	54.6	49.3	50.1	
Zinc	7440-66-6	1.0	mg/kg	32.6	34.5	32.4	39.8	37.1	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg	0.02	0.02	0.02	0.02	0.02	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	-----	20	mg/kg	490	520	420	510	520	
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	-----	20	mg/kg	490	520	420	510	520	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	-----	2	mg/kg	546	269	680	190	268	
EK255A SD: Ammonia in Sediment									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH04_1.0_2.0	BH04_2.0_3.0	BH04_3.0_3.7	BH03_0.0_0.5	BH03_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-006	EB1804288-007	EB1804288-008	EB1804288-009	EB1804288-010
					Result	Result	Result	Result	Result
EK255A SD: Ammonia in Sediment - Continued									
Ammonia as N	7664-41-7	0.2	mg/kg		15.5	32.9	31.4	5.6	9.2
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.68	0.67	0.23	0.89	0.62
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
>C16 - C34 Fraction	----	3	mg/kg		<3	4	<3	<3	<3
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	4	<3	<3	<3
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C15 - C28 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

Client sampling date / time				BH04_1.0_2.0	BH04_2.0_3.0	BH04_3.0_3.7	BH03_0.0_0.5	BH03_0.5_1.0
				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804288-006	EB1804288-007	EB1804288-008	EB1804288-009	EB1804288-010
				Result	Result	Result	Result	Result

EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued

Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg	<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg	<10	<10	<10	<10	<10
Dimethoate	60-51-5	10	µg/kg	<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg	<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg	<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg	<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg	<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg	<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg	<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg	<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg	<10	<10	<10	<10	<10

EP131A: Organochlorine Pesticides

Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH04_1.0_2.0	BH04_2.0_3.0	BH04_3.0_3.7	BH03_0.0_0.5	BH03_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-006	EB1804288-007	EB1804288-008	EB1804288-009	EB1804288-010
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<4	<4	<4
Pyrene	129-00-0	4	µg/kg		<4	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg		<4	<4	<4	<4	<4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH04_1.0_2.0	BH04_2.0_3.0	BH04_3.0_3.7	BH03_0.0_0.5	BH03_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-006	EB1804288-007	EB1804288-008	EB1804288-009	EB1804288-010
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<4
Indeno(1,2,3,cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		<4	<4	<4	<4	<4
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		70.7	65.6	60.0	73.3	69.2
Toluene-D8	2037-26-5	0.2	%		78.0	69.9	64.8	82.2	76.7
4-Bromofluorobenzene	460-00-4	0.2	%		83.3	80.4	71.5	86.3	82.8
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		57.1	41.6	43.5	45.8	49.9
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		58.2	106	53.3	104	105
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		91.3	84.5	94.2	82.6	83.3
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		82.6	114	88.4	87.0	81.5
Anthracene-d10	1719-06-8	10	%		89.2	123	97.7	96.6	90.2
4-Terphenyl-d14	1718-51-0	10	%		85.3	123	94.6	95.7	89.8



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH03_1.0_2.0	BH03_2.0_2.8	BH10_0.0_0.5	BH10_0.5_1.0	BH10_1.0_1.45
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-011	EB1804288-012	EB1804288-013	EB1804288-014	EB1804288-015
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.4	7.8	8.7	6.6	6.6
pH OX (23B)	----	0.1	pH Unit		3.6	6.4	8.6	7.5	7.6
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		122	12	<2	<2	<2
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		122	12	<2	<2	<2
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	<0.020
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		0.195	<0.020	<0.020	<0.020	<0.020
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		0.195	<0.020	<0.020	<0.020	<0.020
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.095	0.043	0.047	0.031	0.026
Peroxide Sulfur (23De)	----	0.020	% S		0.715	0.309	0.158	0.041	0.028
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		0.620	0.266	0.110	<0.020	<0.020
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		387	166	69	<10	<10
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.236	0.092	0.235	0.102	0.086
Peroxide Calcium (23Wh)	----	0.020	% Ca		0.437	0.199	1.01	0.133	0.110
Acid Reacted Calcium (23X)	----	0.020	% Ca		0.201	0.107	0.771	0.031	0.024
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		100	53	385	16	12
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		0.161	0.086	0.617	0.025	<0.020
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.158	0.113	0.121	0.104	0.105
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.260	0.216	0.191	0.134	0.118
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.102	0.103	0.069	0.029	<0.020
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		84	85	57	24	11
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.135	0.136	0.091	0.039	<0.020
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		----	----	2.47	0.588	0.431
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		----	----	494	117	86
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		----	----	0.790	0.188	0.138



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH03_1.0_2.0	BH03_2.0_2.8	BH10_0.0_0.5	BH10_0.5_1.0	BH10_1.0_1.45
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-011	EB1804288-012	EB1804288-013	EB1804288-014	EB1804288-015
					Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S		0.34	0.10	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t		210	63	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t		16	5	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		0.34	0.10	0.11	<0.02	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		210	63	69	<10	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t		16	5	5	<1	<1
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		39.6	23.9	30.0	24.1	19.3
EA150: Particle Sizing									
+75µm	----	1	%		4	----	43	----	43
+150µm	----	1	%		1	----	33	----	15
+300µm	----	1	%		<1	----	15	----	9
+425µm	----	1	%		<1	----	9	----	7
+600µm	----	1	%		<1	----	5	----	4
+1180µm	----	1	%		<1	----	1	----	2
+2.36mm	----	1	%		<1	----	<1	----	<1
+4.75mm	----	1	%		<1	----	<1	----	<1
+9.5mm	----	1	%		<1	----	<1	----	<1
+19.0mm	----	1	%		<1	----	<1	----	<1
+37.5mm	----	1	%		<1	----	<1	----	<1
+75.0mm	----	1	%		<1	----	<1	----	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		47	----	32	----	32
Silt (2-60 µm)	----	1	%		41	----	20	----	19
Sand (0.06-2.00 mm)	----	1	%		12	----	47	----	48
Gravel (>2mm)	----	1	%		<1	----	1	----	1
Cobbles (>6cm)	----	1	%		<1	----	<1	----	<1
EA152: Soil Particle Density									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.72	----	2.68	----	2.71
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		13600	11000	10600	8670	7540
Iron	7439-89-6	50	mg/kg		23800	24200	23200	37700	23800



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH03_1.0_2.0	BH03_2.0_2.8	BH10_0.0_0.5	BH10_0.5_1.0	BH10_1.0_1.45
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-011	EB1804288-012	EB1804288-013	EB1804288-014	EB1804288-015
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	1.00	mg/kg		9.10	7.19	5.20	23.1	21.0
Cadmium	7440-43-9	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg		19.9	13.7	21.4	17.3	18.6
Copper	7440-50-8	1.0	mg/kg		23.6	38.0	16.3	26.2	23.8
Cobalt	7440-48-4	0.5	mg/kg		11.4	66.7	14.9	35.9	56.4
Lead	7439-92-1	1.0	mg/kg		9.0	5.6	8.2	20.3	9.0
Manganese	7439-96-5	10	mg/kg		356	266	132	406	1240
Nickel	7440-02-0	1.0	mg/kg		10.8	32.8	16.4	30.4	17.8
Selenium	7782-49-2	0.1	mg/kg		0.3	0.8	0.2	0.4	2.0
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg		48.6	40.0	35.1	51.0	38.6
Zinc	7440-66-6	1.0	mg/kg		35.4	66.4	50.2	72.5	54.0
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		0.02	0.03	0.06	<0.01	0.04
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		470	250	250	140	170
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		470	250	250	140	170
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		270	230	222	482	402
EK255A SD: Ammonia in Sediment									
Ammonia as N	7664-41-7	0.2	mg/kg		14.1	19.9	30.5	5.9	5.3
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.66	0.17	0.48	0.04	0.03
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH03_1.0_2.0	BH03_2.0_2.8	BH10_0.0_0.5	BH10_0.5_1.0	BH10_1.0_1.45
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-011	EB1804288-012	EB1804288-013	EB1804288-014	EB1804288-015
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	3	mg/kg		<3	<3	4	<3	<3
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	4	<3	<3
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C15 - C28 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg		<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH03_1.0_2.0	BH03_2.0_2.8	BH10_0.0_0.5	BH10_0.5_1.0	BH10_1.0_1.45
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804288-011	EB1804288-012	EB1804288-013	EB1804288-014	EB1804288-015
				Result	Result	Result	Result	Result

EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued

Dimethoate	60-51-5	10	µg/kg	<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg	<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg	<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg	<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg	<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg	<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg	<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg	<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg	<10	<10	<10	<10	<10

EP131A: Organochlorine Pesticides

Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH03_1.0_2.0	BH03_2.0_2.8	BH10_0.0_0.5	BH10_0.5_1.0	BH10_1.0_1.45
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-011	EB1804288-012	EB1804288-013	EB1804288-014	EB1804288-015
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<4	<4	<4
Pyrene	129-00-0	4	µg/kg		<4	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg		8	<4	<4	<4	<4
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		8	<4	<4	<4	<4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH03_1.0_2.0	BH03_2.0_2.8	BH10_0.0_0.5	BH10_0.5_1.0	BH10_1.0_1.45
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-011	EB1804288-012	EB1804288-013	EB1804288-014	EB1804288-015
					Result	Result	Result	Result	Result
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		73.9	64.1	60.3	67.0	68.3
Toluene-D8	2037-26-5	0.2	%		79.8	73.0	63.8	71.7	80.8
4-Bromofluorobenzene	460-00-4	0.2	%		91.0	78.2	72.6	76.8	85.6
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		47.6	45.5	54.6	46.7	38.7
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		118	105	47.2	113	82.8
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		93.9	87.1	93.6	90.0	73.7
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		115	84.0	95.5	87.8	91.0
Anthracene-d10	1719-06-8	10	%		121	93.3	93.1	90.3	96.0
4-Terphenyl-d14	1718-51-0	10	%		118	91.4	88.1	90.4	95.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH09_0.0_0.5	BH09_0.5_1.0	BH09_1.0_1.65	BH19_0.0_0.5	BH18_0.0_0.5
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-016	EB1804288-017	EB1804288-018	EB1804288-019	EB1804288-020
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.6	8.5	7.0	9.3	9.2
pH OX (23B)	----	0.1	pH Unit		8.3	9.0	8.1	9.9	9.2
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	<2	<2	<2	<2
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	<2	<2	<2	<2
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	<0.020
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	<0.020
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		<0.020	<0.020	<0.020	<0.020	<0.020
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.040	0.028	0.026	0.037	0.028
Peroxide Sulfur (23De)	----	0.020	% S		0.169	0.038	0.027	0.061	0.039
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		0.129	<0.020	<0.020	0.024	<0.020
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		81	<10	<10	15	<10
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.200	0.202	0.098	0.181	0.133
Peroxide Calcium (23Wh)	----	0.020	% Ca		0.856	0.313	0.127	6.86	0.602
Acid Reacted Calcium (23X)	----	0.020	% Ca		0.656	0.110	0.029	6.67	0.469
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		327	55	14	3330	234
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		0.524	0.088	0.023	5.34	0.375
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.115	0.126	0.110	0.054	0.059
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.222	0.172	0.138	0.155	0.095
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.107	0.046	0.028	0.101	0.036
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		88	38	23	83	30
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.141	0.061	0.038	0.133	0.047
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		2.28	0.998	0.598	18.1	1.78
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		455	199	119	3610	355
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		0.729	0.319	0.191	5.78	0.568



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH09_0.0_0.5	BH09_0.5_1.0	BH09_1.0_1.65	BH19_0.0_0.5	BH18_0.0_0.5
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-016	EB1804288-017	EB1804288-018	EB1804288-019	EB1804288-020
					Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S		<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t		<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t		<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		0.13	<0.02	<0.02	0.02	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		81	<10	<10	15	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t		6	<1	<1	1	<1
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		31.8	28.2	25.9	23.6	26.7
EA150: Particle Sizing									
+75µm	----	1	%		23	----	11	87	91
+150µm	----	1	%		14	----	2	85	87
+300µm	----	1	%		5	----	<1	63	70
+425µm	----	1	%		3	----	<1	53	59
+600µm	----	1	%		2	----	<1	45	43
+1180µm	----	1	%		<1	----	<1	35	16
+2.36mm	----	1	%		<1	----	<1	27	4
+4.75mm	----	1	%		<1	----	<1	21	<1
+9.5mm	----	1	%		<1	----	<1	17	<1
+19.0mm	----	1	%		<1	----	<1	13	<1
+37.5mm	----	1	%		<1	----	<1	<1	<1
+75.0mm	----	1	%		<1	----	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		39	----	45	6	6
Silt (2-60 µm)	----	1	%		31	----	34	6	3
Sand (0.06-2.00 mm)	----	1	%		30	----	21	58	84
Gravel (>2mm)	----	1	%		<1	----	<1	30	7
Cobbles (>6cm)	----	1	%		<1	----	<1	<1	<1
EA152: Soil Particle Density									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.72	----	2.72	2.68	2.66
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		8470	9470	9880	2440	5340
Iron	7439-89-6	50	mg/kg		24600	31100	30400	10100	10700



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH09_0.0_0.5	BH09_0.5_1.0	BH09_1.0_1.65	BH19_0.0_0.5	BH18_0.0_0.5
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-016	EB1804288-017	EB1804288-018	EB1804288-019	EB1804288-020
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	1.00	mg/kg		8.14	12.6	8.47	8.08	5.65
Cadmium	7440-43-9	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg		15.4	17.0	19.0	5.4	7.0
Copper	7440-50-8	1.0	mg/kg		16.4	20.0	16.1	5.6	9.2
Cobalt	7440-48-4	0.5	mg/kg		20.0	18.6	27.2	7.0	5.2
Lead	7439-92-1	1.0	mg/kg		8.7	8.8	10.1	2.9	5.5
Manganese	7439-96-5	10	mg/kg		643	738	598	424	237
Nickel	7440-02-0	1.0	mg/kg		12.8	17.0	26.4	3.7	4.1
Selenium	7782-49-2	0.1	mg/kg		0.3	0.3	0.2	<0.1	0.2
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	0.4	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg		52.8	61.7	50.2	25.9	29.1
Zinc	7440-66-6	1.0	mg/kg		36.1	42.5	49.2	13.8	17.4
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		0.02	0.02	0.06	<0.01	<0.01
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg		<0.1	<0.1	<0.1	1.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.1	<0.1	<0.1	1.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		290	210	170	730	190
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		290	210	170	730	190
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		391	404	413	350	164
EK255A SD: Ammonia in Sediment									
Ammonia as N	7664-41-7	0.2	mg/kg		47.2	11.9	4.5	6.9	13.3
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.52	0.10	0.05	0.09	0.10
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH09_0.0_0.5	BH09_0.5_1.0	BH09_1.0_1.65	BH19_0.0_0.5	BH18_0.0_0.5
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-016	EB1804288-017	EB1804288-018	EB1804288-019	EB1804288-020
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	3	mg/kg		4	<3	<3	8	9
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	6	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		4	<3	<3	14	9
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C15 - C28 Fraction	----	3	mg/kg		<3	<3	<3	6	6
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	8	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	<3	<3	14	6
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg		<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH09_0.0_0.5	BH09_0.5_1.0	BH09_1.0_1.65	BH19_0.0_0.5	BH18_0.0_0.5
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804288-016	EB1804288-017	EB1804288-018	EB1804288-019	EB1804288-020
				Result	Result	Result	Result	Result

EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued

Dimethoate	60-51-5	10	µg/kg	<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg	<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg	<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg	<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg	<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg	<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg	<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg	<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg	<10	<10	<10	<10	<10

EP131A: Organochlorine Pesticides

Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH09_0.0_0.5	BH09_0.5_1.0	BH09_1.0_1.65	BH19_0.0_0.5	BH18_0.0_0.5
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-016	EB1804288-017	EB1804288-018	EB1804288-019	EB1804288-020
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<4	<4	<4
Pyrene	129-00-0	4	µg/kg		<4	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg		<4	4	<4	<4	<4
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		<4	4	<4	<4	<4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH09_0.0_0.5	BH09_0.5_1.0	BH09_1.0_1.65	BH19_0.0_0.5	BH18_0.0_0.5
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-016	EB1804288-017	EB1804288-018	EB1804288-019	EB1804288-020
					Result	Result	Result	Result	Result
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		61.0	63.2	66.5	61.5	63.8
Toluene-D8	2037-26-5	0.2	%		68.3	67.5	74.7	64.8	68.1
4-Bromofluorobenzene	460-00-4	0.2	%		72.7	72.9	80.2	71.3	73.4
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		61.8	55.7	46.2	54.6	44.8
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		114	127	115	121	114
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		97.5	106	95.9	99.4	98.6
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		82.6	97.4	85.4	75.5	76.5
Anthracene-d10	1719-06-8	10	%		93.5	109	93.8	99.5	111
4-Terphenyl-d14	1718-51-0	10	%		88.0	99.8	88.0	93.1	95.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH17_0.0_0.5	Triplicate_2A	Triplicate_2B	BH05_0.0_0.5	BH05_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-021	EB1804288-022	EB1804288-023	EB1804288-025	EB1804288-026
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		9.2	----	----	8.5	----
pH OX (23B)	----	0.1	pH Unit		9.5	----	----	6.2	----
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	----	----	<2	----
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	----	----	4	----
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	----	----	4	----
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	----	----	<0.020	----
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		<0.020	----	----	<0.020	----
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		<0.020	----	----	<0.020	----
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.021	----	----	0.112	----
Peroxide Sulfur (23De)	----	0.020	% S		0.034	----	----	0.715	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		<0.020	----	----	0.604	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		<10	----	----	376	----
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.149	----	----	0.266	----
Peroxide Calcium (23Wh)	----	0.020	% Ca		1.83	----	----	0.671	----
Acid Reacted Calcium (23X)	----	0.020	% Ca		1.68	----	----	0.405	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		837	----	----	202	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		1.34	----	----	0.324	----
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.048	----	----	0.164	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.114	----	----	0.268	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.066	----	----	0.103	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		54	----	----	85	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.086	----	----	0.136	----
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		5.11	----	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		1020	----	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		1.64	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH17_0.0_0.5	Triplicate_2A	Triplicate_2B	BH05_0.0_0.5	BH05_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804288-021	EB1804288-022	EB1804288-023	EB1804288-025	EB1804288-026	
				Result	Result	Result	Result	Result	
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-	1.5	----	----	1.5	----	
Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	0.20	----	
Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	128	----	
Liming Rate	----	1	kg CaCO3/t	<1	----	----	10	----	
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	----	----	0.20	----	
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	----	----	128	----	
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	----	----	10	----	
EA037: Ass Field Screening Analysis									
ø pH (F)	----	0.1	pH Unit	----	----	----	----	8.8	
ø pH (Fox)	----	0.1	pH Unit	----	----	----	----	5.2	
ø Reaction Rate	----	1	-	----	----	----	----	2	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	24.0	40.8	45.6	44.6	40.4	
EA150: Particle Sizing									
+75µm	----	1	%	65	----	----	35	----	
+150µm	----	1	%	63	----	----	30	----	
+300µm	----	1	%	55	----	----	15	----	
+425µm	----	1	%	51	----	----	10	----	
+600µm	----	1	%	47	----	----	6	----	
+1180µm	----	1	%	40	----	----	3	----	
+2.36mm	----	1	%	35	----	----	1	----	
+4.75mm	----	1	%	29	----	----	<1	----	
+9.5mm	----	1	%	22	----	----	<1	----	
+19.0mm	----	1	%	10	----	----	<1	----	
+37.5mm	----	1	%	<1	----	----	<1	----	
+75.0mm	----	1	%	<1	----	----	<1	----	
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%	20	----	----	36	----	
Silt (2-60 µm)	----	1	%	12	----	----	23	----	
Sand (0.06-2.00 mm)	----	1	%	31	----	----	39	----	
Gravel (>2mm)	----	1	%	37	----	----	2	----	
Cobbles (>6cm)	----	1	%	<1	----	----	<1	----	
EA152: Soil Particle Density									

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH17_0.0_0.5	Triplicate_2A	Triplicate_2B	BH05_0.0_0.5	BH05_0.5_1.0
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804288-021	EB1804288-022	EB1804288-023	EB1804288-025	EB1804288-026	
				Result	Result	Result	Result	Result	
EA152: Soil Particle Density - Continued									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.72	----	----	2.68	----	
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	16000	16900	18900	18800	17400	
Iron	7439-89-6	50	mg/kg	46700	27500	28300	30500	27100	
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	
Arsenic	7440-38-2	1.00	mg/kg	11.2	11.0	8.40	9.61	8.71	
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium	7440-47-3	1.0	mg/kg	21.5	24.7	27.3	26.4	25.4	
Copper	7440-50-8	1.0	mg/kg	26.0	21.6	23.5	24.9	21.8	
Cobalt	7440-48-4	0.5	mg/kg	21.5	12.2	12.1	13.0	10.9	
Lead	7439-92-1	1.0	mg/kg	6.0	8.4	8.9	8.6	8.0	
Manganese	7439-96-5	10	mg/kg	1370	254	226	519	280	
Nickel	7440-02-0	1.0	mg/kg	17.1	11.7	12.6	12.8	11.6	
Selenium	7782-49-2	0.1	mg/kg	0.3	0.3	0.2	0.3	0.3	
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Vanadium	7440-62-2	2.0	mg/kg	86.3	49.9	52.4	57.0	49.1	
Zinc	7440-66-6	1.0	mg/kg	36.9	40.9	44.0	44.2	39.4	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg	0.01	0.02	0.02	0.02	0.02	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg	210	470	480	510	460	
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg	210	470	480	510	460	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	496	277	225	368	226	
EK255A SD: Ammonia in Sediment									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH17_0.0_0.5	Triplicate_2A	Triplicate_2B	BH05_0.0_0.5	BH05_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-021	EB1804288-022	EB1804288-023	EB1804288-025	EB1804288-026
					Result	Result	Result	Result	Result
EK255A SD: Ammonia in Sediment - Continued									
Ammonia as N	7664-41-7	0.2	mg/kg		2.9	7.5	7.9	12.8	18.8
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.07	0.83	0.75	0.78	0.68
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	6	<3	<3
>C16 - C34 Fraction	----	3	mg/kg		5	19	31	7	5
>C34 - C40 Fraction	----	5	mg/kg		<5	5	9	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		5	24	46	7	5
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	6	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	5	<3	<3
C15 - C28 Fraction	----	3	mg/kg		3	16	25	5	<3
C29 - C36 Fraction	----	5	mg/kg		<5	8	14	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		3	24	44	5	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

Client sampling date / time				BH17_0.0_0.5	Triplicate_2A	Triplicate_2B	BH05_0.0_0.5	BH05_0.5_1.0
Compound				CAS Number	LOR	Unit		
				EB1804288-021	EB1804288-022	EB1804288-023	EB1804288-025	EB1804288-026
				Result	Result	Result	Result	Result

EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued

Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg	<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg	<10	<10	<10	<10	<10
Dimethoate	60-51-5	10	µg/kg	<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg	<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg	<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg	<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg	<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg	<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg	<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg	<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg	<10	<10	<10	<10	<10

EP131A: Organochlorine Pesticides

Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH17_0.0_0.5	Triplicate_2A	Triplicate_2B	BH05_0.0_0.5	BH05_0.5_1.0
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804288-021	EB1804288-022	EB1804288-023	EB1804288-025	EB1804288-026
				Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued								
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg	<4	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg	<4	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg	<4	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg	<4	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg	<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg	<4	<4	<4	<4	<4
Pyrene	129-00-0	4	µg/kg	<4	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg	<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg	<4	<4	4	<4	10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH17_0.0_0.5	Triplicate_2A	Triplicate_2B	BH05_0.0_0.5	BH05_0.5_1.0
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-021	EB1804288-022	EB1804288-023	EB1804288-025	EB1804288-026
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<4
Indeno(1,2,3,cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		<4	<4	4	<4	10
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		56.7	63.5	62.2	58.4	54.0
Toluene-D8	2037-26-5	0.2	%		83.6	88.6	89.1	75.3	68.2
4-Bromofluorobenzene	460-00-4	0.2	%		86.0	93.4	94.7	81.4	79.4
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		59.6	51.7	69.0	60.7	63.0
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		91.1	69.1	62.3	109	68.8
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		100	60.3	89.5	80.5	72.8
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		88.6	90.5	84.7	85.2	116
Anthracene-d10	1719-06-8	10	%		89.0	97.7	91.5	94.0	123
4-Terphenyl-d14	1718-51-0	10	%		84.1	95.2	86.0	89.9	120



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH05_1.0_2.0	BH05_2.0_3.0	BH05_3.0_4.0	BH05_4.0_4.3	BH06_0.0_0.5
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-027	EB1804288-028	EB1804288-029	EB1804288-030	EB1804288-031
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.4	----	8.1	----	8.6
pH OX (23B)	----	0.1	pH Unit		3.7	----	3.0	----	8.0
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	----	<2	----	<2
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		102	----	185	----	<2
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		102	----	185	----	<2
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	----	<0.020	----	<0.020
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		0.163	----	0.296	----	<0.020
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		0.163	----	0.296	----	<0.020
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.077	----	0.072	----	0.106
Peroxide Sulfur (23De)	----	0.020	% S		0.615	----	0.735	----	0.785
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		0.538	----	0.663	----	0.678
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		336	----	414	----	423
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.226	----	0.228	----	0.251
Peroxide Calcium (23Wh)	----	0.020	% Ca		0.360	----	0.346	----	1.76
Acid Reacted Calcium (23X)	----	0.020	% Ca		0.133	----	0.118	----	1.50
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		66	----	59	----	751
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		0.107	----	0.095	----	1.20
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.151	----	0.151	----	0.148
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.249	----	0.244	----	0.284
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.098	----	0.093	----	0.136
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		80	----	76	----	112
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.129	----	0.123	----	0.179
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		----	----	----	----	2.77
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		----	----	----	----	553
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		----	----	----	----	0.886

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH05_1.0_2.0	BH05_2.0_3.0	BH05_3.0_4.0	BH05_4.0_4.3	BH06_0.0_0.5
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-027	EB1804288-028	EB1804288-029	EB1804288-030	EB1804288-031
					Result	Result	Result	Result	Result

EA029-H: Acid Base Accounting

EA037: Ass Field Screening Analysis

EA055: Moisture Content (Dried @ 105-110°C)

EA150: Particle Sizing

EA150: Soil Classification based on Particle Size

EA152: Soil Particle Density

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH05_1.0_2.0	BH05_2.0_3.0	BH05_3.0_4.0	BH05_4.0_4.3	BH06_0.0_0.5
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804288-027	EB1804288-028	EB1804288-029	EB1804288-030	EB1804288-031	
				Result	Result	Result	Result	Result	
EA152: Soil Particle Density - Continued									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.72	----	2.70	----	2.71	
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	17600	16500	17000	8810	13200	
Iron	7439-89-6	50	mg/kg	28700	28400	27700	21400	27000	
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	
Arsenic	7440-38-2	1.00	mg/kg	8.25	8.18	10.7	6.81	17.7	
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium	7440-47-3	1.0	mg/kg	25.7	23.8	24.4	14.3	22.6	
Copper	7440-50-8	1.0	mg/kg	23.0	26.7	25.0	51.2	14.7	
Cobalt	7440-48-4	0.5	mg/kg	11.8	11.9	12.3	24.4	12.2	
Lead	7439-92-1	1.0	mg/kg	8.3	7.5	8.8	8.9	6.1	
Manganese	7439-96-5	10	mg/kg	441	396	504	50	636	
Nickel	7440-02-0	1.0	mg/kg	12.1	11.9	12.0	18.5	11.5	
Selenium	7782-49-2	0.1	mg/kg	0.4	0.3	0.4	0.1	0.3	
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Vanadium	7440-62-2	2.0	mg/kg	52.9	53.7	55.7	60.2	50.8	
Zinc	7440-66-6	1.0	mg/kg	40.8	40.1	40.6	46.5	33.6	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg	0.02	0.02	0.02	0.03	0.01	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg	500	510	490	210	530	
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg	500	510	490	210	530	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	302	302	219	154	230	
EK255A SD: Ammonia in Sediment									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH05_1.0_2.0	BH05_2.0_3.0	BH05_3.0_4.0	BH05_4.0_4.3	BH06_0.0_0.5
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-027	EB1804288-028	EB1804288-029	EB1804288-030	EB1804288-031
					Result	Result	Result	Result	Result
EK255A SD: Ammonia in Sediment - Continued									
Ammonia as N	7664-41-7	0.2	mg/kg		35.1	48.3	62.8	47.2	7.7
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.65	0.65	0.69	0.09	0.84
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
>C16 - C34 Fraction	----	3	mg/kg		6	3	4	<3	5
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		6	3	4	<3	5
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C15 - C28 Fraction	----	3	mg/kg		3	<3	<3	<3	<3
C29 - C36 Fraction	----	5	mg/kg		6	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		9	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

Client sampling date / time				BH05_1.0_2.0	BH05_2.0_3.0	BH05_3.0_4.0	BH05_4.0_4.3	BH06_0.0_0.5
				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804288-027	EB1804288-028	EB1804288-029	EB1804288-030	EB1804288-031
				Result	Result	Result	Result	Result

EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued

Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg	<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg	<10	<10	<10	<10	<10
Dimethoate	60-51-5	10	µg/kg	<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg	<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg	<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg	<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg	<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg	<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg	<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg	<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg	<10	<10	<10	<10	<10

EP131A: Organochlorine Pesticides

Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH05_1.0_2.0	BH05_2.0_3.0	BH05_3.0_4.0	BH05_4.0_4.3	BH06_0.0_0.5
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-027	EB1804288-028	EB1804288-029	EB1804288-030	EB1804288-031
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<4	<4	<4
Pyrene	129-00-0	4	µg/kg		<4	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg		4	8	9	<4	<4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH05_1.0_2.0	BH05_2.0_3.0	BH05_3.0_4.0	BH05_4.0_4.3	BH06_0.0_0.5
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-027	EB1804288-028	EB1804288-029	EB1804288-030	EB1804288-031
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<4
Indeno(1,2,3,cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		4	8	9	<4	<4
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		62.4	60.9	72.9	65.0	57.2
Toluene-D8	2037-26-5	0.2	%		78.2	77.0	93.5	78.2	66.1
4-Bromofluorobenzene	460-00-4	0.2	%		87.0	82.8	98.7	84.6	76.7
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		60.5	40.2	44.7	46.7	52.5
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		115	93.7	69.4	108	118
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		85.8	70.5	92.7	82.4	93.4
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		95.1	82.5	103	78.2	90.1
Anthracene-d10	1719-06-8	10	%		103	92.2	111	82.4	96.5
4-Terphenyl-d14	1718-51-0	10	%		99.2	86.5	105	83.1	95.0



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH06_0.5_1.0	BH06_1.0_2.0	BH06_2.0_3.0	BH06_3.0_4.0	ASS_DUP6
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-032	EB1804288-033	EB1804288-034	EB1804288-035	EB1804288-036
				Result	Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit	----	8.6	----	----	8.4	8.7
pH OX (23B)	----	0.1	pH Unit	----	3.0	----	----	3.4	7.7
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t	----	<2	----	----	<2	<2
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t	----	184	----	----	137	<2
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	184	----	----	137	<2
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S	----	<0.020	----	----	<0.020	<0.020
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S	----	0.294	----	----	0.219	<0.020
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S	----	0.294	----	----	0.219	<0.020
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S	----	0.104	----	----	0.048	0.104
Peroxide Sulfur (23De)	----	0.020	% S	----	1.11	----	----	0.708	0.786
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S	----	1.01	----	----	0.659	0.683
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	629	----	----	411	426
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca	----	0.236	----	----	0.191	0.260
Peroxide Calcium (23Wh)	----	0.020	% Ca	----	0.741	----	----	0.396	3.87
Acid Reacted Calcium (23X)	----	0.020	% Ca	----	0.505	----	----	0.205	3.61
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	252	----	----	102	1800
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S	----	0.404	----	----	0.164	2.88
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg	----	0.152	----	----	0.147	0.113
Peroxide Magnesium (23Tm)	----	0.020	% Mg	----	0.273	----	----	0.271	0.315
Acid Reacted Magnesium (23U)	----	0.020	% Mg	----	0.121	----	----	0.124	0.201
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	100	----	----	102	166
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S	----	0.160	----	----	0.163	0.266
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3	----	----	----	----	----	4.69
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	----	----	938
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S	----	----	----	----	----	1.50

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH06_0.5_1.0	BH06_1.0_2.0	BH06_2.0_3.0	BH06_3.0_4.0	ASS_DUP6
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	
Compound	CAS Number	LOR	Unit	EB1804288-032	EB1804288-033	EB1804288-034	EB1804288-035	EB1804288-036	
				Result	Result	Result	Result	Result	
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-	----	1.5	----	1.5	1.5	
Net Acidity (sulfur units)	----	0.02	% S	----	0.53	----	0.36	<0.02	
Net Acidity (acidity units)	----	10	mole H+ / t	----	332	----	228	<10	
Liming Rate	----	1	kg CaCO3/t	----	25	----	17	<1	
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	0.53	----	0.36	0.68	
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	332	----	228	426	
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	25	----	17	32	
EA037: Ass Field Screening Analysis									
Ø pH (F)	----	0.1	pH Unit	8.8	----	8.9	----	----	
Ø pH (Fox)	----	0.1	pH Unit	2.4	----	2.9	----	----	
Ø Reaction Rate	----	1	-	2	----	3	----	----	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	45.2	43.4	40.4	40.6	----	
EA150: Particle Sizing									
+75µm	----	1	%	----	5	----	4	----	
+150µm	----	1	%	----	3	----	<1	----	
+300µm	----	1	%	----	2	----	<1	----	
+425µm	----	1	%	----	1	----	<1	----	
+600µm	----	1	%	----	<1	----	<1	----	
+1180µm	----	1	%	----	<1	----	<1	----	
+2.36mm	----	1	%	----	<1	----	<1	----	
+4.75mm	----	1	%	----	<1	----	<1	----	
+9.5mm	----	1	%	----	<1	----	<1	----	
+19.0mm	----	1	%	----	<1	----	<1	----	
+37.5mm	----	1	%	----	<1	----	<1	----	
+75.0mm	----	1	%	----	<1	----	<1	----	
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%	----	50	----	51	----	
Silt (2-60 µm)	----	1	%	----	39	----	40	----	
Sand (0.06-2.00 mm)	----	1	%	----	11	----	9	----	
Gravel (>2mm)	----	1	%	----	<1	----	<1	----	
Cobbles (>6cm)	----	1	%	----	<1	----	<1	----	
EA152: Soil Particle Density									

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH06_0.5_1.0	BH06_1.0_2.0	BH06_2.0_3.0	BH06_3.0_4.0	ASS_DUP6
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	
Compound	CAS Number	LOR	Unit	EB1804288-032	EB1804288-033	EB1804288-034	EB1804288-035	EB1804288-036	
				Result	Result	Result	Result	Result	
EA152: Soil Particle Density - Continued									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	2.65	----	2.72	----	
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	18600	20400	21600	19500	----	
Iron	7439-89-6	50	mg/kg	26700	30500	36200	32400	----	
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	----	
Arsenic	7440-38-2	1.00	mg/kg	8.16	10.5	8.49	8.71	----	
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----	
Chromium	7440-47-3	1.0	mg/kg	29.0	29.5	27.0	27.9	----	
Copper	7440-50-8	1.0	mg/kg	21.3	27.8	35.2	26.9	----	
Cobalt	7440-48-4	0.5	mg/kg	11.1	13.3	14.4	12.6	----	
Lead	7439-92-1	1.0	mg/kg	8.4	7.9	6.5	7.4	----	
Manganese	7439-96-5	10	mg/kg	220	261	364	672	----	
Nickel	7440-02-0	1.0	mg/kg	12.6	13.9	14.4	13.1	----	
Selenium	7782-49-2	0.1	mg/kg	0.3	0.3	0.3	0.3	----	
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----	
Vanadium	7440-62-2	2.0	mg/kg	53.2	60.5	63.3	57.6	----	
Zinc	7440-66-6	1.0	mg/kg	41.5	48.1	51.6	44.4	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg	0.02	0.02	0.02	0.02	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg	460	420	570	580	----	
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg	460	420	570	580	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	209	225	265	276	----	
EK255A SD: Ammonia in Sediment									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH06_0.5_1.0	BH06_1.0_2.0	BH06_2.0_3.0	BH06_3.0_4.0	ASS_DUP6
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-032	EB1804288-033	EB1804288-034	EB1804288-035	EB1804288-036
					Result	Result	Result	Result	Result
EK255A SD: Ammonia in Sediment - Continued									
Ammonia as N	7664-41-7	0.2	mg/kg		21.4	48.8	74.2	62.9	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.70	0.67	0.68	0.76	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	<3	----
>C16 - C34 Fraction	----	3	mg/kg		5	4	4	4	----
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		5	4	4	4	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	<3	<3	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	----
C10 - C14 Fraction	----	3	mg/kg		<3	<3	<3	<3	----
C15 - C28 Fraction	----	3	mg/kg		<3	<3	3	<3	----
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	<5	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	<3	3	<3	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Naphthalene	91-20-3	0.2	mg/kg		0.3	<0.2	<0.2	<0.2	----
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	----
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	----
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	----
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH06_0.5_1.0	BH06_1.0_2.0	BH06_2.0_3.0	BH06_3.0_4.0	ASS_DUP6
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804288-032	EB1804288-033	EB1804288-034	EB1804288-035	EB1804288-036
				Result	Result	Result	Result	Result

EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued

Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	<10	<10	----
Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	<10	<10	----
Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	<10	<10	----
Diazinon	333-41-5	10	µg/kg	<10	<10	<10	<10	----
Dichlorvos	62-73-7	10	µg/kg	<10	<10	<10	<10	----
Dimethoate	60-51-5	10	µg/kg	<10	<10	<10	<10	----
Ethion	563-12-2	10	µg/kg	<10	<10	<10	<10	----
Fenamiphos	22224-92-6	10	µg/kg	<10	<10	<10	<10	----
Fenthion	55-38-9	10	µg/kg	<10	<10	<10	<10	----
Malathion	121-75-5	10	µg/kg	<10	<10	<10	<10	----
Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	<10	<10	----
Monocrotophos	6923-22-4	10	µg/kg	<10	<10	<10	<10	----
Parathion	56-38-2	10	µg/kg	<10	<10	<10	<10	----
Parathion-methyl	298-00-0	10	µg/kg	<10	<10	<10	<10	----
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	<10	<10	----
Prothiofos	34643-46-4	10	µg/kg	<10	<10	<10	<10	----

EP131A: Organochlorine Pesticides

Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
4,4'-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
4,4'-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
4,4'-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH06_0.5_1.0	BH06_1.0_2.0	BH06_2.0_3.0	BH06_3.0_4.0	ASS_DUP6
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-032	EB1804288-033	EB1804288-034	EB1804288-035	EB1804288-036
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
gamma-BHC	58-89-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
cis-Chlordane	5103-71-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	----
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	----
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	----
Aroclor 1016	12674-11-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	----
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	----
Aroclor 1232	11141-16-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	----
Aroclor 1242	53469-21-9	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	----
Aroclor 1248	12672-29-6	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	----
Aroclor 1254	11097-69-1	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	----
Aroclor 1260	11096-82-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	<5	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	<5	----
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<4	<4	----
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	<4	----
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	<4	----
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	<4	----
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	<4	----
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<4	<4	----
Pyrene	129-00-0	4	µg/kg		<4	<4	<4	<4	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	<4	----
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	<4	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	<4	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	<4	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	<4	----
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	----
Perylene	198-55-0	4	µg/kg		47	24	62	110	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH06_0.5_1.0	BH06_1.0_2.0	BH06_2.0_3.0	BH06_3.0_4.0	ASS_DUP6
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804288-032	EB1804288-033	EB1804288-034	EB1804288-035	EB1804288-036
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	----
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	----
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	----
^ Sum of PAHs	----	4	µg/kg		47	24	62	110	----
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		60.7	62.6	53.8	58.4	----
Toluene-D8	2037-26-5	0.2	%		71.6	75.7	60.9	68.6	----
4-Bromofluorobenzene	460-00-4	0.2	%		78.5	83.1	73.5	75.8	----
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		50.4	54.2	49.4	59.4	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		118	62.1	118	63.9	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		84.9	95.7	89.1	104	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		74.1	90.4	93.5	85.7	----
Anthracene-d10	1719-06-8	10	%		94.2	110	119	111	----
4-Terphenyl-d14	1718-51-0	10	%		80.4	105	113	107	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	Duplicate_1A	ASS_DUP5	Trip Blank 3	----	----
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804288-037	EB1804288-039	EB1804288-040	-----	-----
					Result	Result	Result	----	----
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		----	9.4	----	----	----
pH OX (23B)	----	0.1	pH Unit		----	9.2	----	----	----
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		----	<2	----	----	----
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		----	<2	----	----	----
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		----	<2	----	----	----
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		----	<0.020	----	----	----
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		----	<0.020	----	----	----
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		----	<0.020	----	----	----
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		----	0.025	----	----	----
Peroxide Sulfur (23De)	----	0.020	% S		----	0.052	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		----	0.027	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		----	17	----	----	----
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		----	0.154	----	----	----
Peroxide Calcium (23Wh)	----	0.020	% Ca		----	3.18	----	----	----
Acid Reacted Calcium (23X)	----	0.020	% Ca		----	3.02	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		----	1510	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		----	2.42	----	----	----
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		----	0.048	----	----	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg		----	0.149	----	----	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg		----	0.100	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		----	83	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		----	0.133	----	----	----
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		----	6.88	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		----	1380	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		----	2.20	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	Duplicate_1A	ASS_DUP5	Trip Blank 3	----	----
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	----	----	
Compound	CAS Number	LOR	Unit	EB1804288-037	EB1804288-039	EB1804288-040	-----	-----	
				Result	Result	Result	----	----	
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-	----	1.5	----	----	----	
Net Acidity (sulfur units)	----	0.02	% S	----	<0.02	----	----	----	
Net Acidity (acidity units)	----	10	mole H+ / t	----	<10	----	----	----	
Liming Rate	----	1	kg CaCO3/t	----	<1	----	----	----	
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	0.03	----	----	----	
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	17	----	----	----	
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	1	----	----	----	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	38.3	----	----	----	----	
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	11900	----	----	----	----	
Iron	7439-89-6	50	mg/kg	35600	----	----	----	----	
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg	<0.50	----	----	----	----	
Arsenic	7440-38-2	1.00	mg/kg	49.7	----	----	----	----	
Cadmium	7440-43-9	0.1	mg/kg	<0.1	----	----	----	----	
Chromium	7440-47-3	1.0	mg/kg	19.8	----	----	----	----	
Copper	7440-50-8	1.0	mg/kg	19.0	----	----	----	----	
Cobalt	7440-48-4	0.5	mg/kg	51.3	----	----	----	----	
Lead	7439-92-1	1.0	mg/kg	5.6	----	----	----	----	
Manganese	7439-96-5	10	mg/kg	602	----	----	----	----	
Nickel	7440-02-0	1.0	mg/kg	20.3	----	----	----	----	
Selenium	7782-49-2	0.1	mg/kg	0.5	----	----	----	----	
Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----	
Vanadium	7440-62-2	2.0	mg/kg	70.6	----	----	----	----	
Zinc	7440-66-6	1.0	mg/kg	46.6	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg	0.02	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	<0.1	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	Duplicate_1A	ASS_DUP5	Trip Blank 3	----	----
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804288-037	EB1804288-039	EB1804288-040	-----	-----
					Result	Result	Result	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser - Continued									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.1	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		990	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		990	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		319	----	----	----	----
EK255A SD: Ammonia in Sediment									
Ammonia as N	7664-41-7	0.2	mg/kg		38.5	----	----	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.93	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	<10	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	<10	----	----
>C10 - C16 Fraction	----	3	mg/kg		6	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	<10	----	----
>C16 - C34 Fraction	----	3	mg/kg		88	----	----	----	----
>C34 - C40 Fraction	----	5	mg/kg		14	----	----	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		108	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		6	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		----	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		----	----	<1	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	Duplicate_1A	ASS_DUP5	Trip Blank 3	----	----
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804288-037	EB1804288-039	EB1804288-040	-----	-----
					Result	Result	Result	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	3	mg/kg		5	----	----	----	----
C15 - C28 Fraction	----	3	mg/kg		76	----	----	----	----
C29 - C36 Fraction	----	5	mg/kg		24	----	----	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		105	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	----	----	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.2	mg/kg		<0.2	----	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	----	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	----	----	----	----
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	----	----	----	----
Carbophenothion	786-19-6	10	µg/kg		<10	----	----	----	----
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	----	----	----	----
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	----	----	----	----
Chlorpyrifos	2921-88-2	10	µg/kg		<10	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	----	----	----	----
Demeton-S-methyl	919-86-8	10	µg/kg		<10	----	----	----	----
Diazinon	333-41-5	10	µg/kg		<10	----	----	----	----
Dichlorvos	62-73-7	10	µg/kg		<10	----	----	----	----
Dimethoate	60-51-5	10	µg/kg		<10	----	----	----	----
Ethion	563-12-2	10	µg/kg		<10	----	----	----	----
Fenamiphos	22224-92-6	10	µg/kg		<10	----	----	----	----
Fenthion	55-38-9	10	µg/kg		<10	----	----	----	----
Malathion	121-75-5	10	µg/kg		<10	----	----	----	----
Azinphos Methyl	86-50-0	10	µg/kg		<10	----	----	----	----
Monocrotophos	6923-22-4	10	µg/kg		<10	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	Duplicate_1A	ASS_DUP5	Trip Blank 3	----	----
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804288-037	EB1804288-039	EB1804288-040	-----	-----
					Result	Result	Result	----	----
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued									
Parathion	56-38-2	10	µg/kg		<10	----	----	----	----
Parathion-methyl	298-00-0	10	µg/kg		<10	----	----	----	----
Pirimphos-ethyl	23505-41-1	10	µg/kg		<10	----	----	----	----
Prothiofos	34643-46-4	10	µg/kg		<10	----	----	----	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	----	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	----	----	----	----
beta-BHC	319-85-7	0.50	µg/kg		<0.50	----	----	----	----
delta-BHC	319-86-8	0.50	µg/kg		<0.50	----	----	----	----
4,4`-DDD	72-54-8	0.50	µg/kg		<0.50	----	----	----	----
4,4`-DDE	72-55-9	0.50	µg/kg		<0.50	----	----	----	----
4,4`-DDT	50-29-3	0.50	µg/kg		<0.50	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.50	µg/kg		<0.50	----	----	----	----
Dieldrin	60-57-1	0.50	µg/kg		<0.50	----	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	----	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	----	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg		<0.50	----	----	----	----
Endrin	72-20-8	0.50	µg/kg		<0.50	----	----	----	----
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	----	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	----	----	----	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	----	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	----	----	----	----
gamma-BHC	58-89-9	0.25	µg/kg		<0.25	----	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	----	----	----	----
cis-Chlordane	5103-71-9	0.25	µg/kg		<0.25	----	----	----	----
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	----	----	----	----
^ Total Chlordane (sum)	-----	0.25	µg/kg		<0.25	----	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	-----	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				Duplicate_1A	ASS_DUP5	Trip Blank 3	----	----
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1804288-037	EB1804288-039	EB1804288-040	-----	-----
				Result	Result	Result	----	----

EP131B: Polychlorinated Biphenyls (as Aroclors) - Continued

Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	----	----	----	----

EP132B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	5	µg/kg	<5	----	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	----	----	----	----
Acenaphthylene	208-96-8	4	µg/kg	<4	----	----	----	----
Acenaphthene	83-32-9	4	µg/kg	<4	----	----	----	----
Fluorene	86-73-7	4	µg/kg	<4	----	----	----	----
Phenanthrene	85-01-8	4	µg/kg	<4	----	----	----	----
Anthracene	120-12-7	4	µg/kg	<4	----	----	----	----
Fluoranthene	206-44-0	4	µg/kg	<4	----	----	----	----
Pyrene	129-00-0	4	µg/kg	<4	----	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	<4	----	----	----	----
Chrysene	218-01-9	4	µg/kg	<4	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	----	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	----	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	----	----	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	<4	----	----	----	----
Perylene	198-55-0	4	µg/kg	20	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	----	----	----	----
Indeno(1,2,3-cd)pyrene	193-39-5	4	µg/kg	<4	----	----	----	----
Coronene	191-07-1	5	µg/kg	<5	----	----	----	----
^ Sum of PAHs	----	4	µg/kg	20	----	----	----	----

EP080S: TPH(V)/BTEX Surrogates

1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	70.2	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	78.6	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	83.4	----	----

EP080-SD: TPH(V)/BTEX Surrogates

1,2-Dichloroethane-D4	17060-07-0	0.2	%	72.7	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	82.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	Duplicate_1A	ASS_DUP5	Trip Blank 3	----	----
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804288-037	EB1804288-039	EB1804288-040	-----	-----
					Result	Result	Result	----	----
EP080-SD: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		89.0	----	----	----	----
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		64.3	----	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		93.8	----	----	----	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		109	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		88.4	----	----	----	----
Anthracene-d10	1719-06-8	10	%		121	----	----	----	----
4-Terphenyl-d14	1718-51-0	10	%		108	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RIN02	RIN03	----	----	----
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB1804288-041	EB1804288-042	-----	-----	-----
				Result	Result	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	----	----	----
Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RIN02	RIN03	----	----	----
Client sampling date / time				14-Feb-2018 00:00	14-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB1804288-041	EB1804288-042	-----	-----	-----
				Result	Result	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
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	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RIN02	RIN03	----	----	----
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EB1804288-041	EB1804288-042	-----	-----	-----
					Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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+j)fluoranthene	205-99-2 205-82-3	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	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	----	----	----
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RIN02	RIN03	----	----	----
Client sampling date / time					14-Feb-2018 00:00	14-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EB1804288-041	EB1804288-042	-----	-----	-----
					Result	Result	----	----	----
EP080: BTEXN - Continued									
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		104	106	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		113	110	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		117	113	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		52.2	50.4	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		93.2	93.5	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		89.0	86.5	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		69.2	75.5	----	----	----
Anthracene-d10	1719-06-8	1.0	%		99.9	97.4	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		103	103	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		79.6	77.1	----	----	----
Toluene-D8	2037-26-5	2	%		99.8	104	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		95.3	97.7	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP080-SD: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	145
Toluene-D8	2037-26-5	42	144
4-Bromofluorobenzene	460-00-4	58	142
EP130S: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	14	102
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	119
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	106
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	55	135
Anthracene-d10	1719-06-8	70	136
4-Terphenyl-d14	1718-51-0	57	127

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	37	138
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	40	134
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	42	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

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Work Order : EB1804288
Client : AURECON AUSTRALASIA PTY LTD
Project : 237374



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates - Continued			

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EB1804288**

Page : 1 of 27

Client : **AURECON AUSTRALASIA PTY LTD**
Contact : **MS GEORGINA KERR**
Project : **237374**
Site : **----**
Sampler : **KAITLIN MULCAHY**
Order number : **----**

Laboratory : **Environmental Division Brisbane**
Telephone : **+61-7-3243 7222**
Date Samples Received : **16-Feb-2018**
Issue Date : **27-Feb-2018**
No. of samples received : **41**
No. of samples analysed : **40**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005-SD: Total Metals in Sediments by ICP-AES	EB1804288--021	BH17_0.0_0.5	Iron	7439-89-6	33.6 %	0% - 20%	RPD exceeds LOR based limits
EG020-SD: Total Metals in Sediments by ICPMS	EB1804288--021	BH17_0.0_0.5	Manganese	7439-96-5	56.6 %	0% - 20%	RPD exceeds LOR based limits
EG020-SD: Total Metals in Sediments by ICPMS	EB1804288--021	BH17_0.0_0.5	Zinc	7440-66-6	27.9 %	0% - 20%	RPD exceeds LOR based limits
Matrix Spike (MS) Recoveries							
EG020-SD: Total Metals in Sediments by ICPMS	EB1804288--002	BH13_0.5_1.0	Manganese	7439-96-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK255A SD: Ammonia in Sediment	EB1804288--001	BH13_0.0_0.5	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK255A SD: Ammonia in Sediment	EB1804288--021	BH17_0.0_0.5	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons	EB1804288--022	Triplicate_2A	C6 - C9 Fraction	----	60.8 %	70-130%	Recovery less than lower data quality objective
EP080-SD / EP071-SD: Total Recoverable Hydrocarbon	EB1804288--022	Triplicate_2A	C6 - C10 Fraction	C6_C10	59.6 %	70-130%	Recovery less than lower data quality objective
EP080-SD: BTEXN	EB1804288--022	Triplicate_2A	Benzene	71-43-2	59.8 %	70-130%	Recovery less than lower data quality objective

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	QC-1446611-002	----	alpha-BHC	319-84-6	132 %	45-125%	Recovery greater than upper control limit
EP068A: Organochlorine Pesticides (OC)	QC-1446611-002	----	beta-BHC	319-85-7	124 %	39-122%	Recovery greater than upper control limit
EP068A: Organochlorine Pesticides (OC)	QC-1446611-002	----	gamma-BHC	58-89-9	126 %	42-119%	Recovery greater than upper control limit
EP068A: Organochlorine Pesticides (OC)	QC-1446611-002	----	delta-BHC	319-86-8	115 %	53-112%	Recovery greater than upper control limit
EP068A: Organochlorine Pesticides (OC)	QC-1446611-002	----	Heptachlor	76-44-8	124 %	45-118%	Recovery greater than upper control limit
EP068A: Organochlorine Pesticides (OC)	QC-1446611-002	----	Endrin	72-20-8	136 %	47-129%	Recovery greater than upper control limit
EP068A: Organochlorine Pesticides (OC)	QC-1446611-002	----	4,4'-DDD	72-54-8	125 %	52-124%	Recovery greater than upper control limit
EP068A: Organochlorine Pesticides (OC)	QC-1446611-002	----	Endosulfan sulfate	1031-07-8	126 %	37-124%	Recovery greater than upper control limit



Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries - Continued							
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Dichlorvos	62-73-7	118 %	49-115%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Demeton-S-methyl	919-86-8	154 %	44-118%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Dimethoate	60-51-5	124 %	41-111%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Chlorpyrifos-methyl	5598-13-0	124 %	50-118%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Malathion	121-75-5	125 %	51-122%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Fenthion	55-38-9	129 %	49-121%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Chlorpyrifos	2921-88-2	120 %	54-119%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Parathion	56-38-2	140 %	43-123%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Chlorfenvinphos	470-90-6	137 %	50-127%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Fenamiphos	22224-92-6	152 %	43-121%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Ethion	563-12-2	139 %	50-127%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Carbophenothion	786-19-6	138 %	48-128%	Recovery greater than upper control limit
EP068B: Organophosphorus Pesticides (OP)	QC-1446611-002	----	Azinphos Methyl	86-50-0	145 %	44-130%	Recovery greater than upper control limit

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP131S: OC Pesticide Surrogate	EB1804288-017	BH09_0.5_1.0	Dibromo-DDE	21655-73-2	127 %	10-119 %	Recovery greater than upper data quality objective
EP131S: OC Pesticide Surrogate	EB1804288-019	BH19_0.0_0.5	Dibromo-DDE	21655-73-2	121 %	10-119 %	Recovery greater than upper data quality objective
EP131T: PCB Surrogate	EB1804288-003	BH13_1.0_2.0	Decachlorobiphenyl	2051-24-3	110 %	10-106 %	Recovery greater than upper data quality objective
EP131T: PCB Surrogate	EB1804288-005	BH04_0.5_1.0	Decachlorobiphenyl	2051-24-3	107 %	10-106 %	Recovery greater than upper data quality objective
EP131T: PCB Surrogate	EB1804288-037	Duplicate_1A	Decachlorobiphenyl	2051-24-3	109 %	10-106 %	Recovery greater than upper data quality objective



Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
TRH Volatiles/BTEX	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-A: pH Measurements							
Snap Lock Bag - frozen (EA029)							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-A: pH Measurements - Continued								
BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH03_0.0_0.5, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH09_1.0_1.65, BH18_0.0_0.5, BH05_0.0_0.5, BH05_3.0_4.0, BH06_1.0_2.0, ASS_DUP5	BH13_0.5_1.0, BH04_0.0_0.5, BH04_2.0_3.0, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH19_0.0_0.5, ASS_DUP6, BH17_0.0_0.5, BH05_1.0_2.0, BH06_0.0_0.5, BH06_3.0_4.0,	14-Feb-2018	22-Feb-2018	09-Nov-2020	✔	22-Feb-2018	23-May-2018	✔
EA029-B: Acidity Trail								
Snap Lock Bag - frozen (EA029)	BH13_0.5_1.0, BH04_0.0_0.5, BH04_2.0_3.0, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH19_0.0_0.5, ASS_DUP6, BH17_0.0_0.5, BH05_1.0_2.0, BH06_0.0_0.5, BH06_3.0_4.0,	14-Feb-2018	22-Feb-2018	09-Nov-2020	✔	22-Feb-2018	23-May-2018	✔

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-C: Sulfur Trail								
Snap Lock Bag - frozen (EA029)		14-Feb-2018	22-Feb-2018	09-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH03_0.0_0.5, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH09_1.0_1.65, BH18_0.0_0.5, BH05_0.0_0.5, BH05_3.0_4.0, BH06_1.0_2.0, ASS_DUP5	BH13_0.5_1.0, BH04_0.0_0.5, BH04_2.0_3.0, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH19_0.0_0.5, ASS_DUP6, BH17_0.0_0.5, BH05_1.0_2.0, BH06_0.0_0.5, BH06_3.0_4.0,							
EA029-D: Calcium Values								
Snap Lock Bag - frozen (EA029)		14-Feb-2018	22-Feb-2018	09-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH03_0.0_0.5, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH09_1.0_1.65, BH18_0.0_0.5, BH05_0.0_0.5, BH05_3.0_4.0, BH06_1.0_2.0, ASS_DUP5	BH13_0.5_1.0, BH04_0.0_0.5, BH04_2.0_3.0, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH19_0.0_0.5, ASS_DUP6, BH17_0.0_0.5, BH05_1.0_2.0, BH06_0.0_0.5, BH06_3.0_4.0,							

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-E: Magnesium Values								
Snap Lock Bag - frozen (EA029)		14-Feb-2018	22-Feb-2018	09-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH03_0.0_0.5, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH09_1.0_1.65, BH18_0.0_0.5, BH05_0.0_0.5, BH05_3.0_4.0, BH06_1.0_2.0, ASS_DUP5	BH13_0.5_1.0, BH04_0.0_0.5, BH04_2.0_3.0, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH19_0.0_0.5, ASS_DUP6, BH17_0.0_0.5, BH05_1.0_2.0, BH06_0.0_0.5, BH06_3.0_4.0,							
EA029-F: Excess Acid Neutralising Capacity								
Snap Lock Bag - frozen (EA029)		14-Feb-2018	22-Feb-2018	09-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH03_0.0_0.5, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH09_1.0_1.65, BH18_0.0_0.5, BH05_0.0_0.5, BH05_3.0_4.0, BH06_1.0_2.0, ASS_DUP5	BH13_0.5_1.0, BH04_0.0_0.5, BH04_2.0_3.0, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH19_0.0_0.5, ASS_DUP6, BH17_0.0_0.5, BH05_1.0_2.0, BH06_0.0_0.5, BH06_3.0_4.0,							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-G: Retained Acidity								
Snap Lock Bag - frozen (EA029)		14-Feb-2018	22-Feb-2018	09-Nov-2020	✔	22-Feb-2018	23-May-2018	✔
BH13_0.0_0.5,	BH13_0.5_1.0,							
BH13_1.0_2.0,	BH04_0.0_0.5,							
BH04_0.5_1.0,	BH04_2.0_3.0,							
BH03_0.0_0.5,	BH03_1.0_2.0,							
BH03_2.0_2.8,	BH10_0.0_0.5,							
BH10_0.5_1.0,	BH10_1.0_1.45,							
BH09_0.0_0.5,	BH09_0.5_1.0,							
BH09_1.0_1.65,	BH19_0.0_0.5,							
BH18_0.0_0.5,	ASS_DUP6, BH17_0.0_0.5,							
BH05_0.0_0.5,	BH05_1.0_2.0,							
BH05_3.0_4.0,	BH06_0.0_0.5,							
BH06_1.0_2.0,	BH06_3.0_4.0,							
ASS_DUP5								
EA029-H: Acid Base Accounting								
Snap Lock Bag - frozen (EA029)		14-Feb-2018	22-Feb-2018	09-Nov-2020	✔	22-Feb-2018	23-May-2018	✔
BH13_0.0_0.5,	BH13_0.5_1.0,							
BH13_1.0_2.0,	BH04_0.0_0.5,							
BH04_0.5_1.0,	BH04_2.0_3.0,							
BH03_0.0_0.5,	BH03_1.0_2.0,							
BH03_2.0_2.8,	BH10_0.0_0.5,							
BH10_0.5_1.0,	BH10_1.0_1.45,							
BH09_0.0_0.5,	BH09_0.5_1.0,							
BH09_1.0_1.65,	BH19_0.0_0.5,							
BH18_0.0_0.5,	ASS_DUP6, BH17_0.0_0.5,							
BH05_0.0_0.5,	BH05_1.0_2.0,							
BH05_3.0_4.0,	BH06_0.0_0.5,							
BH06_1.0_2.0,	BH06_3.0_4.0,							
ASS_DUP5								
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)		14-Feb-2018	22-Feb-2018	13-Aug-2018	✔	22-Feb-2018	13-Aug-2018	✔
BH04_1.0_2.0,	BH04_3.0_3.7,							
BH03_0.5_1.0,	BH05_0.5_1.0,							
BH05_2.0_3.0,	BH05_4.0_4.3,							
BH06_0.5_1.0,	BH06_2.0_3.0							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date		Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content (Dried @ 105-110°C)									
Soil Glass Jar - Unpreserved (EA055)		14-Feb-2018	----	----	----	19-Feb-2018	28-Feb-2018	✔	
BH13_0.0_0.5,	BH13_0.5_1.0,								
BH13_1.0_2.0,	BH04_0.0_0.5,								
BH04_0.5_1.0,	BH04_1.0_2.0,								
BH04_2.0_3.0,	BH04_3.0_3.7,								
BH03_0.0_0.5,	BH03_0.5_1.0,								
BH03_1.0_2.0,	BH03_2.0_2.8,								
BH10_0.0_0.5,	BH10_0.5_1.0,								
BH10_1.0_1.45,	BH09_0.0_0.5,								
BH09_0.5_1.0,	BH19_0.0_0.5, BH09_1.0_1.65,								
BH18_0.0_0.5,									
BH17_0.0_0.5,	Triplicate_2A,								
Triplicate_2B,	BH05_0.0_0.5,								
BH05_0.5_1.0,	BH05_1.0_2.0,								
BH05_2.0_3.0,	BH05_3.0_4.0,								
BH05_4.0_4.3,	BH06_0.0_0.5,								
BH06_0.5_1.0,	BH06_1.0_2.0,								
BH06_2.0_3.0,	BH06_3.0_4.0,								
Duplicate_1A									
EA150: Particle Sizing									
80* dried soil (EA150H)		14-Feb-2018	----	----	----	23-Feb-2018	13-Aug-2018	✔	
BH13_0.0_0.5,	BH13_1.0_2.0,								
BH04_0.0_0.5,	BH04_0.5_1.0,								
BH04_2.0_3.0,	BH03_0.0_0.5,								
BH03_1.0_2.0,	BH10_0.0_0.5,								
BH10_1.0_1.45,	BH09_0.0_0.5,								
BH09_1.0_1.65,	BH19_0.0_0.5,								
BH18_0.0_0.5,	BH17_0.0_0.5,								
BH05_0.0_0.5,	BH05_1.0_2.0,								
BH05_3.0_4.0,	BH06_0.0_0.5,								
BH06_1.0_2.0,	BH06_3.0_4.0,								

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA150: Soil Classification based on Particle Size								
80* dried soil (EA150H) BH13_0.0_0.5, BH04_0.0_0.5, BH04_2.0_3.0, BH03_1.0_2.0, BH10_1.0_1.45, BH09_1.0_1.65, BH18_0.0_0.5, BH05_0.0_0.5, BH05_3.0_4.0, BH06_1.0_2.0,	BH13_1.0_2.0, BH04_0.5_1.0, BH03_0.0_0.5, BH10_0.0_0.5, BH09_0.0_0.5, BH19_0.0_0.5, BH17_0.0_0.5, BH05_1.0_2.0, BH06_0.0_0.5, BH06_3.0_4.0	14-Feb-2018	----	----	----	23-Feb-2018	13-Aug-2018	✓
EA152: Soil Particle Density								
80* dried soil (EA152) BH13_0.0_0.5, BH04_0.0_0.5, BH04_2.0_3.0, BH03_1.0_2.0, BH10_1.0_1.45, BH09_1.0_1.65, BH18_0.0_0.5, BH05_0.0_0.5, BH05_3.0_4.0, BH06_1.0_2.0,	BH13_1.0_2.0, BH04_0.5_1.0, BH03_0.0_0.5, BH10_0.0_0.5, BH09_0.0_0.5, BH19_0.0_0.5, BH17_0.0_0.5, BH05_1.0_2.0, BH06_0.0_0.5, BH06_3.0_4.0	14-Feb-2018	----	----	----	23-Feb-2018	13-Aug-2018	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005-SD: Total Metals in Sediments by ICP-AES								
Soil Glass Jar - Unpreserved (EG005-SD)		14-Feb-2018	19-Feb-2018	13-Aug-2018	✓	21-Feb-2018	13-Aug-2018	✓
BH13_0.0_0.5, BH13_0.5_1.0,								
BH13_1.0_2.0, BH04_0.0_0.5,								
BH04_0.5_1.0, BH04_1.0_2.0,								
BH04_2.0_3.0, BH04_3.0_3.7,								
BH03_0.0_0.5, BH03_0.5_1.0,								
BH03_1.0_2.0, BH03_2.0_2.8,								
BH10_0.0_0.5, BH10_0.5_1.0,								
BH10_1.0_1.45, BH09_0.0_0.5,								
BH09_0.5_1.0, BH19_0.0_0.5, BH09_1.0_1.65,								
BH18_0.0_0.5								
Soil Glass Jar - Unpreserved (EG005-SD)		14-Feb-2018	20-Feb-2018	13-Aug-2018	✓	21-Feb-2018	13-Aug-2018	✓
BH17_0.0_0.5, Triplicate_2A,								
TriPLICATE_2B, BH05_0.0_0.5,								
BH05_0.5_1.0, BH05_1.0_2.0,								
BH05_2.0_3.0, BH05_3.0_4.0,								
BH05_4.0_4.3, BH06_0.0_0.5,								
BH06_0.5_1.0, BH06_1.0_2.0,								
BH06_2.0_3.0, BH06_3.0_4.0,								
Duplicate_1A								
EG020-SD: Total Metals in Sediments by ICPMS								
Soil Glass Jar - Unpreserved (EG020-SD)		14-Feb-2018	19-Feb-2018	13-Aug-2018	✓	21-Feb-2018	13-Aug-2018	✓
BH13_0.0_0.5, BH13_0.5_1.0,								
BH13_1.0_2.0, BH04_0.0_0.5,								
BH04_0.5_1.0, BH04_1.0_2.0,								
BH04_2.0_3.0, BH04_3.0_3.7,								
BH03_0.0_0.5, BH03_0.5_1.0,								
BH03_1.0_2.0, BH03_2.0_2.8,								
BH10_0.0_0.5, BH10_0.5_1.0,								
BH10_1.0_1.45, BH09_0.0_0.5,								
BH09_0.5_1.0, BH19_0.0_0.5, BH09_1.0_1.65,								
BH18_0.0_0.5								
Soil Glass Jar - Unpreserved (EG020-SD)		14-Feb-2018	20-Feb-2018	13-Aug-2018	✓	21-Feb-2018	13-Aug-2018	✓
BH17_0.0_0.5, Triplicate_2A,								
TriPLICATE_2B, BH05_0.0_0.5,								
BH05_0.5_1.0, BH05_1.0_2.0,								
BH05_2.0_3.0, BH05_3.0_4.0,								
BH05_4.0_4.3, BH06_0.0_0.5,								
BH06_0.5_1.0, BH06_1.0_2.0,								
BH06_2.0_3.0, BH06_3.0_4.0,								
Duplicate_1A								

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date		Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG035T: Total Recoverable Mercury by FIMS									
Soil Glass Jar - Unpreserved (EG035T-LL)	BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH04_2.0_3.0, BH03_0.0_0.5, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH18_0.0_0.5	BH13_0.5_1.0, BH04_0.0_0.5, BH04_1.0_2.0, BH04_3.0_3.7, BH03_0.5_1.0, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH19_0.0_0.5, BH09_1.0_1.65,	14-Feb-2018	19-Feb-2018	14-Mar-2018	✓	21-Feb-2018	14-Mar-2018	✓
Soil Glass Jar - Unpreserved (EG035T-LL)	BH17_0.0_0.5, Triplicate_2B, BH05_0.5_1.0, BH05_2.0_3.0, BH05_4.0_4.3, BH06_0.5_1.0, BH06_2.0_3.0, Duplicate_1A	Triplicate_2A, BH05_0.0_0.5, BH05_1.0_2.0, BH05_3.0_4.0, BH06_0.0_0.5, BH06_1.0_2.0, BH06_3.0_4.0,	14-Feb-2018	20-Feb-2018	14-Mar-2018	✓	21-Feb-2018	14-Mar-2018	✓
EK057G: Nitrite as N by Discrete Analyser									
Soil Glass Jar - Unpreserved (EK057G)	BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH04_2.0_3.0, BH03_0.0_0.5, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH18_0.0_0.5, BH17_0.0_0.5, Triplicate_2B, BH05_0.5_1.0, BH05_2.0_3.0, BH05_4.0_4.3, BH06_0.5_1.0, BH06_2.0_3.0, Duplicate_1A	BH13_0.5_1.0, BH04_0.0_0.5, BH04_1.0_2.0, BH04_3.0_3.7, BH03_0.5_1.0, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH19_0.0_0.5, BH09_1.0_1.65, Triplicate_2A, BH05_0.0_0.5, BH05_1.0_2.0, BH05_3.0_4.0, BH06_0.0_0.5, BH06_1.0_2.0, BH06_3.0_4.0,	14-Feb-2018	20-Feb-2018	13-Aug-2018	✓	21-Feb-2018	13-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date		Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Soil Glass Jar - Unpreserved (EK059G)	BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH04_2.0_3.0, BH03_0.0_0.5, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH18_0.0_0.5, BH17_0.0_0.5, Triplicate_2B, BH05_0.5_1.0, BH05_2.0_3.0, BH05_4.0_4.3, BH06_0.5_1.0, BH06_2.0_3.0, Duplicate_1A	BH13_0.5_1.0, BH04_0.0_0.5, BH04_1.0_2.0, BH04_3.0_3.7, BH03_0.5_1.0, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH19_0.0_0.5, BH09_1.0_1.65, Triplicate_2A, BH05_0.0_0.5, BH05_1.0_2.0, BH05_3.0_4.0, BH06_0.0_0.5, BH06_1.0_2.0, BH06_3.0_4.0,	14-Feb-2018	20-Feb-2018	13-Aug-2018	✔	21-Feb-2018	13-Aug-2018	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Soil Glass Jar - Unpreserved (EK061G)	BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH04_2.0_3.0, BH03_0.0_0.5, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH18_0.0_0.5	BH13_0.5_1.0, BH04_0.0_0.5, BH04_1.0_2.0, BH04_3.0_3.7, BH03_0.5_1.0, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH19_0.0_0.5, BH09_1.0_1.65,	14-Feb-2018	19-Feb-2018	13-Aug-2018	✔	20-Feb-2018	13-Aug-2018	✔
Soil Glass Jar - Unpreserved (EK061G)	BH17_0.0_0.5, Triplicate_2B, BH05_0.5_1.0, BH05_2.0_3.0, BH05_4.0_4.3, BH06_0.5_1.0, BH06_2.0_3.0, Duplicate_1A	Triplicate_2A, BH05_0.0_0.5, BH05_1.0_2.0, BH05_3.0_4.0, BH06_0.0_0.5, BH06_1.0_2.0, BH06_3.0_4.0,	14-Feb-2018	20-Feb-2018	13-Aug-2018	✔	21-Feb-2018	13-Aug-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date		Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK067G: Total Phosphorus as P by Discrete Analyser									
Soil Glass Jar - Unpreserved (EK067G)	BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH04_2.0_3.0, BH03_0.0_0.5, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH18_0.0_0.5	BH13_0.5_1.0, BH04_0.0_0.5, BH04_1.0_2.0, BH04_3.0_3.7, BH03_0.5_1.0, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH19_0.0_0.5, BH09_1.0_1.65,	14-Feb-2018	19-Feb-2018	13-Aug-2018	✔	20-Feb-2018	13-Aug-2018	✔
Soil Glass Jar - Unpreserved (EK067G)	BH17_0.0_0.5, Triplicate_2B, BH05_0.5_1.0, BH05_2.0_3.0, BH05_4.0_4.3, BH06_0.5_1.0, BH06_2.0_3.0, Duplicate_1A	Triplicate_2A, BH05_0.0_0.5, BH05_1.0_2.0, BH05_3.0_4.0, BH06_0.0_0.5, BH06_1.0_2.0, BH06_3.0_4.0,	14-Feb-2018	20-Feb-2018	13-Aug-2018	✔	21-Feb-2018	13-Aug-2018	✔
EK255A SD: Ammonia in Sediment									
Soil Glass Jar - Unpreserved (EK255A SD)	BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH04_2.0_3.0, BH03_0.0_0.5, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH18_0.0_0.5, BH17_0.0_0.5, Triplicate_2B, BH05_0.5_1.0, BH05_2.0_3.0, BH05_4.0_4.3, BH06_0.5_1.0, BH06_2.0_3.0, Duplicate_1A	BH13_0.5_1.0, BH04_0.0_0.5, BH04_1.0_2.0, BH04_3.0_3.7, BH03_0.5_1.0, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH19_0.0_0.5, BH09_1.0_1.65, Triplicate_2A, BH05_0.0_0.5, BH05_1.0_2.0, BH05_3.0_4.0, BH06_0.0_0.5, BH06_1.0_2.0, BH06_3.0_4.0,	14-Feb-2018	----	----	----	22-Feb-2018	13-Aug-2018	✔

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP003: Total Organic Carbon (TOC) in Soil							
Pulp Bag (EP003) BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH04_2.0_3.0, BH03_0.0_0.5, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH18_0.0_0.5, BH17_0.0_0.5, Triplicate_2B, BH05_0.5_1.0, BH05_2.0_3.0, BH05_4.0_4.3, BH06_0.5_1.0, BH06_2.0_3.0, Duplicate_1A BH13_0.5_1.0, BH04_0.0_0.5, BH04_1.0_2.0, BH04_3.0_3.7, BH03_0.5_1.0, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH19_0.0_0.5, BH09_1.0_1.65, Triplicate_2A, BH05_0.0_0.5, BH05_1.0_2.0, BH05_3.0_4.0, BH06_0.0_0.5, BH06_1.0_2.0, BH06_3.0_4.0	14-Feb-2018	21-Feb-2018	14-Mar-2018	✓	21-Feb-2018	14-Mar-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) Trip Blank 3	14-Feb-2018	19-Feb-2018	28-Feb-2018	✓	20-Feb-2018	28-Feb-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080) Trip Blank 3		14-Feb-2018	19-Feb-2018	28-Feb-2018	✓	20-Feb-2018	28-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP071-SD) BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH04_2.0_3.0, BH03_0.0_0.5, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH18_0.0_0.5		14-Feb-2018	19-Feb-2018	28-Feb-2018	✓	23-Feb-2018	31-Mar-2018	✓
BH13_0.5_1.0, BH04_0.0_0.5, BH04_1.0_2.0, BH04_3.0_3.7, BH03_0.5_1.0, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH19_0.0_0.5, BH09_1.0_1.65,								
Soil Glass Jar - Unpreserved (EP071-SD) BH17_0.0_0.5, Triplicate_2B, BH05_0.5_1.0, BH05_2.0_3.0, BH05_4.0_4.3, BH06_0.5_1.0, BH06_2.0_3.0, Duplicate_1A		14-Feb-2018	20-Feb-2018	28-Feb-2018	✓	22-Feb-2018	01-Apr-2018	✓
Triplicate_2A, BH05_0.0_0.5, BH05_1.0_2.0, BH05_3.0_4.0, BH06_0.0_0.5, BH06_1.0_2.0, BH06_3.0_4.0,								
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) Trip Blank 3		14-Feb-2018	19-Feb-2018	28-Feb-2018	✓	20-Feb-2018	28-Feb-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
Soil Glass Jar - Unpreserved (EP080-SD)		14-Feb-2018	19-Feb-2018	28-Feb-2018	✔	20-Feb-2018	28-Feb-2018	✔	
BH13_0.0_0.5,	BH13_0.5_1.0,								
BH13_1.0_2.0,	BH04_0.0_0.5,								
BH04_0.5_1.0,	BH04_1.0_2.0,								
BH04_2.0_3.0,	BH04_3.0_3.7,								
BH03_0.0_0.5,	BH03_0.5_1.0,								
BH03_1.0_2.0,	BH03_2.0_2.8,								
BH10_0.0_0.5,	BH10_0.5_1.0,								
BH10_1.0_1.45,	BH09_0.0_0.5,								
BH09_0.5_1.0,	BH19_0.0_0.5, BH09_1.0_1.65,								
BH18_0.0_0.5,									
BH17_0.0_0.5,	Triplicate_2A,								
Triplicate_2B,	BH05_0.0_0.5,								
BH05_0.5_1.0,	BH05_1.0_2.0,								
BH05_2.0_3.0,	BH05_3.0_4.0,								
BH05_4.0_4.3,	BH06_0.0_0.5,								
BH06_0.5_1.0,	BH06_1.0_2.0,								
BH06_2.0_3.0,	BH06_3.0_4.0,								
Duplicate_1A									
Soil Glass Jar - Unpreserved (EP071-SD)		14-Feb-2018	19-Feb-2018	28-Feb-2018	✔	23-Feb-2018	31-Mar-2018	✔	
BH13_0.0_0.5,	BH13_0.5_1.0,								
BH13_1.0_2.0,	BH04_0.0_0.5,								
BH04_0.5_1.0,	BH04_1.0_2.0,								
BH04_2.0_3.0,	BH04_3.0_3.7,								
BH03_0.0_0.5,	BH03_0.5_1.0,								
BH03_1.0_2.0,	BH03_2.0_2.8,								
BH10_0.0_0.5,	BH10_0.5_1.0,								
BH10_1.0_1.45,	BH09_0.0_0.5,								
BH09_0.5_1.0,	BH19_0.0_0.5, BH09_1.0_1.65,								
BH18_0.0_0.5									
Soil Glass Jar - Unpreserved (EP071-SD)		14-Feb-2018	20-Feb-2018	28-Feb-2018	✔	22-Feb-2018	01-Apr-2018	✔	
BH17_0.0_0.5,	Triplicate_2A,								
Triplicate_2B,	BH05_0.0_0.5,								
BH05_0.5_1.0,	BH05_1.0_2.0,								
BH05_2.0_3.0,	BH05_3.0_4.0,								
BH05_4.0_4.3,	BH06_0.0_0.5,								
BH06_0.5_1.0,	BH06_1.0_2.0,								
BH06_2.0_3.0,	BH06_3.0_4.0,								
Duplicate_1A									

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date		Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
Soil Glass Jar - Unpreserved (EP080-SD)			14-Feb-2018	19-Feb-2018	28-Feb-2018	✓	20-Feb-2018	28-Feb-2018	✓
BH13_0.0_0.5,	BH13_0.5_1.0,								
BH13_1.0_2.0,	BH04_0.0_0.5,								
BH04_0.5_1.0,	BH04_1.0_2.0,								
BH04_2.0_3.0,	BH04_3.0_3.7,								
BH03_0.0_0.5,	BH03_0.5_1.0,								
BH03_1.0_2.0,	BH03_2.0_2.8,								
BH10_0.0_0.5,	BH10_0.5_1.0,								
BH10_1.0_1.45,	BH09_0.0_0.5,								
BH09_0.5_1.0,	BH19_0.0_0.5, BH09_1.0_1.65,								
BH18_0.0_0.5,									
BH17_0.0_0.5,	TriPLICATE_2A,								
TriPLICATE_2B,	BH05_0.0_0.5,								
BH05_0.5_1.0,	BH05_1.0_2.0,								
BH05_2.0_3.0,	BH05_3.0_4.0,								
BH05_4.0_4.3,	BH06_0.0_0.5,								
BH06_0.5_1.0,	BH06_1.0_2.0,								
BH06_2.0_3.0,	BH06_3.0_4.0,								
Duplicate_1A									
EP080-SD: BTEXN									
Soil Glass Jar - Unpreserved (EP080-SD)			14-Feb-2018	19-Feb-2018	28-Feb-2018	✓	20-Feb-2018	28-Feb-2018	✓
BH13_0.0_0.5,	BH13_0.5_1.0,								
BH13_1.0_2.0,	BH04_0.0_0.5,								
BH04_0.5_1.0,	BH04_1.0_2.0,								
BH04_2.0_3.0,	BH04_3.0_3.7,								
BH03_0.0_0.5,	BH03_0.5_1.0,								
BH03_1.0_2.0,	BH03_2.0_2.8,								
BH10_0.0_0.5,	BH10_0.5_1.0,								
BH10_1.0_1.45,	BH09_0.0_0.5,								
BH09_0.5_1.0,	BH19_0.0_0.5, BH09_1.0_1.65,								
BH18_0.0_0.5,									
BH17_0.0_0.5,	TriPLICATE_2A,								
TriPLICATE_2B,	BH05_0.0_0.5,								
BH05_0.5_1.0,	BH05_1.0_2.0,								
BH05_2.0_3.0,	BH05_3.0_4.0,								
BH05_4.0_4.3,	BH06_0.0_0.5,								
BH06_0.5_1.0,	BH06_1.0_2.0,								
BH06_2.0_3.0,	BH06_3.0_4.0,								
Duplicate_1A									



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Soil Glass Jar - Unpreserved (EP130)		14-Feb-2018	22-Feb-2018	28-Feb-2018	✓	22-Feb-2018	03-Apr-2018	✓
BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH04_2.0_3.0, BH03_0.0_0.5, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH18_0.0_0.5, BH17_0.0_0.5, Triplicate_2B, BH05_0.5_1.0, BH05_2.0_3.0, BH05_4.0_4.3, BH06_0.5_1.0, BH06_2.0_3.0, Duplicate_1A	BH13_0.5_1.0, BH04_0.0_0.5, BH04_1.0_2.0, BH04_3.0_3.7, BH03_0.5_1.0, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH19_0.0_0.5, Triplicate_2A, BH05_0.0_0.5, BH05_1.0_2.0, BH05_3.0_4.0, BH06_0.0_0.5, BH06_1.0_2.0, BH06_3.0_4.0,							
EP131A: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP131A)		14-Feb-2018	22-Feb-2018	28-Feb-2018	✓	22-Feb-2018	03-Apr-2018	✓
BH13_0.0_0.5, BH13_1.0_2.0, BH04_0.5_1.0, BH04_2.0_3.0, BH03_0.0_0.5, BH03_1.0_2.0, BH10_0.0_0.5, BH10_1.0_1.45, BH09_0.5_1.0, BH18_0.0_0.5, BH17_0.0_0.5, Triplicate_2B, BH05_0.5_1.0, BH05_2.0_3.0, BH05_4.0_4.3, BH06_0.5_1.0, BH06_2.0_3.0, Duplicate_1A	BH13_0.5_1.0, BH04_0.0_0.5, BH04_1.0_2.0, BH04_3.0_3.7, BH03_0.5_1.0, BH03_2.0_2.8, BH10_0.5_1.0, BH09_0.0_0.5, BH19_0.0_0.5, Triplicate_2A, BH05_0.0_0.5, BH05_1.0_2.0, BH05_3.0_4.0, BH06_0.0_0.5, BH06_1.0_2.0, BH06_3.0_4.0,							



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date		Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP131B: Polychlorinated Biphenyls (as Aroclors)									
Soil Glass Jar - Unpreserved (EP131B)		14-Feb-2018	22-Feb-2018	28-Feb-2018	✓	22-Feb-2018	03-Apr-2018	✓	
BH13_0.0_0.5,	BH13_0.5_1.0,								
BH13_1.0_2.0,	BH04_0.0_0.5,								
BH04_0.5_1.0,	BH04_1.0_2.0,								
BH04_2.0_3.0,	BH04_3.0_3.7,								
BH03_0.0_0.5,	BH03_0.5_1.0,								
BH03_1.0_2.0,	BH03_2.0_2.8,								
BH10_0.0_0.5,	BH10_0.5_1.0,								
BH10_1.0_1.45,	BH09_0.0_0.5,								
BH09_0.5_1.0,	BH19_0.0_0.5, BH09_1.0_1.65,								
BH18_0.0_0.5,									
BH17_0.0_0.5,	Triplicate_2A,								
Triplicate_2B,	BH05_0.0_0.5,								
BH05_0.5_1.0,	BH05_1.0_2.0,								
BH05_2.0_3.0,	BH05_3.0_4.0,								
BH05_4.0_4.3,	BH06_0.0_0.5,								
BH06_0.5_1.0,	BH06_1.0_2.0,								
BH06_2.0_3.0,	BH06_3.0_4.0,								
Duplicate_1A									
EP132B: Polynuclear Aromatic Hydrocarbons									
Soil Glass Jar - Unpreserved (EP132B-SD)		14-Feb-2018	20-Feb-2018	28-Feb-2018	✓	21-Feb-2018	01-Apr-2018	✓	
BH13_0.0_0.5,	BH13_0.5_1.0,								
BH13_1.0_2.0,	BH04_0.0_0.5,								
BH04_0.5_1.0,	BH04_1.0_2.0,								
BH04_2.0_3.0,	BH04_3.0_3.7,								
BH03_0.0_0.5,	BH03_0.5_1.0,								
BH03_1.0_2.0,	BH03_2.0_2.8,								
BH10_0.0_0.5,	BH10_0.5_1.0,								
BH10_1.0_1.45,	BH09_0.0_0.5,								
BH09_0.5_1.0,	BH19_0.0_0.5, BH09_1.0_1.65,								
BH18_0.0_0.5									
Soil Glass Jar - Unpreserved (EP132B-SD)		14-Feb-2018	21-Feb-2018	28-Feb-2018	✓	22-Feb-2018	02-Apr-2018	✓	
BH17_0.0_0.5,	Triplicate_2A,								
Triplicate_2B,	BH05_0.0_0.5,								
BH05_0.5_1.0,	BH05_1.0_2.0,								
BH05_2.0_3.0,	BH05_3.0_4.0,								
BH05_4.0_4.3,	BH06_0.0_0.5,								
BH06_0.5_1.0,	BH06_1.0_2.0,								
BH06_2.0_3.0,	BH06_3.0_4.0,								
Duplicate_1A									

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Unspecified; Lab-acidified (EG020A-T) RIN02, RIN03	14-Feb-2018	20-Feb-2018	13-Aug-2018	✓	20-Feb-2018	13-Aug-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Unspecified; Lab-acidified (EG035T) RIN02, RIN03	14-Feb-2018	----	----	----	20-Feb-2018	14-Mar-2018	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066) RIN02, RIN03	14-Feb-2018	21-Feb-2018	21-Feb-2018	✓	22-Feb-2018	02-Apr-2018	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068) RIN02, RIN03	14-Feb-2018	21-Feb-2018	21-Feb-2018	✓	22-Feb-2018	02-Apr-2018	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) RIN02, RIN03	14-Feb-2018	21-Feb-2018	21-Feb-2018	✓	22-Feb-2018	02-Apr-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) RIN02, RIN03	14-Feb-2018	21-Feb-2018	21-Feb-2018	✓	22-Feb-2018	02-Apr-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) RIN02, RIN03	14-Feb-2018	21-Feb-2018	21-Feb-2018	✓	22-Feb-2018	02-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RIN02, RIN03	14-Feb-2018	20-Feb-2018	28-Feb-2018	✓	20-Feb-2018	28-Feb-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) RIN02, RIN03	14-Feb-2018	21-Feb-2018	21-Feb-2018	✓	22-Feb-2018	02-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RIN02, RIN03	14-Feb-2018	20-Feb-2018	28-Feb-2018	✓	20-Feb-2018	28-Feb-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) RIN02, RIN03	14-Feb-2018	20-Feb-2018	28-Feb-2018	✓	20-Feb-2018	28-Feb-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia in Sediments	EK255A SD	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
ASS Field Screening Analysis	EA037	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fe and Al in Sediments by ICPAES	EG005-SD	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	5	39	12.82	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia in Sediments	EK255A SD	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus By Discrete Analyser	EK067G	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia in Sediments	EK255A SD	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fe and Al in Sediments by ICPAES	EG005-SD	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia in Sediments	EK255A SD	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Evaluation	Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected		
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	SOIL	In house: Referenced to Ahern et al 2004 - a suspension peroxide oxidation method following the 'sulfur trail' by determining the level of 1M KCL extractable sulfur and the sulfur level after oxidation of soil sulphides. The 'acidity trail' is followed by measurement of TAA, TPA and TSA. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Soil Particle Density	* EA152	SOIL	Soil Particle Density by AS 1289.3.5.1-2006 : Methods of testing soils for engineering purposes - Soil classification tests - Determination of the soil particle density of a soil - Standard method
Total Fe and Al in Sediments by ICPAES	EG005-SD	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3). LORs per NODG
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N - Soluble by Discrete Analyser	EK057G	SOIL	In house: Referenced to APHA 4500-NO ₃ - B. Nitrite in a water extract is determined by direct colourimetry by Discrete Analyser.
Nitrate as N - Soluble by Discrete Analyser	EK058G	SOIL	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate in the 1:5 soil:water extract is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N (NO _x)- Soluble by Discrete Analyser	EK059G	SOIL	In house: Thermo Scientific Method D08727 and NEMI (National Environmental Method Index) Method ID: 9171. This method covers the determination of total oxidised nitrogen (NO _x -N) and nitrate (NO ₃ -N) by calculation, Combined oxidised Nitrogen (NO ₂ +NO ₃) in a water extract is determined by direct colourimetry by Discrete Analyser.
TKN as N By Discrete Analyser	EK061G	SOIL	In house: Referenced to APHA 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Discrete Analyser.
Total Nitrogen as N (TKN + NO _x) By Discrete Analyser	EK062G	SOIL	In house: Referenced to APHA 4500 Norg/NO ₃ - Total Nitrogen is determined as the sum of TKN and Oxidised Nitrogen, each determined seperately as N.



Analytical Methods	Method	Matrix	Method Descriptions
Total Phosphorus By Discrete Analyser	EK067G	SOIL	In house: Referenced to APHA 4500 P-B&F This procedure involves sulfuric acid digestion and quantification using Discrete Analyser.
Ammonia in Sediments	EK255A SD	SOIL	In house: Referenced to Rayment and Higginson (1992) Method 7C1 and 7C2. This method measures exchangeable ammonium which is defined by the amount of ammonium released by shaking sediment with an un-buffered 2M potassium chloride solution.
Total Organic Carbon	EP003	SOIL	In house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.
TPH - Semivolatile Fraction	EP071-SD	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
TRH Volatiles/BTEX in Sediments	EP080-SD	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Organophosphorus Pesticides (Ultra-trace)	EP130	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup), 8141 (GC/FPD - Capillary Column) This technique is compliant with NEPM (2013) Schedule B(3).
Organochlorine Pesticides (Ultra-trace)	EP131A	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup), 3620 (Florisil), 8081/8082 (GC/μECD/μECD) This technique is compliant with NEPM (2013) Schedule B(3)
PCB's (Ultra-trace)	EP131B	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup), 3620 (Florisil), 8081/8082 (GC/μECD/μECD) This technique is compliant with NEPM (2013) Schedule B(3)
PAHs in Sediments by GCMS(SIM)	EP132B-SD	SOIL	In house: Referenced to USEPA 8270D GCMS Capillary column, SIM mode using large volume programmed temperature vaporisation injection.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	SOIL	In house: Referenced to APHA 4500 Norg- D; APHA 4500 P - H. Macro Kjeldahl digestion.
Drying only	EN020D	SOIL	In house
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Dry and Pulverise (up to 100g)	GEO30	SOIL	#
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In house: Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids for LVI (Non-concentrating)	ORG17D	SOIL	In house: 10g of sample, Na2SO4 and surrogate are extracted with 50mL 1:1 DCM/Acetone by end over end tumbling. An aliquot is concentrated by nitrogen blowdown to a reduced volume for analysis if required.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

QUALITY CONTROL REPORT

Work Order	: EB1804288	Page	: 1 of 41
Client	: AURECON AUSTRALASIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MS GEORGINA KERR	Contact	: John Pickering
Address	: P O BOX 1144 GLADSTONE QLD, AUSTRALIA 4680	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3173 8396	Telephone	: +61-7-3243 7222
Project	: 237374	Date Samples Received	: 16-Feb-2018
Order number	: ----	Date Analysis Commenced	: 19-Feb-2018
C-O-C number	: ----	Issue Date	: 27-Feb-2018
Sampler	: KAITLIN MULCAHY		
Site	: ----		
Quote number	: BN/004/18		
No. of samples received	: 41		
No. of samples analysed	: 40		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Greg Vogel	Laboratory Manager	Brisbane Acid Sulphate Soils, Stafford, QLD
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD
Nathan Webb	Asbestos Identifier	Newcastle - Inorganics, Mayfield West, NSW
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils, Stafford, QLD



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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 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
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-A: pH Measurements (QC Lot: 1447183)									
EB1804288-001	BH13_0.0_0.5	EA029: pH KCl (23A)	----	0.1	pH Unit	8.5	8.6	1.17	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	8.0	8.0	0.00	0% - 20%
EB1804288-014	BH10_0.5_1.0	EA029: pH KCl (23A)	----	0.1	pH Unit	6.6	6.8	2.98	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	7.5	7.6	0.00	0% - 20%
EA029-A: pH Measurements (QC Lot: 1447184)									
EB1804288-029	BH05_3.0_4.0	EA029: pH KCl (23A)	----	0.1	pH Unit	8.1	8.2	1.23	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	3.0	3.0	0.00	0% - 20%
EB1804407-009	Anonymous	EA029: pH KCl (23A)	----	0.1	pH Unit	8.4	8.5	1.18	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	7.9	7.8	0.00	0% - 20%
EA029-B: Acidity Trail (QC Lot: 1447183)									
EB1804288-001	BH13_0.0_0.5	EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	0.00	No Limit
EB1804288-014	BH10_0.5_1.0	EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-B: Acidity Trail (QC Lot: 1447183) - continued									
EB1804288-014	BH10_0.5_1.0	EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	0.00	No Limit
EA029-B: Acidity Trail (QC Lot: 1447184)									
EB1804288-029	BH05_3.0_4.0	EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	0.296	0.281	5.16	0% - 50%
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	0.296	0.281	5.16	0% - 50%
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	185	175	5.16	0% - 20%
		EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	185	175	5.16	0% - 20%
		EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
EB1804407-009	Anonymous	EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.097	0.103	6.12	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.477	0.488	2.32	0% - 20%
EB1804288-001	BH13_0.0_0.5	EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.380	0.385	1.33	0% - 50%
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	237	240	1.33	0% - 20%
		EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.031	0.031	0.00	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.041	0.037	10.4	No Limit
EB1804288-014	BH10_0.5_1.0	EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.020	<0.020	0.00	No Limit
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	<10	0.00	No Limit
		EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.118	0.118	0.00	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.900	0.926	2.79	0% - 20%
EB1804407-009	Anonymous	EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.782	0.807	3.22	0% - 20%
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	488	504	3.22	0% - 20%
		EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.072	0.074	3.70	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.735	0.717	2.48	0% - 20%
EB1804288-029	BH05_3.0_4.0	EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.663	0.642	3.17	0% - 20%
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	414	401	3.17	0% - 20%
		EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.118	0.118	0.00	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.900	0.926	2.79	0% - 20%
EB1804407-009	Anonymous	EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.782	0.807	3.22	0% - 20%
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	488	504	3.22	0% - 20%
		EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.118	0.118	0.00	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.900	0.926	2.79	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-D: Calcium Values (QC Lot: 1447183)									
EB1804288-001	BH13_0.0_0.5	EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.224	0.229	1.81	0% - 50%
		EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	1.75	1.75	0.0571	0% - 20%
		EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	1.53	1.52	0.334	0% - 20%
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	1.22	1.22	0.334	0% - 20%
		EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	763	760	0.334	0% - 20%
EB1804288-014	BH10_0.5_1.0	EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.102	0.100	1.89	No Limit
		EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	0.133	0.120	10.4	No Limit
		EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	0.031	0.020	44.0	No Limit
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	0.025	<0.020	22.4	No Limit
		EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	16	<10	43.9	No Limit
EA029-D: Calcium Values (QC Lot: 1447184)									
EB1804288-029	BH05_3.0_4.0	EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.228	0.233	2.34	0% - 50%
		EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	0.346	0.348	0.496	0% - 50%
		EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	0.118	0.115	3.16	No Limit
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	0.095	0.092	3.16	No Limit
		EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	59	57	3.16	No Limit
EB1804407-009	Anonymous	EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.297	0.296	0.438	0% - 50%
		EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	3.14	3.16	0.572	0% - 20%
		EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	2.84	2.86	0.677	0% - 20%
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	2.27	2.29	0.677	0% - 20%
		EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	1420	1430	0.677	0% - 20%
EA029-E: Magnesium Values (QC Lot: 1447183)									
EB1804288-001	BH13_0.0_0.5	EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.152	0.156	2.46	No Limit
		EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.296	0.303	2.47	0% - 50%
		EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	0.144	0.147	2.48	No Limit
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.190	0.194	2.48	No Limit
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	118	121	2.48	0% - 50%
EB1804288-014	BH10_0.5_1.0	EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.104	0.104	0.00	No Limit
		EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.134	0.127	5.44	No Limit
		EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	0.029	0.023	25.2	No Limit
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.039	0.030	25.2	No Limit
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	24	19	25.2	No Limit
EA029-E: Magnesium Values (QC Lot: 1447184)									
EB1804288-029	BH05_3.0_4.0	EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.151	0.155	2.67	No Limit
		EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.244	0.231	5.42	0% - 50%
		EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	0.093	0.076	20.1	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-E: Magnesium Values (QC Lot: 1447184) - continued									
EB1804288-029	BH05_3.0_4.0	EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.123	0.100	20.1	No Limit
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	76	63	20.1	No Limit
EB1804407-009	Anonymous	EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.136	0.138	1.53	No Limit
		EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.265	0.263	0.535	0% - 50%
		EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	0.129	0.125	2.77	No Limit
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.170	0.165	2.77	No Limit
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	106	103	2.77	0% - 50%
EA029-F: Excess Acid Neutralising Capacity (QC Lot: 1447183)									
EB1804288-001	BH13_0.0_0.5	EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	3.52	3.45	2.07	0% - 20%
		EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	1.13	1.10	2.07	0% - 20%
		EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	704	689	2.07	0% - 20%
EB1804288-014	BH10_0.5_1.0	EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	0.588	0.579	1.46	0% - 20%
		EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	0.188	0.185	1.46	No Limit
		EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	117	116	1.46	0% - 50%
EA029-F: Excess Acid Neutralising Capacity (QC Lot: 1447184)									
EB1804407-009	Anonymous	EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	5.89	6.30	6.74	0% - 20%
		EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	1.88	2.02	6.74	0% - 20%
		EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	1180	1260	6.74	0% - 20%
EA029-H: Acid Base Accounting (QC Lot: 1447183)									
EB1804288-001	BH13_0.0_0.5	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.38	0.38	0.00	0% - 50%
		EA029: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.00	No Limit
		EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	18	18	0.00	0% - 50%
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit
		EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	237	240	1.33	0% - 20%
EB1804288-014	BH10_0.5_1.0	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.00	No Limit

Page : 6 of 41
 Work Order : EB1804288
 Client : AURECON AUSTRALASIA PTY LTD
 Project : 237374



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-H: Acid Base Accounting (QC Lot: 1447183) - continued									
EB1804288-014	BH10_0.5_1.0	EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	<1	0.00	No Limit
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit
		EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EA029-H: Acid Base Accounting (QC Lot: 1447184)									
EB1804288-029	BH05_3.0_4.0	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	0.42	0.40	4.10	0% - 20%
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.42	0.40	4.10	0% - 20%
		EA029: Liming Rate	----	1	kg CaCO3/t	20	19	0.00	0% - 50%
		EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	20	19	0.00	0% - 50%
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	261	250	4.10	0% - 20%
		EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	261	250	4.10	0% - 20%
EB1804407-009	Anonymous	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.78	0.81	3.22	0% - 20%
		EA029: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.00	No Limit
		EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	36	38	3.22	0% - 20%
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit
		EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	488	504	3.22	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 1448282)									
EB1804288-006	BH04_1.0_2.0	EA037: pH (F)	----	0.1	pH Unit	8.8	8.8	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.6	5.7	0.00	0% - 20%
EB1804407-006	Anonymous	EA037: pH (F)	----	0.1	pH Unit	8.9	8.9	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.8	2.8	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1440713)									
EB1804288-001	BH13_0.0_0.5	EA055: Moisture Content	----	1	%	35.7	36.6	2.45	0% - 20%
EB1804288-011	BH03_1.0_2.0	EA055: Moisture Content	----	1	%	39.6	38.9	1.83	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1440725)									
EB1804288-021	BH17_0.0_0.5	EA055: Moisture Content	----	1	%	24.0	23.6	1.64	0% - 20%
EB1804288-032	BH06_0.5_1.0	EA055: Moisture Content	----	1	%	45.2	44.4	1.82	0% - 20%
EG005-SD: Total Metals in Sediments by ICP-AES (QC Lot: 1440704)									
EB1804288-001	BH13_0.0_0.5	EG005-SD: Aluminium	7429-90-5	50	mg/kg	8380	8280	1.30	0% - 20%
		EG005-SD: Iron	7439-89-6	50	mg/kg	23000	23200	0.888	0% - 20%
EB1804288-011	BH03_1.0_2.0	EG005-SD: Aluminium	7429-90-5	50	mg/kg	13600	11500	17.3	0% - 20%
		EG005-SD: Iron	7439-89-6	50	mg/kg	23800	22400	5.96	0% - 20%
EG005-SD: Total Metals in Sediments by ICP-AES (QC Lot: 1440714)									
EB1804288-021	BH17_0.0_0.5	EG005-SD: Aluminium	7429-90-5	50	mg/kg	16000	13600	16.8	0% - 20%
		EG005-SD: Iron	7439-89-6	50	mg/kg	46700	# 33200	33.6	0% - 20%
EB1804288-032	BH06_0.5_1.0	EG005-SD: Aluminium	7429-90-5	50	mg/kg	18600	18100	3.01	0% - 20%
		EG005-SD: Iron	7439-89-6	50	mg/kg	26700	28000	4.56	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1440705)									
EB1804288-001	BH13_0.0_0.5	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.3	0.2	0.00	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	<0.50	0.00	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	14.7	13.6	7.24	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	13.4	11.5	15.2	0% - 50%
		EG020-SD: Chromium	7440-47-3	1	mg/kg	16.0	15.9	0.00	0% - 50%
		EG020-SD: Copper	7440-50-8	1	mg/kg	14.4	15.0	3.77	0% - 50%
		EG020-SD: Lead	7439-92-1	1	mg/kg	6.4	6.5	2.17	No Limit
		EG020-SD: Nickel	7440-02-0	1	mg/kg	10.1	9.9	2.03	0% - 50%
		EG020-SD: Zinc	7440-66-6	1	mg/kg	33.5	33.5	0.00	0% - 20%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	362	436	18.6	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2	mg/kg	53.3	54.1	1.45	0% - 20%
EB1804288-011	BH03_1.0_2.0	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.3	0.3	0.00	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	<0.50	0.00	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	11.4	11.0	3.13	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	9.10	8.77	3.74	No Limit
		EG020-SD: Chromium	7440-47-3	1	mg/kg	19.9	18.8	5.49	0% - 50%
		EG020-SD: Copper	7440-50-8	1	mg/kg	23.6	23.3	1.28	0% - 20%
		EG020-SD: Lead	7439-92-1	1	mg/kg	9.0	8.9	0.00	No Limit
		EG020-SD: Nickel	7440-02-0	1	mg/kg	10.8	10.4	3.72	0% - 50%
		EG020-SD: Zinc	7440-66-6	1	mg/kg	35.4	34.4	2.84	0% - 20%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	356	333	6.49	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2	mg/kg	48.6	46.5	4.27	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1440715)									
EB1804288-021	BH17_0.0_0.5	EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	21.5	25.4	16.8	0% - 20%
		EG020-SD: Copper	7440-50-8	1	mg/kg	26.0	31.5	18.9	0% - 20%
		EG020-SD: Lead	7439-92-1	1	mg/kg	6.0	9.3	42.4	No Limit
		EG020-SD: Zinc	7440-66-6	1	mg/kg	36.9	# 48.8	27.9	0% - 20%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	1370	# 2460	56.6	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2	mg/kg	86.3	103	17.5	0% - 20%
EB1804288-021	BH17_0.0_0.5	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.3	0.3	0.00	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	<0.50	0.00	No Limit
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	11.2	7.92	34.5	0% - 50%
		EG020-SD: Chromium	7440-47-3	1	mg/kg	21.5	20.4	5.50	0% - 20%
		EG020-SD: Nickel	7440-02-0	1	mg/kg	17.1	13.5	23.6	0% - 50%

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1440715) - continued									
EB1804288-032	BH06_0.5_1.0	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.3	0.3	0.00	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	<0.50	0.00	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	11.1	11.0	1.03	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	8.16	8.50	4.15	No Limit
		EG020-SD: Chromium	7440-47-3	1	mg/kg	29.0	27.8	4.24	0% - 20%
		EG020-SD: Copper	7440-50-8	1	mg/kg	21.3	20.4	4.06	0% - 20%
		EG020-SD: Lead	7439-92-1	1	mg/kg	8.4	8.0	4.74	No Limit
		EG020-SD: Nickel	7440-02-0	1	mg/kg	12.6	12.3	2.78	0% - 50%
		EG020-SD: Zinc	7440-66-6	1	mg/kg	41.5	40.2	3.17	0% - 20%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	220	214	2.59	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2	mg/kg	53.2	50.9	4.47	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1440706)									
EB1804288-001	BH13_0.0_0.5	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.02	0.02	0.00	0% - 20%
EB1804288-011	BH03_1.0_2.0	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.02	0.02	0.00	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1440716)									
EB1804288-021	BH17_0.0_0.5	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.01	0.02	0.00	0% - 20%
EB1804288-032	BH06_0.5_1.0	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.02	0.02	0.00	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 1440710)									
EB1804288-001	BH13_0.0_0.5	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1804288-011	BH03_1.0_2.0	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 1440720)									
EB1804288-021	BH17_0.0_0.5	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1804288-032	BH06_0.5_1.0	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 1440709)									
EB1804288-001	BH13_0.0_0.5	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1804288-011	BH03_1.0_2.0	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 1440719)									
EB1804288-021	BH17_0.0_0.5	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.4	0.2	64.4	No Limit
EB1804288-032	BH06_0.5_1.0	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 1440708)									
EB1804288-001	BH13_0.0_0.5	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	480	500	4.07	0% - 20%
EB1804288-011	BH03_1.0_2.0	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	470	470	0.00	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 1440718)									
EB1804288-021	BH17_0.0_0.5	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	210	240	14.4	0% - 50%
EB1804288-032	BH06_0.5_1.0	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	460	480	4.62	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 1440707)									

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 Work Order : EB1804288
 Client : AURECON AUSTRALASIA PTY LTD
 Project : 237374



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 1440707) - continued									
EB1804288-001	BH13_0.0_0.5	EK067G: Total Phosphorus as P	----	2	mg/kg	346	287	18.6	0% - 20%
EB1804288-011	BH03_1.0_2.0	EK067G: Total Phosphorus as P	----	2	mg/kg	270	271	0.00	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 1440717)									
EB1804288-021	BH17_0.0_0.5	EK067G: Total Phosphorus as P	----	2	mg/kg	496	591	17.5	0% - 20%
EB1804288-032	BH06_0.5_1.0	EK067G: Total Phosphorus as P	----	2	mg/kg	209	214	2.51	0% - 20%
EK255A SD: Ammonia in Sediment (QC Lot: 1450342)									
EB1804288-001	BH13_0.0_0.5	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	8.8	8.8	0.00	0% - 20%
EB1804288-011	BH03_1.0_2.0	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	14.1	13.5	3.88	0% - 20%
EK255A SD: Ammonia in Sediment (QC Lot: 1450343)									
EB1804288-021	BH17_0.0_0.5	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	2.9	2.4	18.7	0% - 50%
EB1804288-032	BH06_0.5_1.0	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	21.4	19.9	7.22	0% - 20%
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 1447323)									
EB1804288-001	BH13_0.0_0.5	EP003: Total Organic Carbon	----	0.02	%	0.85	0.85	0.00	0% - 20%
EB1804288-011	BH03_1.0_2.0	EP003: Total Organic Carbon	----	0.02	%	0.66	0.64	2.78	0% - 20%
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 1447324)									
EB1804288-021	BH17_0.0_0.5	EP003: Total Organic Carbon	----	0.02	%	0.07	0.06	19.9	No Limit
EB1804288-032	BH06_0.5_1.0	EP003: Total Organic Carbon	----	0.02	%	0.70	0.70	0.00	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1440723)									
EB1804288-040	Trip Blank 3	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1440723)									
EB1804288-040	Trip Blank 3	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 1440723)									
EB1804288-040	Trip Blank 3	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1440711)									
EB1804288-001	BH13_0.0_0.5	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EB1804288-010	BH03_0.5_1.0	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1440712)									
EB1804288-001	BH13_0.0_0.5	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
EB1804288-010	BH03_0.5_1.0	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1440721)									
EB1804288-021	BH17_0.0_0.5	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	3	4	0.00	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	3	4	28.6	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EB1804288-031	BH06_0.0_0.5	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	4	29.8	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	9	100	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	5	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1440722)									
EB1804288-021	BH17_0.0_0.5	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
EB1804288-031	BH06_0.0_0.5	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1440711)									
EB1804288-001	BH13_0.0_0.5	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EB1804288-010	BH03_0.5_1.0	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1440712)									
EB1804288-001	BH13_0.0_0.5	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	No Limit
EB1804288-010	BH03_0.5_1.0	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1440721)									
EB1804288-021	BH17_0.0_0.5	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	5	5	0.00	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	5	5	0.00	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EB1804288-031	BH06_0.0_0.5	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	5	6	28.4	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	5	6	18.2	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1440722)									
EB1804288-021	BH17_0.0_0.5	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	No Limit
EB1804288-031	BH06_0.0_0.5	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD: BTEXN (QC Lot: 1440712)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080-SD: BTEXN (QC Lot: 1440712) - continued									
EB1804288-001	BH13_0.0_0.5	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EB1804288-010	BH03_0.5_1.0	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2
EP080-SD: Toluene	108-88-3			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP080-SD: Ethylbenzene	100-41-4			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP080-SD: meta- & para-Xylene	108-38-3 106-42-3			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP080-SD: ortho-Xylene	95-47-6			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP080-SD: Total Xylenes	----			0.2	mg/kg	<0.5	<0.5	0.00	No Limit
EP080-SD: Naphthalene	91-20-3			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP080-SD: BTEXN (QC Lot: 1440722)									
EB1804288-021	BH17_0.0_0.5	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EB1804288-031	BH06_0.0_0.5	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2
EP080-SD: Toluene	108-88-3			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP080-SD: Ethylbenzene	100-41-4			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP080-SD: meta- & para-Xylene	108-38-3 106-42-3			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP080-SD: ortho-Xylene	95-47-6			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP080-SD: Total Xylenes	----			0.2	mg/kg	<0.5	<0.5	0.00	No Limit
EP080-SD: Naphthalene	91-20-3			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1444801)									
EB1804288-001	BH13_0.0_0.5	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1444801) - continued									
EB1804288-001	BH13_0.0_0.5	EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EB1804288-011	BH03_1.0_2.0	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1444819)									
EB1804288-021	BH17_0.0_0.5	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1444819) - continued									
EB1804288-021	BH17_0.0_0.5	EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EB1804288-032	BH06_0.5_1.0	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EP131A: Organochlorine Pesticides (QC Lot: 1444803)									
EB1804288-001	BH13_0.0_0.5	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131A: Organochlorine Pesticides (QC Lot: 1444803) - continued									
EB1804288-001	BH13_0.0_0.5	EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EB1804288-011	BH03_1.0_2.0	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131A: Organochlorine Pesticides (QC Lot: 1444803) - continued									
EB1804288-011	BH03_1.0_2.0	EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EP131A: Organochlorine Pesticides (QC Lot: 1444821)									
EB1804288-021	BH17_0.0_0.5	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EB1804288-032	BH06_0.5_1.0	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131A: Organochlorine Pesticides (QC Lot: 1444821) - continued									
EB1804288-032	BH06_0.5_1.0	EP131A: 4.4'-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4.4'-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4.4'-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1444802)									
EB1804288-001	BH13_0.0_0.5	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
EB1804288-011	BH03_1.0_2.0	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1444820)									
EB1804288-021	BH17_0.0_0.5	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	<5.0	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1444820) - continued									
EB1804288-021	BH17_0.0_0.5	EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
EB1804288-032	BH06_0.5_1.0	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1444830)							
EB1804288-001	BH13_0.0_0.5	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	<4	0.00	No Limit
			205-82-3						
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit
EB1804288-011	BH03_1.0_2.0	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1444830) - continued									
EB1804288-011	BH03_1.0_2.0	EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	<4	0.00	No Limit
			205-82-3						
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	8	13	44.8	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	8	13	47.6	No Limit
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit		
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1444835)									
EB1804288-021	BH17_0.0_0.5	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	<4	0.00	No Limit
			205-82-3						
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit
		EB1804288-032	BH06_0.5_1.0	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1444835) - continued									
EB1804288-032	BH06_0.5_1.0	EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	<4	0.00	No Limit
			205-82-3						
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	47	37	24.0	0% - 50%
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1,2,3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	47	37	23.8	0% - 50%
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1443488)									
EB1804219-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0010	161	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	0.00	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.026	0.028	8.13	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.002	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.192	0.192	0.00	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.005	0.006	30.7	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.002	69.6	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.003	91.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.048	0.038	22.6	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EB1804310-005	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001
EG020A-T: Arsenic	7440-38-2			0.001	mg/L	0.002	0.002	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1443488) - continued									
EB1804310-005	Anonymous	EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.886	0.872	1.49	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.016	0.016	0.00	0% - 50%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.183	0.180	1.49	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.005	0.005	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.098	0.101	3.31	0% - 50%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	0.60	0.59	0.00	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1443495)									
EB1804288-041	RIN02	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EB1804374-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1441038)									
EB1804225-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<0.02 mg/L	<20	0.00	No Limit
EB1804407-013	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1446612)									
EB1804578-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	0.21 mg/L	<100	72.3	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<0.05 mg/L	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	0.09 mg/L	<50	56.9	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1441038)									
EB1804225-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<0.02 mg/L	<20	0.00	No Limit
EB1804407-013	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1446612)									
EB1804578-001	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<0.10 mg/L	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	0.28 mg/L	<100	93.5	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<0.10 mg/L	<100	0.00	No Limit
EP080: BTEXN (QC Lot: 1441038)									
EB1804225-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<0.001 mg/L	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<0.005 mg/L	<5	0.00	No Limit
EB1804407-013	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1441038) - continued									
EB1804407-013	Anonymous	EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
		106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA029-A: pH Measurements (QCLot: 1447183)								
EA029: pH KCl (23A)	----	0.1	pH Unit	<0.1	4.6 pH Unit	102	70	130
EA029: pH OX (23B)	----	0.1	pH Unit	<0.1	4.3 pH Unit	101	70	130
EA029-A: pH Measurements (QCLot: 1447184)								
EA029: pH KCl (23A)	----	0.1	pH Unit	<0.1	4.6 pH Unit	102	70	130
EA029: pH OX (23B)	----	0.1	pH Unit	<0.1	4.3 pH Unit	100	70	130
EA029-B: Acidity Trail (QCLot: 1447183)								
EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	17.7 mole H+ / t	90.4	70	130
EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	35.2 mole H+ / t	100	70	130
EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	----	----	----	----
EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029-B: Acidity Trail (QCLot: 1447184)								
EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	17.7 mole H+ / t	89.7	70	130
EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	35.2 mole H+ / t	100	70	130
EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	----	----	----	----
EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029-C: Sulfur Trail (QCLot: 1447183)								
EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.020	0.052 % S	94.9	70	130
EA029: Peroxide Sulfur (23De)	----	0.02	% S	<0.020	0.158 % S	95.4	70	130
EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.020	----	----	----	----
EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	----	----	----	----
EA029-C: Sulfur Trail (QCLot: 1447184)								
EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.020	0.052 % S	94.3	70	130
EA029: Peroxide Sulfur (23De)	----	0.02	% S	<0.020	0.158 % S	101	70	130
EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.020	----	----	----	----
EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	----	----	----	----
EA029-D: Calcium Values (QCLot: 1447183)								
EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	<0.020	0.097 % Ca	112	70	130
EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	<0.020	0.22 % Ca	99.8	70	130
EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.020	----	----	----	----



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA029-D: Calcium Values (QCLot: 1447183) - continued								
EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.020	----	----	----	----
EA029-D: Calcium Values (QCLot: 1447184)								
EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	<0.020	0.097 % Ca	113	70	130
EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	<0.020	0.22 % Ca	99.5	70	130
EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.020	----	----	----	----
EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.020	----	----	----	----
EA029-E: Magnesium Values (QCLot: 1447183)								
EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	<0.020	0.25 % Mg	97.4	70	130
EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	<0.020	0.234 % Mg	99.0	70	130
EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.020	----	----	----	----
EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	<0.020	----	----	----	----
EA029-E: Magnesium Values (QCLot: 1447184)								
EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	<0.020	0.25 % Mg	97.0	70	130
EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	<0.020	0.234 % Mg	93.9	70	130
EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.020	----	----	----	----
EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	<0.020	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity (QCLot: 1447183)								
EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	<0.020	----	----	----	----
EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	<0.020	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity (QCLot: 1447184)								
EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	<0.020	----	----	----	----
EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	<0.020	----	----	----	----
EA029-H: Acid Base Accounting (QCLot: 1447183)								
EA029: ANC Fineness Factor	----	0.5	-	<0.5	----	----	----	----
EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	----	----	----	----



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA029-H: Acid Base Accounting (QCLot: 1447184)								
EA029: ANC Fineness Factor	----	0.5	-	<0.5	----	----	----	----
EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	----	----	----	----
EG005-SD: Total Metals in Sediments by ICP-AES (QCLot: 1440704)								
EG005-SD: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005-SD: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005-SD: Total Metals in Sediments by ICP-AES (QCLot: 1440714)								
EG005-SD: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005-SD: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1440705)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1	mg/kg	<1.00	116.3 mg/kg	94.9	80	124
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	1.43 mg/kg	96.2	87	122
EG020-SD: Chromium	7440-47-3	1	mg/kg	<1.0	20.5 mg/kg	91.5	79	129
EG020-SD: Copper	7440-50-8	1	mg/kg	<1.0	52.9 mg/kg	94.9	85	118
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	----	----	----	----
EG020-SD: Lead	7439-92-1	1	mg/kg	<1.0	66.3 mg/kg	118	86	119
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	----	----	----	----
EG020-SD: Nickel	7440-02-0	1	mg/kg	<1.0	14.72 mg/kg	95.7	77	123
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	----	----	----	----
EG020-SD: Zinc	7440-66-6	1	mg/kg	<1.0	182.3 mg/kg	98.3	71	127
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1440715)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1	mg/kg	<1.00	116.3 mg/kg	90.9	80	124
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	1.43 mg/kg	93.2	87	122
EG020-SD: Chromium	7440-47-3	1	mg/kg	<1.0	20.5 mg/kg	101	79	129
EG020-SD: Copper	7440-50-8	1	mg/kg	<1.0	52.9 mg/kg	93.2	85	118
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	----	----	----	----
EG020-SD: Lead	7439-92-1	1	mg/kg	<1.0	66.3 mg/kg	119	86	119
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	----	----	----	----
EG020-SD: Nickel	7440-02-0	1	mg/kg	<1.0	14.72 mg/kg	99.4	77	123
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1440715) - continued								
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	----	----	----	----
EG020-SD: Zinc	7440-66-6	1	mg/kg	<1.0	182.3 mg/kg	97.8	71	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1440706)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.0555 mg/kg	98.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1440716)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.0555 mg/kg	95.5	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1440710)								
EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	2.5 mg/kg	94.9	83	111
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1440720)								
EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	2.5 mg/kg	94.8	83	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1440709)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	94.5	86	115
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1440719)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	93.2	86	115
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 1440708)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20 <20	877 mg/kg 3644 mg/kg	95.2 86.1	70 70	110 110
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 1440718)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20 <20	877 mg/kg 3644 mg/kg	101 90.1	70 70	110 110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1440707)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2 <2	766 mg/kg 1200 mg/kg	89.3 95.5	70 70	110 110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1440717)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2 <2	766 mg/kg 1200 mg/kg	86.2 100	70 70	110 110
EK255A SD: Ammonia in Sediment (QCLot: 1450342)								
EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	<0.2	1 mg/kg	102	79	121
EK255A SD: Ammonia in Sediment (QCLot: 1450343)								
EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	<0.2	1 mg/kg	116	79	121
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 1447323)								
EP003: Total Organic Carbon	----	0.02	%	<0.02	0.44 %	106	70	130
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 1447324)								
EP003: Total Organic Carbon	----	0.02	%	<0.02	0.44 %	106	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1440723)								



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1440723) - continued								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	75.2	72	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1440723)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	74.5	70	119
EP080: BTEXN (QCLot: 1440723)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	78.5	69	118
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	89.5	73	123
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	85.5	73	115
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	84.7	75	115
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	82.6	75	115
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	83.0	71	113
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440711)								
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	159 mg/kg	92.4	43	126
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	266 mg/kg	96.9	66	140
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440712)								
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	16 mg/kg	85.3	66	120
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440721)								
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	159 mg/kg	95.0	43	126
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	266 mg/kg	95.8	66	140
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440722)								
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	16 mg/kg	76.2	66	120
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440711)								
EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	214 mg/kg	94.4	40	134
EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	198 mg/kg	94.6	66	136
EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440712)								
EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	18.5 mg/kg	85.0	66	119
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440721)								
EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	214 mg/kg	97.2	40	134
EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	198 mg/kg	95.1	66	136
EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440722)								
EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	18.5 mg/kg	73.8	66	119
EP080-SD: BTEXN (QCLot: 1440712)								
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	98.6	73	105
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	1 mg/kg	100	73	105
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	1 mg/kg	97.9	67	104
EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	2 mg/kg	106	66	106
	106-42-3							
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	1 mg/kg	102	68	105
EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	1 mg/kg	105	72	115
EP080-SD: BTEXN (QCLot: 1440722)								
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	86.8	73	105
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	1 mg/kg	99.1	73	105
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	1 mg/kg	94.0	67	104
EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	2 mg/kg	98.9	66	106
	106-42-3							
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	1 mg/kg	93.8	68	105
EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	1 mg/kg	98.7	72	115
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444801)								
EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	50 µg/kg	87.3	49	117
EP130: Carbophenothion	786-19-6	10	µg/kg	<10	50 µg/kg	78.6	54	104
EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	5 µg/kg	93.4	48	156
EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	50 µg/kg	92.3	53	119
EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	50 µg/kg	87.0	54	112
EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	50 µg/kg	86.5	52	108
EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	50 µg/kg	88.5	51	109
EP130: Diazinon	333-41-5	10	µg/kg	<10	50 µg/kg	81.5	57	121
EP130: Dichlorvos	62-73-7	10	µg/kg	<10	50 µg/kg	77.0	48	104
EP130: Dimethoate	60-51-5	10	µg/kg	<10	50 µg/kg	95.7	52	120
EP130: Ethion	563-12-2	10	µg/kg	<10	50 µg/kg	91.2	51	121
EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	50 µg/kg	95.6	50	120
EP130: Fenthion	55-38-9	10	µg/kg	<10	50 µg/kg	89.4	48	112
EP130: Malathion	121-75-5	10	µg/kg	<10	50 µg/kg	91.9	51	121
EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	50 µg/kg	78.5	45	127
EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	50 µg/kg	90.5	48	128



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444801) - continued								
EP130: Parathion	56-38-2	10	µg/kg	<10	50 µg/kg	88.4	49	125
EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	50 µg/kg	84.0	51	119
EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	50 µg/kg	89.6	48	120
EP130: Prothiofos	34643-46-4	10	µg/kg	<10	50 µg/kg	88.4	51	117
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444819)								
EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	50 µg/kg	89.2	49	117
EP130: Carbophenothion	786-19-6	10	µg/kg	<10	50 µg/kg	76.3	54	104
EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	5 µg/kg	91.1	48	156
EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	50 µg/kg	89.5	53	119
EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	50 µg/kg	91.2	54	112
EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	50 µg/kg	86.8	52	108
EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	50 µg/kg	95.1	51	109
EP130: Diazinon	333-41-5	10	µg/kg	<10	50 µg/kg	88.9	57	121
EP130: Dichlorvos	62-73-7	10	µg/kg	<10	50 µg/kg	79.7	48	104
EP130: Dimethoate	60-51-5	10	µg/kg	<10	50 µg/kg	95.6	52	120
EP130: Ethion	563-12-2	10	µg/kg	<10	50 µg/kg	89.3	51	121
EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	50 µg/kg	93.0	50	120
EP130: Fenthion	55-38-9	10	µg/kg	<10	50 µg/kg	92.2	48	112
EP130: Malathion	121-75-5	10	µg/kg	<10	50 µg/kg	91.6	51	121
EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	50 µg/kg	69.2	45	127
EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	50 µg/kg	83.0	48	128
EP130: Parathion	56-38-2	10	µg/kg	<10	50 µg/kg	91.4	49	125
EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	50 µg/kg	86.2	51	119
EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	50 µg/kg	89.6	48	120
EP130: Prothiofos	34643-46-4	10	µg/kg	<10	50 µg/kg	89.6	51	117
EP131A: Organochlorine Pesticides (QCLot: 1444803)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	109	38	139
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	106	18	136
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	115	31	131
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	106	37	140
EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	110	26	141
EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	88.2	35	129
EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	5 µg/kg	116	23	138
EP131A: Sum of DDD + DDE + DDT	72-54-8/72-5-9/50-2	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	5 µg/kg	106	30	140
EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	5 µg/kg	103	38	140
EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	5 µg/kg	115	32	152
EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	5 µg/kg	87.2	36	155

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 1444803) - continued								
EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	5 µg/kg	126	26	158
EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	5 µg/kg	114	20	118
EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	5 µg/kg	113	13	135
EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	5 µg/kg	71.7	39	155
EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	5 µg/kg	109	34	148
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	5 µg/kg	130	26	152
EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	5 µg/kg	106	31	137
EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	5 µg/kg	113	36	152
EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	5 µg/kg	116	36	142
EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	5 µg/kg	115	30	138
EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	----	----	----	----
EP131A: Organochlorine Pesticides (QCLot: 1444821)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	99.0	38	139
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	88.6	18	136
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	103	31	131
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	92.3	37	140
EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	85.2	26	141
EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	54.6	35	129
EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	5 µg/kg	94.7	23	138
EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	5 µg/kg	93.1	30	140
EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	5 µg/kg	78.8	38	140
EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	5 µg/kg	89.2	32	152
EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	5 µg/kg	92.0	36	155
EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	5 µg/kg	107	26	158
EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	5 µg/kg	82.2	20	118
EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	5 µg/kg	82.7	13	135
EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	5 µg/kg	96.4	39	155
EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	5 µg/kg	92.0	34	148
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	5 µg/kg	103	26	152
EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	5 µg/kg	90.9	31	137
EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	5 µg/kg	98.3	36	152
EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	5 µg/kg	86.1	36	142
EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	5 µg/kg	93.6	30	138
EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1444802)								



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1444802) - continued								
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	50 µg/kg	106	45	115
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	106	45	115
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1444820)								
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	50 µg/kg	102	45	115
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	102	45	115
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444830)								
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	82.7	63	129
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	89.0	64	128
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	79.2	65	129
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	82.5	68	132
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	80.6	68	124
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	79.3	64	134
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	75.1	65	131
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	73.8	64	130
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	73.2	67	133
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	76.2	62	130
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	79.9	65	133
EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	80.3	68	120
	205-82-3							
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	75.4	61	133
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	78.1	63	127
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	72.4	66	118
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	75.9	69	119
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	78.0	66	120
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	79.2	64	122
EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	76.1	64	120
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	79.9	68	136



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444830) - continued								
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444835)								
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	108	63	129
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	110	64	128
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	76.0	65	129
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	78.5	68	132
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	77.3	68	124
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	90.4	64	134
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	84.6	65	131
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	85.1	64	130
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	84.8	67	133
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	75.8	62	130
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	73.1	65	133
EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	80.2	68	120
	205-82-3							
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	81.7	61	133
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	80.3	63	127
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	76.9	66	118
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	79.9	69	119
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	85.0	66	120
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	84.5	64	122
EP132B-SD: Indeno(1,2,3.cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	81.1	64	120
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	81.1	68	136
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)
				Concentration		LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1443488)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.0	88	112
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	94.2	81	119
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.5 mg/L	107	70	130
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	107	88	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	105	89	115
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	107	89	115
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.2 mg/L	112	88	116
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	104	89	112
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	100	88	114
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	104	88	116



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020T: Total Metals by ICP-MS (QCLot: 1443488) - continued								
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	104	79	111
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	107	87	114
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.2 mg/L	103	84	114
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	108	82	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1443495)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.1	84	118
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1446610)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	122	55	131
EP068A: Organochlorine Pesticides (OC) (QCLot: 1446611)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	# 132	45	125
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	107	41	121
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	# 124	39	122
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	# 126	42	119
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	# 115	53	112
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	# 124	45	118
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	102	52	123
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	113	52	124
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	115	48	125
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	108	54	128
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	115	51	125
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	112	50	124
EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	112	56	122
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	# 136	47	129
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	114	50	126
EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	# 125	52	124
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	114	49	131
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	# 126	37	124
EP068: 4,4'-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	119	35	131
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	129	45	129
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	122	32	135
EP068: Total Chlordane (sum)	----	0.5	µg/L	<0.5	----	----	----	----
EP068: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.5	µg/L	<0.5	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60- 57-1	0.5	µg/L	<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1446611)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	# 118	49	115
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	# 154	44	118

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1446611) - continued								
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	25.2	16	49
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	# 124	41	111
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	122	44	129
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	# 124	50	118
EP068: Parathion-methyl	298-00-0	----	µg/L	----	5 µg/L	114	50	118
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	# 125	51	122
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	# 129	49	121
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	# 120	54	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	# 140	43	123
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	118	52	126
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	# 137	50	127
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	120	52	124
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	# 152	43	121
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	123	53	126
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	# 139	50	127
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	# 138	48	128
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	# 145	44	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1446609)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	10 µg/L	78.1	47	101
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	10 µg/L	97.4	46	109
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	10 µg/L	85.4	50	104
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	10 µg/L	107	50	114
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	10 µg/L	102	49	114
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	10 µg/L	112	48	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	10 µg/L	113	48	120
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	10 µg/L	110	48	119
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	10 µg/L	105	48	125
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	10 µg/L	100	45	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	10 µg/L	93.8	43	130
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	10 µg/L	107	46	130
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	10 µg/L	95.0	49	125
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	10 µg/L	102	40	132
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	10 µg/L	97.4	42	140
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	10 µg/L	99.1	39	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1441038)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	160 µg/L	102	76	122
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1446612)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1446612) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	1211 µg/L	84.8	38	114
EP071: C15 - C28 Fraction	----	100	µg/L	<100	2103 µg/L	93.0	50	132
EP071: C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1441038)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	185 µg/L	103	75	123
EP080: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
	X							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1446612)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	1696 µg/L	87.8	43	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	1496 µg/L	93.8	49	134
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
EP080: BTEXN (QCLot: 1441038)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	106	77	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	102	78	122
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	98.2	78	119
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	20 µg/L	94.0	77	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	93.8	76	121
EP080: Total Xylenes	----	2	µg/L	<2	----	----	----	----
EP080: Sum of BTEX	----	1	µg/L	<1	----	----	----	----
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	82.7	75	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
					MS	Low	High
Client sample ID	Method: Compound	CAS Number					
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1440705)							
EB1804288-002	BH13_0.5_1.0	EG020-SD: Arsenic	7440-38-2	50 mg/kg	89.1	70	130
		EG020-SD: Cadmium	7440-43-9	25 mg/kg	94.5	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	105	70	130
		EG020-SD: Copper	7440-50-8	50 mg/kg	86.3	70	130
		EG020-SD: Cobalt	7440-48-4	50 mg/kg	93.4	70	130
		EG020-SD: Lead	7439-92-1	50 mg/kg	117	70	130
		EG020-SD: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1440705) - continued							
EB1804288-002	BH13_0.5_1.0	EG020-SD: Nickel	7440-02-0	50 mg/kg	96.6	70	130
		EG020-SD: Vanadium	7440-62-2	50 mg/kg	80.7	70	130
		EG020-SD: Zinc	7440-66-6	50 mg/kg	95.7	70	130
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1440715)							
EB1804288-022	Triplicate_2A	EG020-SD: Arsenic	7440-38-2	50 mg/kg	89.6	70	130
		EG020-SD: Cadmium	7440-43-9	25 mg/kg	96.1	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	103	70	130
		EG020-SD: Copper	7440-50-8	50 mg/kg	95.1	70	130
		EG020-SD: Cobalt	7440-48-4	50 mg/kg	97.2	70	130
		EG020-SD: Lead	7439-92-1	50 mg/kg	113	70	130
		EG020-SD: Manganese	7439-96-5	50 mg/kg	73.1	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	95.7	70	130
		EG020-SD: Vanadium	7440-62-2	50 mg/kg	105	70	130
		EG020-SD: Zinc	7440-66-6	50 mg/kg	97.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1440706)							
EB1804288-002	BH13_0.5_1.0	EG035T-LL: Mercury	7439-97-6	0.5 mg/kg	79.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1440716)							
EB1804288-022	Triplicate_2A	EG035T-LL: Mercury	7439-97-6	0.5 mg/kg	74.2	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1440710)							
EB1804288-002	BH13_0.5_1.0	EK057G: Nitrite as N (Sol.)	14797-65-0	2 mg/kg	99.0	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1440720)							
EB1804288-022	Triplicate_2A	EK057G: Nitrite as N (Sol.)	14797-65-0	2 mg/kg	105	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1440709)							
EB1804288-002	BH13_0.5_1.0	EK059G: Nitrite + Nitrate as N (Sol.)	----	2 mg/kg	95.3	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1440719)							
EB1804288-022	Triplicate_2A	EK059G: Nitrite + Nitrate as N (Sol.)	----	2 mg/kg	93.6	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 1440708)							
EB1804288-002	BH13_0.5_1.0	EK061G: Total Kjeldahl Nitrogen as N	----	500 mg/kg	84.9	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 1440718)							
EB1804288-022	Triplicate_2A	EK061G: Total Kjeldahl Nitrogen as N	----	500 mg/kg	105	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1440707)							
EB1804288-002	BH13_0.5_1.0	EK067G: Total Phosphorus as P	----	100 mg/kg	87.7	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1440717)							
EB1804288-022	Triplicate_2A	EK067G: Total Phosphorus as P	----	100 mg/kg	118	70	130
EK255A SD: Ammonia in Sediment (QCLot: 1450342)							



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK255A SD: Ammonia in Sediment (QCLot: 1450342) - continued							
EB1804288-001	BH13_0.0_0.5	EK255A: Ammonia as N	7664-41-7	0.5 mg/kg	# Not Determined	70	130
EK255A SD: Ammonia in Sediment (QCLot: 1450343)							
EB1804288-021	BH17_0.0_0.5	EK255A: Ammonia as N	7664-41-7	0.5 mg/kg	# Not Determined	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440711)							
EB1804288-002	BH13_0.5_1.0	EP071-SD: C10 - C14 Fraction	----	159 mg/kg	90.0	70	130
		EP071-SD: C15 - C28 Fraction	----	266 mg/kg	94.1	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440712)							
EB1804288-002	BH13_0.5_1.0	EP080-SD: C6 - C9 Fraction	----	8 mg/kg	99.7	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440721)							
EB1804288-022	Triplicate_2A	EP071-SD: C10 - C14 Fraction	----	159 mg/kg	91.8	70	130
		EP071-SD: C15 - C28 Fraction	----	266 mg/kg	90.3	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440722)							
EB1804288-022	Triplicate_2A	EP080-SD: C6 - C9 Fraction	----	8 mg/kg	# 60.8	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440711)							
EB1804288-002	BH13_0.5_1.0	EP071-SD: >C10 - C16 Fraction	----	214 mg/kg	92.0	70	130
		EP071-SD: >C16 - C34 Fraction	----	198 mg/kg	91.5	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440712)							
EB1804288-002	BH13_0.5_1.0	EP080-SD: C6 - C10 Fraction	C6_C10	8 mg/kg	100	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440721)							
EB1804288-022	Triplicate_2A	EP071-SD: >C10 - C16 Fraction	----	214 mg/kg	93.7	70	130
		EP071-SD: >C16 - C34 Fraction	----	198 mg/kg	89.0	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440722)							
EB1804288-022	Triplicate_2A	EP080-SD: C6 - C10 Fraction	C6_C10	8 mg/kg	# 59.6	70	130
EP080-SD: BTEXN (QCLot: 1440712)							
EB1804288-002	BH13_0.5_1.0	EP080-SD: Benzene	71-43-2	2 mg/kg	95.3	70	130
		EP080-SD: Toluene	108-88-3	2 mg/kg	98.8	70	130
EP080-SD: BTEXN (QCLot: 1440722)							
EB1804288-022	Triplicate_2A	EP080-SD: Benzene	71-43-2	2 mg/kg	# 59.8	70	130
		EP080-SD: Toluene	108-88-3	2 mg/kg	73.1	70	130
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444801)							
EB1804288-001	BH13_0.0_0.5	EP130: Bromophos-ethyl	4824-78-6	50 µg/kg	75.0	36	144
		EP130: Carbophenothion	786-19-6	50 µg/kg	82.5	38	120
		EP130: Chlorfenvinphos (E)	18708-86-6	5 µg/kg	84.3	49	157

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444801) - continued							
EB1804288-001	BH13_0.0_0.5	EP130: Chlorfenvinphos (Z)	18708-87-7	50 µg/kg	76.4	53	145
		EP130: Chlorpyrifos	2921-88-2	50 µg/kg	84.7	60	140
		EP130: Chlorpyrifos-methyl	5598-13-0	50 µg/kg	77.3	56	126
		EP130: Demeton-S-methyl	919-86-8	50 µg/kg	85.7	10	148
		EP130: Diazinon	333-41-5	50 µg/kg	67.1	60	122
		EP130: Dichlorvos	62-73-7	50 µg/kg	69.9	33	123
		EP130: Dimethoate	60-51-5	50 µg/kg	80.7	36	142
		EP130: Ethion	563-12-2	50 µg/kg	74.6	48	136
		EP130: Fenamiphos	22224-92-6	50 µg/kg	73.1	42	136
		EP130: Fenthion	55-38-9	50 µg/kg	79.8	35	131
		EP130: Malathion	121-75-5	50 µg/kg	82.6	55	141
		EP130: Azinphos Methyl	86-50-0	50 µg/kg	92.0	24	132
		EP130: Monocrotophos	6923-22-4	50 µg/kg	77.4	35	153
		EP130: Parathion	56-38-2	50 µg/kg	76.2	57	147
		EP130: Parathion-methyl	298-00-0	50 µg/kg	79.8	48	140
		EP130: Pirimphos-ethyl	23505-41-1	50 µg/kg	73.5	45	137
	EP130: Prothiofos	34643-46-4	50 µg/kg	74.0	51	137	
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444819)							
EB1804288-021	BH17_0.0_0.5	EP130: Bromophos-ethyl	4824-78-6	50 µg/kg	60.8	36	144
		EP130: Carbophenothion	786-19-6	50 µg/kg	68.2	38	120
		EP130: Chlorfenvinphos (E)	18708-86-6	5 µg/kg	66.0	49	157
		EP130: Chlorfenvinphos (Z)	18708-87-7	50 µg/kg	60.8	53	145
		EP130: Chlorpyrifos	2921-88-2	50 µg/kg	74.3	60	140
		EP130: Chlorpyrifos-methyl	5598-13-0	50 µg/kg	79.4	56	126
		EP130: Demeton-S-methyl	919-86-8	50 µg/kg	74.8	10	148
		EP130: Diazinon	333-41-5	50 µg/kg	60.3	60	122
		EP130: Dichlorvos	62-73-7	50 µg/kg	65.2	33	123
		EP130: Dimethoate	60-51-5	50 µg/kg	57.6	36	142
		EP130: Ethion	563-12-2	50 µg/kg	61.1	48	136
		EP130: Fenamiphos	22224-92-6	50 µg/kg	61.4	42	136
		EP130: Fenthion	55-38-9	50 µg/kg	65.2	35	131
		EP130: Malathion	121-75-5	50 µg/kg	62.9	55	141
		EP130: Azinphos Methyl	86-50-0	50 µg/kg	63.2	24	132
		EP130: Monocrotophos	6923-22-4	50 µg/kg	67.6	35	153
		EP130: Parathion	56-38-2	50 µg/kg	61.3	57	147
		EP130: Parathion-methyl	298-00-0	50 µg/kg	64.5	48	140
		EP130: Pirimphos-ethyl	23505-41-1	50 µg/kg	61.1	45	137
			EP130: Prothiofos	34643-46-4	50 µg/kg	74.8	51
EP131A: Organochlorine Pesticides (QCLot: 1444803)							



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 1444803) - continued							
EB1804288-001	BH13_0.0_0.5	EP131A: Aldrin	309-00-2	5 µg/kg	122	23	153
		EP131A: alpha-BHC	319-84-6	5 µg/kg	77.7	18	156
		EP131A: beta-BHC	319-85-7	5 µg/kg	66.2	25	153
		EP131A: delta-BHC	319-86-8	5 µg/kg	97.2	25	147
		EP131A: 4.4'-DDD	72-54-8	5 µg/kg	104	26	150
		EP131A: 4.4'-DDE	72-55-9	5 µg/kg	64.0	31	125
		EP131A: 4.4'-DDT	50-29-3	5 µg/kg	86.8	23	163
		EP131A: Dieldrin	60-57-1	5 µg/kg	80.1	30	140
		EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	107	29	135
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	83.7	23	141
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	59.0	16	156
		EP131A: Endrin	72-20-8	5 µg/kg	95.5	18	162
		EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	74.0	20	116
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	72.9	13	151
		EP131A: Heptachlor	76-44-8	5 µg/kg	86.4	24	170
		EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	112	28	140
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	109	18	144
		EP131A: gamma-BHC	58-89-9	5 µg/kg	76.3	22	158
		EP131A: Methoxychlor	72-43-5	5 µg/kg	93.5	24	158
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	113	27	139
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	95.6	30	138
EP131A: Organochlorine Pesticides (QCLot: 1444821)							
EB1804288-021	BH17_0.0_0.5	EP131A: Aldrin	309-00-2	5 µg/kg	84.7	23	153
		EP131A: alpha-BHC	319-84-6	5 µg/kg	62.5	18	156
		EP131A: beta-BHC	319-85-7	5 µg/kg	72.0	25	153
		EP131A: delta-BHC	319-86-8	5 µg/kg	64.2	25	147
		EP131A: 4.4'-DDD	72-54-8	5 µg/kg	64.7	26	150
		EP131A: 4.4'-DDE	72-55-9	5 µg/kg	60.1	31	125
		EP131A: 4.4'-DDT	50-29-3	5 µg/kg	95.6	23	163
		EP131A: Dieldrin	60-57-1	5 µg/kg	66.4	30	140
		EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	69.5	29	135
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	70.4	23	141
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	53.6	16	156
		EP131A: Endrin	72-20-8	5 µg/kg	76.8	18	162
		EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	69.5	20	116
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	67.9	13	151
		EP131A: Heptachlor	76-44-8	5 µg/kg	91.9	24	170
		EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	64.8	28	140
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	76.1	18	144



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 1444821) - continued							
EB1804288-021	BH17_0.0_0.5	EP131A: gamma-BHC	58-89-9	5 µg/kg	46.8	22	158
		EP131A: Methoxychlor	72-43-5	5 µg/kg	104	24	158
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	70.4	27	139
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	71.8	30	138
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1444802)							
EB1804288-001	BH13_0.0_0.5	EP131B: Total Polychlorinated biphenyls	----	50 µg/kg	98.3	44	136
		EP131B: Aroclor 1254	11097-69-1	50 µg/kg	98.3	44	136
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1444820)							
EB1804288-021	BH17_0.0_0.5	EP131B: Total Polychlorinated biphenyls	----	50 µg/kg	113	44	136
		EP131B: Aroclor 1254	11097-69-1	50 µg/kg	113	44	136
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444830)							
EB1804288-001	BH13_0.0_0.5	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	90.9	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	92.2	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	79.0	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	76.9	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	77.6	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	77.2	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	79.9	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	73.1	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	72.2	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	73.2	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	78.9	70	130
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	25 µg/kg	77.5	70	130
			205-82-3				
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	76.0	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	76.8	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	77.4	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	77.5	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	75.8	70	130
		EP132B-SD: Dibenzo(a,h)anthracene	53-70-3	25 µg/kg	79.8	70	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	77.8	70	130
		EP132B-SD: Coronene	191-07-1	25 µg/kg	87.4	70	130
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444835)							
EB1804288-021	BH17_0.0_0.5	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	89.2	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	81.2	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	96.3	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	92.2	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	97.4	70	130



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444835) - continued							
EB1804288-021	BH17_0.0_0.5	EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	92.8	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	93.4	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	95.4	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	93.7	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	96.2	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	95.1	70	130
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	25 µg/kg	95.8	70	130
			205-82-3				
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	96.3	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	96.0	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	96.8	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	97.7	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	98.2	70	130
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	98.2	70	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	97.9	70	130
		EP132B-SD: Coronene	191-07-1	25 µg/kg	103	70	130
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1443488)							
EB1804288-041	RIN02	EG020A-T: Arsenic	7440-38-2	1 mg/L	94.4	70	130
		EG020A-T: Beryllium	7440-41-7	0.1 mg/L	91.9	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	105	70	130
		EG020A-T: Cadmium	7440-43-9	0.5 mg/L	103	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	102	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	103	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	106	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	106	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	97.2	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	100	70	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	100	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	103	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1443495)							
EB1804288-042	RIN03	EG035T: Mercury	7439-97-6	0.01 mg/L	89.5	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1441038)							
EB1804227-002	Anonymous	EP080: C6 - C9 Fraction	----	40 µg/L	78.6	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1446612)							
EB1804578-002	Anonymous	EP071: C10 - C14 Fraction	----	1211 µg/L	52.4	49	134

Page : 41 of 41
 Work Order : EB1804288
 Client : AURECON AUSTRALASIA PTY LTD
 Project : 237374



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1446612) - continued							
EB1804578-002	Anonymous	EP071: C15 - C28 Fraction	----	2103 µg/L	54.0	50	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1441038)							
EB1804227-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	40 µg/L	78.0	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1446612)							
EB1804578-002	Anonymous	EP071: >C10 - C16 Fraction	----	1696 µg/L	54.7	43	119
		EP071: >C16 - C34 Fraction	----	1496 µg/L	49.8	38	114
EP080: BTEXN (QCLot: 1441038)							
EB1804227-002	Anonymous	EP080: Benzene	71-43-2	10 µg/L	79.6	70	130
		EP080: Toluene	108-88-3	10 µg/L	82.5	70	130

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB1890013**

Client : **AURECON AUSTRALASIA PTY LTD**
 Contact : **MS GEORGINA KERR**
 Address : **LOCKED BAG 331**
32 TURBOT STREET
BRISBANE QLD, AUSTRALIA 4001

Laboratory : Environmental Division Brisbane
 Contact : Customer Services Brisbane
 Address : **2 Byth Street Stafford QLD Australia**
4053

E-mail : **georgina.kerr@aurecongroup.com**
 Telephone : **+61 07 3173 8396**
 Facsimile : **+61 07 3173 8001**

E-mail : **ALSEnviro.Brisbane@alsglobal.com**
 Telephone : **+61 7 3243 7222**
 Facsimile : **+61 7 3243 7218**

Project : **237374**

Page : **1 of 2**

Order number : **----**

Quote number : **EP2014CONWAG0374 (EN/057/14 BQ)**

C-O-C number : **----**

Site : **----**

Sampler : **K O'NEILL MULCAHY**

QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **16-FEB-2018**
 Client Requested Due Date : **02-MAR-2018**

Issue Date : **16-FEB-2018 22:39**
 Scheduled Reporting Date : **02-MAR-2018**

Delivery Details

Mode of Delivery : **Carrier**
 No. of coolers/boxes : **10 MEDIUM**
 Security Seal : **Intact.**

Temperature : **1.8 <> 6.4°C - Ice present**
 No. of samples received : **6**
 No. of samples analysed : **6**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' etc. suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to John Pickering (Samples.Brisbane@alsglobal.com)
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958),
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - HRMS - Combined Dioxins and Furans (SOILS)
EB1890013-001	14-FEB-2018 15:00	BH13_0.0-0.5	✓
EB1890013-002	14-FEB-2018 15:00	BH03_0.0-0.5	✓
EB1890013-003	14-FEB-2018 15:00	BH09_0.0-0.5	✓
EB1890013-004	14-FEB-2018 15:00	BH19_0.0-0.5	✓
EB1890013-005	14-FEB-2018 15:00	BH17_0.0-0.5	✓
EB1890013-006	14-FEB-2018 15:00	BH05_0.0-0.5	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)

Email creditors@aurecongroup.com

MS GEORGINA KERR

- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- AU Certificate of Analysis - DIOXINS/HRMS (DIONA)
- AU QC Report - DIOXINS/HRMS (DQCNA)
- Chain of Custody (CoC) (COC)

Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com

CERTIFICATE OF ANALYSIS

Client	AURECON AUSTRALASIA PTY LTD	Laboratory :	Environmental Division Brisbane	1 of 7
Contact	MS GEORGINA KERR	Contact	CUSTOMER.SERVICES.EB	Work Order: EB1890013
Address:	LOCKED BAG 331 32 TURBOT STREET BRISBANE QLD, AUSTRALIA 4001	Address:	2 Byth Street Stafford QLD 4053 Australia	
Project	237374	Quote #	EN/057/14 BQ	Received: 16 Feb 2018
Order #	- Not provided -			Issued 1 Mar 2018
C-O-C #	- Not provided -			
Site	- Not provided -			
E-mail	georgina.kerr@aurecongroup.com	E-mail	ALSEnviro.Brisbane@alsglobal.com	Number of Samples
Phone	3173 8396	Phone	+61-7-3243 7222	Received: 6
Fax	3173 8001	Fax	+61-7-3243 7218	Analysed: 6

Notes

LOR = Limit of reporting

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

Samples analysed 'as received', results reported on 'dry weight' basis.

- 1 I -TEQ_(zero) and WHO-TEQ_(zero) calculated treating <LOR as zero concentration
- 2 I -TEQ_(0.5 LOR) and WHO-TEQ_(0.5 zero) calculated treating <LOR as 0.5 LoR concentration
- 3 I-TEQ_(LOR) and WHO-TEQ_(LOR) calculated treating <LOR as LoR concentration
- 4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
- 5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

ALSE - Excellence in Analytical Testing



NATA Accredited Laboratory - 825

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

Accredited for compliance with ISO/IEC 17025

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

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890013
ALS Quote Reference : EN/057/14 BQ



ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890013001
Client Sample ID: BH13 0.0-0.5

Qc Lot Number: 4529906
Sample Matrix: SOIL

Date Sampled: 14-Feb-2018
Date Extracted: 20-Feb-2018
Date Analysed: 20-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ ₁ (zero)	WHO-TEQ ₂ (0.5 LOR)	WHO-TEQ ₃ (LOR)	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	69.6
12378-PeCDD	<2.5	2.5	1	0.00	1.23	2.45	0.5	0.00	0.61	1.23	85.9
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	67.6
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	68.5
123789-HxCDD	3.2	2.5	0.1	0.32	0.32	0.32	0.1	0.32	0.32	0.32	-
1234678-HpCDD	40.0	2.5	0.01	0.40	0.40	0.40	0.01	0.40	0.40	0.40	82.3
OCDD	918.0	9.8	0.0003	0.28	0.28	0.28	0.001	0.92	0.92	0.92	62.9
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	70.8
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	81.8
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.61	1.23	81.6
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	67.1
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	79.2
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	70.6
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	71.5
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	69.0
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	78.4
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	0.99	3.66	6.32	-	1.64	3.96	6.28	-

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	14.1	4.4	9
Penta-Dioxins	26.8	17.2	7
Hexa-Dioxins	173.0	14.7	6
Hepta-Dioxins	186.0	4.9	2
Octa-Dioxin	918.0	9.8	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<4.9	4.9	1
S PCDD/Fs	1317.9		

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890013
ALS Quote Reference : EN/057/14 BQ



ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890013002
Client Sample ID: BH03 0.0-0.5

Qc Lot Number: 4529906
Sample Matrix: SOIL

Date Sampled: 14-Feb-2018
Date Extracted: 20-Feb-2018
Date Analysed: 20-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ ₁ (zero)	WHO-TEQ ₂ (0.5 LOR)	WHO-TEQ ₃ (LOR)	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	63.2
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.50	0.5	0.00	0.62	1.25	83.3
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	62.4
123678-HxCDD	2.5	2.5	0.1	0.25	0.25	0.25	0.1	0.25	0.25	0.25	67.0
123789-HxCDD	7.3	2.5	0.1	0.73	0.73	0.73	0.1	0.73	0.73	0.73	-
1234678-HpCDD	82.9	2.5	0.01	0.83	0.83	0.83	0.01	0.83	0.83	0.83	74.0
OCDD	1410.0	10.0	0.0003	0.42	0.42	0.42	0.001	1.41	1.41	1.41	53.2
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	63.9
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	77.4
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.75	0.5	0.00	0.62	1.25	79.2
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	64.4
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	69.3
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	62.0
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	65.7
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	57.6
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	68.7
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	2.24	4.82	7.41	-	3.22	5.46	7.70	-

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	72.7	4.5	9
Penta-Dioxins	121.0	17.5	7
Hexa-Dioxins	732.0	20.0	8
Hepta-Dioxins	614.0	5.0	2
Octa-Dioxin	1410.0	10.0	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
S PCDD/Fs	2949.7		

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890013
ALS Quote Reference : EN/057/14 BQ



ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890013003
Client Sample ID: BH09 0.0-0.5

Qc Lot Number: 4529907
Sample Matrix: SOIL

Date Sampled: 14-Feb-2018
Date Extracted: 20-Feb-2018
Date Analysed: 20-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ ₁ (zero)	WHO-TEQ ₂ (0.5 LOR)	WHO-TEQ ₃ (LOR)	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	67.9
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.50	0.5	0.00	0.63	1.25	83.1
123478-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	78.2
123678-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	75.5
123789-HxCDD	3.9	2.5	0.1	0.39	0.39	0.39	0.1	0.39	0.39	0.39	-
1234678-HpCDD	57.3	2.5	0.01	0.57	0.57	0.57	0.01	0.57	0.57	0.57	84.2
OCDD	1840.0	10.0	0.0003	0.55	0.55	0.55	0.001	1.84	1.84	1.84	49.9
2378-TCDF	<0.5	0.5	0.1	0.00	0.03	0.05	0.1	0.00	0.03	0.05	67.4
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.08	0.05	0.00	0.06	0.13	82.0
23478-PeCDF	<2.5	2.5	0.3	0.00	0.38	0.75	0.5	0.00	0.63	1.25	78.8
123478-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	75.8
123678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	82.9
234678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	75.4
123789-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	66.1
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	71.9
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	66.2
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.01	-
Total TEQ	-	-	-	1.52	4.23	6.94	-	2.81	5.17	7.54	-

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	19.9	4.5	9
Penta-Dioxins	32.1	15.0	6
Hexa-Dioxins	219.0	17.5	7
Hepta-Dioxins	271.0	5.0	2
Octa-Dioxin	1840.0	10.0	1
Tetra-Furans	<6.0	6.0	12
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
S PCDD/Fs	2382.0		

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890013
ALS Quote Reference : EN/057/14 BQ



ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890013004
Client Sample ID: BH19 0.0-0.5

Qc Lot Number: 4529906
Sample Matrix: SOIL

Date Sampled: 14-Feb-2018
Date Extracted: 20-Feb-2018
Date Analysed: 20-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ ₁ (zero)	WHO-TEQ ₂ (0.5 LOR)	WHO-TEQ ₃ (LOR)	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	65.4
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.47	0.5	0.00	0.62	1.24	84.9
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	64.8
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	72.6
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	5.8	2.5	0.01	0.06	0.06	0.06	0.01	0.06	0.06	0.06	81.6
OCDD	143.0	9.9	0.0003	0.04	0.04	0.04	0.001	0.14	0.14	0.14	56.6
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	66.6
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	82.5
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.24	80.5
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	63.4
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	75.7
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	70.8
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	63.1
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	68.8
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	70.1
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	0.10	2.91	5.72	-	0.20	2.66	5.13	-

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	<2.5	2.5	1
Hexa-Dioxins	14.5	12.4	5
Hepta-Dioxins	31.9	4.9	2
Octa-Dioxin	143.0	9.9	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<4.9	4.9	1
S PCDD/Fs	189.4		

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890013
ALS Quote Reference : EN/057/14 BQ



ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890013005
Client Sample ID: BH17 0.0-0.5

Qc Lot Number: 4529906
Sample Matrix: SOIL

Date Sampled: 14-Feb-2018
Date Extracted: 20-Feb-2018
Date Analysed: 20-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ ₁ (zero)	WHO-TEQ ₂ (0.5 LOR)	WHO-TEQ ₃ (LOR)	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	64.5
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.49	0.5	0.00	0.62	1.25	86.8
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.9
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	88.5
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	13.7	2.5	0.01	0.14	0.14	0.14	0.01	0.14	0.14	0.14	93.2
OCDD	651.0	10.0	0.0003	0.20	0.20	0.20	0.001	0.65	0.65	0.65	68.0
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	71.1
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	94.7
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.75	0.5	0.00	0.62	1.25	86.9
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	85.3
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	103.1
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	83.8
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	67.9
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	89.4
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	72.4
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	0.33	3.16	5.99	-	0.79	3.27	5.75	-

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	<2.5	2.5	1
Hexa-Dioxins	28.5	12.5	5
Hepta-Dioxins	69.2	5.0	2
Octa-Dioxin	651.0	10.0	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
S PCDD/Fs	748.7		

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890013
ALS Quote Reference : EN/057/14 BQ



ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890013006
Client Sample ID: BH05 0.0-0.5

Qc Lot Number: 4529907
Sample Matrix: SOIL

Date Sampled: 14-Feb-2018
Date Extracted: 20-Feb-2018
Date Analysed: 20-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ ₁ (zero)	WHO-TEQ ₂ (0.5 LOR)	WHO-TEQ ₃ (LOR)	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	0.5	0.5	1	0.54	0.54	0.54	1	0.54	0.54	0.54	69.4
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.49	0.5	0.00	0.62	1.24	100.6
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	69.4
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	74.6
123789-HxCDD	7.5	2.5	0.1	0.75	0.75	0.75	0.1	0.75	0.75	0.75	-
1234678-HpCDD	76.0	2.5	0.01	0.76	0.76	0.76	0.01	0.76	0.76	0.76	86.9
OCDD	1270.0	10.0	0.0003	0.38	0.38	0.38	0.001	1.27	1.27	1.27	65.2
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	75.2
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	96.6
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.75	0.5	0.00	0.62	1.24	96.3
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	70.1
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	80.2
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	72.2
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	66.3
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	75.1
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	76.4
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	2.43	4.88	7.33	-	3.32	5.42	7.52	-

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	96.6	5.5	11
Penta-Dioxins	141.0	19.9	8
Hexa-Dioxins	795.0	19.9	8
Hepta-Dioxins	683.0	5.0	2
Octa-Dioxin	1270.0	10.0	1
Tetra-Furans	6.0	3.5	7
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
S PCDD/Fs	2991.6		

QUALITY CONTROL REPORT

Client	AURECON AUSTRALASIA PTY LTD	Laboratory :	Environmental Division Brisbane	1 of 5
Contact	MS GEORGINA KERR	Contact	CUSTOMER.SERVICES.EB	
Address:	LOCKED BAG 331 32 TURBOT STREET BRISBANE QLD, AUSTRALIA 4001	Address:	Stafford QLD 4053 Australia	Work Order: EB1890013

Project	237374	Quote #	EN/057/14 BQ	Received:	16 Feb 2018
Order #	- Not provided -			Issued	1 Mar 2018
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	georgina.kerr@aurecongroup.com	E-mail	ALSEnviro.Brisbane@alsglobal.	Number of Samples	
Phone	3173 8396	Phone	+61-7-3243 7222	Received:	6
Fax	3173 8001	Fax	+61-7-3243 7218	Analysed:	8

Samples analysed 'as received', results reported on 'dry weight' basis.

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

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)



Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890013
ALS Quote Reference : EN/057/14 BQ



Quality Control Report

Laboratory Duplicates (DUP)

	Original Result		Duplicate Result		
	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	
Laboratory Sample Id :	EB1890010001		5572006-007		
Client Sample Id :	Anonymous		Anonymous		
Sample Mass (g) :	10.0		10.0		
Qc Lot Number :	4529907		4529907		
Moisture Content (%) :					
Compound	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
2378-TCDD	<0.5	0.5	<0.5	0.5	-
12378-PeCDD	<2.5	2.5	<2.5	2.5	-
123478-HxCDD	<2.5	2.5	<2.5	2.5	-
123678-HxCDD	<2.5	2.5	<2.5	2.5	-
123789-HxCDD	<2.5	2.5	<2.5	2.5	-
1234678-HpCDD	7.4	2.5	6.3	2.5	16.1
OCDD	160.0	10.0	146.0	10.0	9.2
2378-TCDF	<0.5	0.5	<0.5	0.5	-
12378-PeCDF	<2.5	2.5	<2.5	2.5	-
23478-PeCDF	<2.5	2.5	<2.5	2.5	-
123478-HxCDF	<2.5	2.5	<2.5	2.5	-
123678-HxCDF	<2.5	2.5	<2.5	2.5	-
234678-HxCDF	<2.5	2.5	<2.5	2.5	-
123789-HxCDF	<2.5	2.5	<2.5	2.5	-
1234678-HpCDF	<2.5	2.5	<2.5	2.5	-
1234789-HpCDF	<2.5	2.5	<2.5	2.5	-
OCDF	<5.0	5.0	<5.0	5.0	-

Group Totals	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
Tetra-Dioxins	<0.5	0.5	<0.5	0.5	-
Penta-Dioxins	<2.5	2.5	<2.5	2.5	-
Hexa-Dioxins	19.4	2.5	17.6	2.5	9.7
Hepta-Dioxins	28.2	5.0	25.7	5.0	9.3
Octa-Dioxin	160.0	10.0	146.0	10.0	9.2
Tetra-Furans	<0.5	0.5	<0.5	0.5	-
Penta-Furans	<2.5	2.5	<2.5	2.5	-
Hexa-Furans	<2.5	2.5	<2.5	2.5	-
Hepta-Furans	<2.5	2.5	<2.5	2.5	-
Octa-Furan	<5.0	5.0	<5.0	5.0	-
Σ PCDD/Fs	207.6		189.3		9.2

Notes

LOR = Limit of reporting

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated debenzo-p-dioxin

CDF, furan = chlorinated debenzofuran

RPD = relative per cent difference

Permitted ranges for RPD are dependant upon the magnitude of the result in comparison to the LOR.

Result < 10x LOR, no limit; result between 10x and 20x LOR, 50%; result > 20x LOR, 20%

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890013
ALS Quote Reference : EN/057/14 BQ



Quality Control Report

Laboratory Duplicates (DUP)

	Original Result		Duplicate Result		
	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	
Laboratory Sample Id :	EB1890011001		5572055-002		
Client Sample Id :	Anonymous		Anonymous		
Sample Mass (g) :	10.0		10.0		
Qc Lot Number :	4529907		4529907		
Moisture Content (%) :					
Compound	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
2378-TCDD	<0.5	0.5	<0.5	0.5	-
12378-PeCDD	<2.5	2.5	<2.5	2.5	-
123478-HxCDD	<2.5	2.5	<2.5	2.5	-
123678-HxCDD	<2.5	2.5	<2.5	2.5	-
123789-HxCDD	5.5	2.5	4.6	2.5	17.8
1234678-HpCDD	63.9	2.5	64.2	2.5	0.5
OCDD	1030.0	10.0	993.0	10.0	3.7
2378-TCDF	<0.5	0.5	<0.5	0.5	-
12378-PeCDF	<2.5	2.5	<2.5	2.5	-
23478-PeCDF	<2.5	2.5	<2.5	2.5	-
123478-HxCDF	<2.5	2.5	<2.5	2.5	-
123678-HxCDF	<2.5	2.5	<2.5	2.5	-
234678-HxCDF	<2.5	2.5	<2.5	2.5	-
123789-HxCDF	<2.5	2.5	<2.5	2.5	-
1234678-HpCDF	<2.5	2.5	<2.5	2.5	-
1234789-HpCDF	<2.5	2.5	<2.5	2.5	-
OCDF	<5.0	5.0	<5.0	5.0	-

Group Totals	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
Tetra-Dioxins	80.3	3.5	84.1	5.5	4.6
Penta-Dioxins	146.0	12.5	153.0	20.0	4.7
Hexa-Dioxins	1160.0	15.0	1090.0	20.0	6.2
Hepta-Dioxins	663.0	5.0	619.0	5.0	6.9
Octa-Dioxin	1030.0	10.0	993.0	10.0	3.7
Tetra-Furans	<0.5	0.5	<0.5	0.5	-
Penta-Furans	<2.5	2.5	<2.5	2.5	-
Hexa-Furans	<2.5	2.5	<2.5	2.5	-
Hepta-Furans	<2.5	2.5	<2.5	2.5	-
Octa-Furan	<5.0	5.0	<5.0	5.0	-
Σ PCDD/Fs	3079.3		2939.1		4.7

Notes

LOR = Limit of reporting

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated debenzo-p-dioxin

CDF, furan = chlorinated debenzofuran

RPD = relative per cent difference

Permitted ranges for RPD are dependant upon the magnitude of the result in comparison to the LOR.

Result < 10x LOR - no limit, result between 10x and 20x LOR - 50%, result > 20x LOR - 20%

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890013
ALS Quote Reference : EN/057/14 BQ



Quality Control Results

Laboratory Control Samples(LCS)

Laboratory Sample Id : 5572006-010
QC Lot Number : 4529907
Sample Name : BCR 529 Sandy soil

Compound	Conc pg/g	Lower 1 pg/g	Upper 1 pg/g	¹³ C ¹² Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	4280.0	3900	5100	69.8	25	164
12378-PeCDD	486.0	390	490	70.9	25	181
123478-HxCDD	1230.0	900	1500	83.4	32	141
123678-HxCDD	5130.0	4500	6300	73.3	28	130
123789-HxCDD	3300.0	2600	3400	-	-	-
2378-TCDF	70.7	65	91	59.2	24	169
12378-PeCDF	124.0	110	170	72.0	24	185
23478-PeCDF	410.0	290	430	68.8	21	178
123478-HxCDF	3420.0	2900	3900	78.4	26	152
123678-HxCDF	1210.0	940	1240	77.1	26	123
234678-HxCDF	371.0	330	410	76.6	28	136
123789-HxCDF	619.0	12	32	78.2	29	147

Notes

1. Acceptable concentration limits are as quoted on the analytical certificate for the certified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890013
ALS Quote Reference : EN/057/14 BQ



Quality Control Report Method Blank (MB)

Laboratory Sample ID: 5572006-001
Qc Lot Number : 4529907

Sample Matrix: SOIL
Date Extracted: 18-Feb-2018
Date Analysed: 18-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ 1	WHO-TEQ 2	WHO-TEQ 3	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	66.5
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.50	0.5	0.00	0.63	1.25	67.1
123478-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	75.5
123678-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	90.1
123789-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	-
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	71.5
OCDD	<10.0	10.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.01	0.01	49.4
2378-TCDF	<0.5	0.5	0.1	0.00	0.03	0.05	0.1	0.00	0.03	0.05	59.2
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.08	0.05	0.00	0.06	0.13	65.2
23478-PeCDF	<2.5	2.5	0.3	0.00	0.38	0.75	0.5	0.00	0.63	1.25	64.2
123478-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	78.6
123678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	92.7
234678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	77.0
123789-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	60.0
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	72.6
1234789-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	54.9
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.01	-
Σ TEQ _(WHO)				0.00	2.89	5.72	Σ TEQ _(I)	0.00	2.55	5.04	

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	<2.5	2.5	1
Hexa-Dioxins	<2.5	2.5	1
Hepta-Dioxins	<2.5	2.5	1
Octa-Dioxin	<10.0	10.0	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
Σ PCDD/Fs	0.00		

Notes

LOR = Limit of reporting

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence (pg/g)

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence (pg/g)

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

1 I-TEQ_(zero) and WHO-TEQ_(zero) calculated treating <LOR as zero concentration (pg/g)

2 I-TEQ_(0.5 LOR) and WHO-TEQ_(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/g)

3 I-TEQ_(LOR) and WHO-TEQ_(LOR) calculated treating <LOR as LoR concentration (pg/g)

4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound

CHAIN OF CUSTODY

ALS Laboratory:
please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0800 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callenmondah Drive Clinton QLD 4680
Ph: 07 7471 5800 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9800 E: samples.melbourne@alsglobal.com

MUDGEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 8735 E: mudgee@mail@alsglobal.com

PERTH 10 Hod Way Malaga WA 6090
Ph: 08 9208 7655 E: samples.perth@alsglobal.com

NEWCASTLE 5/565 Maitland Rd Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Dearnia Court Bohle QLD 4818
Ph: 07 4728 6888 E: toowoomba@alsglobal.com

CLIENT: Aurecon

OFFICE: Brisbane

PROJECT: 237374

ORDER NUMBER:

PROJECT MANAGER: Georgina Kerr

CONTACT PH: 07 3173 8396

SAMPLER: Kaitlin O'Neill-Mulcahy

SAMPLER MOBILE:

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): georgina.kerr@aurecongroup.com

Email Invoice to (will default to PM if no other addresses are listed): georgina.kerr@aurecongroup.com

TURNAROUND REQUIREMENTS:

☐ Standard TAT (List due date):

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

BN/004/18

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

RECEIVED BY:

DATE/TIME:

16-2-18

1000

RELINQUISHED BY:

DATE/TIME:

FOR LABORATORY USE ONLY

Chain of Custody

Site / Job / Analysis / Sample / Test / Lab

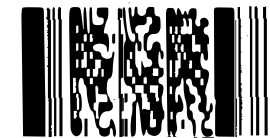
Random Sample / Temperature / Date

Other / Notes

Environmental Division
Brisbane

Work Order Reference

EB1804407



Telephone : + 61-7-3243 7222

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID(S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).										Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <i>codes below</i> (refer to	TOTAL CONTAINERS	TRH, BTEXN, PAH, OC/OPP, PCB, 10 metals	Nutrients (nitrate, nitrite, total phosphorous and total nitrogen), ammonia	Total organic carbon	SPOCAS	Field pH (pH/pHox)	Particle size distribution	Dioxins	Organometallics	TRH/BTEX	HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BH07_0.0_0.5	15/02/2018	S	2x250mL, 150mL, PSD bag, ASS bag	5	X	X	X	X		X	X	X			
2	BH07_0.5_1.0	15/02/2018	S	2x250mL, PSD bag, ASS bag	4	X	X	X		X			X			
3	BH07_1.0_2.0	15/02/2018	S	2x250mL, PSD bag, ASS bag	4	X	X	X	X		X		X			
4	BH07_2.0_3.0	15/02/2018	S	2x250mL, PSD bag, ASS bag	4	X	X	X		X			X			
5	BH07_3.0_4.0	15/02/2018	S	2x250mL, PSD bag, ASS bag	4	X	X	X	X		X		X			
6	BH07_4.0_4.4	15/02/2018	S	2x250mL, PSD bag, ASS bag	4	X	X	X		X			X			
7	BH08_0.0_0.5	15/02/2018	S	2x250mL, PSD bag, ASS bag	4	X	X	X	X		X		X			
8	BH08_0.5_1.0	15/02/2018	S	2x250mL, PSD bag, ASS bag	4	X	X	X		X			X			
9	BH08_1.0_2.0	15/02/2018	S	2x250mL, PSD bag, ASS bag	4	X	X	X	X		X		X			
10	BH08_2.0_3.0	15/02/2018	S	2x250mL, PSD bag, ASS bag	4	X	X	X		X			X			
11	BH08_3.0_3.7	15/02/2018	S	2x250mL, PSD bag, ASS bag	4	X	X	X	X		X		X			
12	ASS_DUP7	15/02/2018	S	ASS Bag	1				X							
13	RIN04	15/02/2018	S	Rinsate Bottles		X										
14	Trip04	15/02/2018	S	Trip Blank	1									X		
TOTAL																

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic

V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;

Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EB1804407

Client : AURECON AUSTRALASIA PTY LTD Contact : MS GEORGINA KERR Address : LOCKED BAG 331 32 TURBOT STREET BRISBANE QLD, AUSTRALIA 4001 E-mail : georgina.kerr@aurecongroup.com Telephone : +61 07 3173 8396 Facsimile : +61 07 3173 8001 Project : 237374 Order number : ---- C-O-C number : ---- Site : ---- Sampler : KAITLIN MULCAHY	Laboratory : Environmental Division Brisbane Contact : John Pickering Address : 2 Byth Street Stafford QLD Australia 4053 E-mail : john.pickering@alsglobal.com Telephone : +61-7-3243 7222 Facsimile : +61-7-3243 7218 Page : 1 of 4 Quote number : EB2018CONWAG0001 (BN/004/18) QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 16-Feb-2018 10:00	Issue Date : 16-Feb-2018
Client Requested Due : 23-Feb-2018	Scheduled Reporting Date : 23-Feb-2018
Date	

Delivery Details

Mode of Delivery : Carrier	Security Seal : Intact.
No. of coolers/boxes : 3	Temperature : 2.7<->4.3°C - Ice present
Receipt Detail : MEDIUM ESKY	No. of samples received / analysed : 14 / 14

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Dioxins and furans analysis will be reported separately as work order EB1890014.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **Ultratrace ammonia and ultratrace organics (OC/OP/PCB + PAH) analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EK255A SD Ammonia in Sediment by FIA	SOIL - EP090 (solids) Organotins	SOIL - NT-11S Total N + Total P	SOIL - NT-4S NO2 and NO3	SOIL - SD-02 OC/OP/PCB/PAH ultra trace	SOIL - SD-03 Metals by ICPMS (15 metals + low level Hg)
EB1804407-001	15-Feb-2018 00:00	BH07_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804407-002	15-Feb-2018 00:00	BH07_0.5_1.0	✓	✓	✓	✓	✓	✓	✓
EB1804407-003	15-Feb-2018 00:00	BH07_1.0_2.0	✓	✓	✓	✓	✓	✓	✓
EB1804407-004	15-Feb-2018 00:00	BH07_2.0_3.0	✓	✓	✓	✓	✓	✓	✓
EB1804407-005	15-Feb-2018 00:00	BH07_3.0_4.0	✓	✓	✓	✓	✓	✓	✓
EB1804407-006	15-Feb-2018 00:00	BH07_4.0_4.4	✓	✓	✓	✓	✓	✓	✓
EB1804407-007	15-Feb-2018 00:00	BH08_0.0_0.5	✓	✓	✓	✓	✓	✓	✓
EB1804407-008	15-Feb-2018 00:00	BH08_0.5_1.0	✓	✓	✓	✓	✓	✓	✓
EB1804407-009	15-Feb-2018 00:00	BH08_1.0_2.0	✓	✓	✓	✓	✓	✓	✓
EB1804407-010	15-Feb-2018 00:00	BH08_2.0_3.0	✓	✓	✓	✓	✓	✓	✓
EB1804407-011	15-Feb-2018 00:00	BH08_3.0_3.7	✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA029 SPOCAS	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA150H/EA152 Particle Sizing with Hydrometer + Soil Particle	SOIL - EP003 Total Organic Carbon (TOC) in Soil	SOIL - EP071 - SD TRH ultra trace in sediments	SOIL - EP080-SD TRH(V)/B/TEXN in Sediments
EB1804407-001	15-Feb-2018 00:00	BH07_0.0_0.5	✓		✓	✓	✓	✓
EB1804407-002	15-Feb-2018 00:00	BH07_0.5_1.0		✓		✓	✓	✓
EB1804407-003	15-Feb-2018 00:00	BH07_1.0_2.0	✓		✓	✓	✓	✓
EB1804407-004	15-Feb-2018 00:00	BH07_2.0_3.0		✓		✓	✓	✓
EB1804407-005	15-Feb-2018 00:00	BH07_3.0_4.0	✓		✓	✓	✓	✓
EB1804407-006	15-Feb-2018 00:00	BH07_4.0_4.4		✓		✓	✓	✓
EB1804407-007	15-Feb-2018 00:00	BH08_0.0_0.5	✓		✓	✓	✓	✓
EB1804407-008	15-Feb-2018 00:00	BH08_0.5_1.0		✓		✓	✓	✓
EB1804407-009	15-Feb-2018 00:00	BH08_1.0_2.0	✓		✓	✓	✓	✓
EB1804407-010	15-Feb-2018 00:00	BH08_2.0_3.0		✓		✓	✓	✓
EB1804407-011	15-Feb-2018 00:00	BH08_3.0_3.7	✓		✓	✓	✓	✓
EB1804407-012	15-Feb-2018 00:00	ASS_DUP7	✓					



Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs
EB1804407-014	15-Feb-2018 00:00	Trip04	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-03T 15 Metals (Total) (NEPM)
EB1804407-013	15-Feb-2018 00:00	RIN04	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-07 TRH/BTEXN/PAH	WATER - W-13 OC/OP/PCB
EB1804407-013	15-Feb-2018 00:00	RIN04	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



Requested Deliverables

ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)

Email creditors@arecongroup.com

EQUIS REPORTING

- EDI Format - EQUIS_AURECON (EQUIS_AURECON)

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GEORGINA KERR

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS_AURECON (EQUIS_AURECON)
- EDI Format - XTab (XTAB)

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JOHN PICKERING

- Chain of Custody (CoC) (COC)

Email john.pickering@alsglobal.com

CERTIFICATE OF ANALYSIS

Work Order : **EB1804407**
Client : **AURECON AUSTRALASIA PTY LTD**
Contact : **MS GEORGINA KERR**
Address : **LOCKED BAG 331 32 TURBOT STREET**
BRISBANE QLD, AUSTRALIA 4001
Telephone : **+61 07 3173 8396**
Project : **237374**
Order number : **----**
C-O-C number : **----**
Sampler : **KAITLIN MULCAHY**
Site : **----**
Quote number : **BN/004/18**
No. of samples received : **14**
No. of samples analysed : **14**

Page : 1 of 30
Laboratory : Environmental Division Brisbane
Contact : John Pickering
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 16-Feb-2018 10:00
Date Analysis Commenced : 19-Feb-2018
Issue Date : 26-Feb-2018 17:06



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	Position	Accreditation Category
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD
Nathan Webb	Asbestos Identifier	Newcastle - Inorganics, Mayfield West, NSW
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils, Stafford, QLD
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Inorganics, Stafford, QLD



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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020-T (Total Metals by ICP-MS): Sample EB1804288-021 shows poor duplicate results due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- EP080: Poor matrix spike recoveries due to high sample moisture content.
- EG005-SD (Total Fe and Al in Sediments by ICPAES): Sample EB1804288-021 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EP090 Organotin: SampleS 'BH07_4.0_4.4' and 'BH07_0.0_0.5' show poor matrix spike recovery for MBT due to matrix interference.
- ASS: EA029 (SPOCAS): Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- ASS: EA029 (SPOCAS): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO₃) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from kg/t dry weight to kg/m³ in-situ soil, multiply reported results x wet bulk density of soil in t/m³.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_0.0_0.5	BH07_0.5_1.0	BH07_1.0_2.0	BH07_2.0_3.0	BH07_3.0_4.0
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804407-001	EB1804407-002	EB1804407-003	EB1804407-004	EB1804407-005
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		9.1	----	8.8	----	8.5
pH OX (23B)	----	0.1	pH Unit		8.3	----	7.7	----	3.0
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	----	<2	----	<2
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	----	<2	----	208
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		<2	----	<2	----	208
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	----	<0.020	----	<0.020
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		<0.020	----	<0.020	----	0.334
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		<0.020	----	<0.020	----	0.334
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.066	----	0.086	----	0.078
Peroxide Sulfur (23De)	----	0.020	% S		0.307	----	0.706	----	0.814
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		0.241	----	0.620	----	0.736
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		150	----	386	----	459
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.194	----	0.239	----	0.235
Peroxide Calcium (23Wh)	----	0.020	% Ca		6.13	----	2.99	----	0.361
Acid Reacted Calcium (23X)	----	0.020	% Ca		5.94	----	2.75	----	0.126
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		2960	----	1370	----	63
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		4.75	----	2.20	----	0.101
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.069	----	0.118	----	0.156
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.136	----	0.254	----	0.263
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.067	----	0.136	----	0.107
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		55	----	111	----	88
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.088	----	0.179	----	0.141
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		16.1	----	6.38	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		3210	----	1280	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		5.14	----	2.04	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_0.0_0.5	BH07_0.5_1.0	BH07_1.0_2.0	BH07_2.0_3.0	BH07_3.0_4.0
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804407-001	EB1804407-002	EB1804407-003	EB1804407-004	EB1804407-005
					Result	Result	Result	Result	Result

EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	----	1.5	----	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	<0.02	----	0.47
Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	<10	----	292
Liming Rate	----	1	kg CaCO3/t	<1	----	<1	----	22
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.24	----	0.62	----	0.47
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	150	----	386	----	292
Liming Rate excluding ANC	----	1	kg CaCO3/t	11	----	29	----	22

Ø pH (F)	----	0.1	pH Unit	----	8.8	----	8.8	----
Ø pH (Fox)	----	0.1	pH Unit	----	6.0	----	3.4	----
Ø Reaction Rate	----	1	-	----	2	----	3	----

Moisture Content	----	1.0	%	33.4	34.8	28.4	41.6	41.8

+75µm	----	1	%	77	----	58	----	1
+150µm	----	1	%	68	----	43	----	<1
+300µm	----	1	%	41	----	15	----	<1
+425µm	----	1	%	27	----	11	----	<1
+600µm	----	1	%	21	----	10	----	<1
+1180µm	----	1	%	13	----	7	----	<1
+2.36mm	----	1	%	6	----	4	----	<1
+4.75mm	----	1	%	1	----	<1	----	<1
+9.5mm	----	1	%	<1	----	<1	----	<1
+19.0mm	----	1	%	<1	----	<1	----	<1
+37.5mm	----	1	%	<1	----	<1	----	<1
+75.0mm	----	1	%	<1	----	<1	----	<1

Clay (<2 µm)	----	1	%	14	----	24	----	53
Silt (2-60 µm)	----	1	%	7	----	16	----	39
Sand (0.06-2.00 mm)	----	1	%	71	----	55	----	8
Gravel (>2mm)	----	1	%	8	----	5	----	<1
Cobbles (>6cm)	----	1	%	<1	----	<1	----	<1

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_0.0_0.5	BH07_0.5_1.0	BH07_1.0_2.0	BH07_2.0_3.0	BH07_3.0_4.0
Client sampling date / time				15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804407-001	EB1804407-002	EB1804407-003	EB1804407-004	EB1804407-005	
				Result	Result	Result	Result	Result	
EA152: Soil Particle Density - Continued									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.66	----	2.67	----	2.67	
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	7650	13300	9710	18500	13300	
Iron	7439-89-6	50	mg/kg	21900	29200	32900	31400	24100	
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	
Arsenic	7440-38-2	1.00	mg/kg	12.9	12.5	9.65	12.2	7.05	
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium	7440-47-3	1.0	mg/kg	15.8	24.2	19.7	28.2	23.3	
Copper	7440-50-8	1.0	mg/kg	8.0	12.8	10.0	23.6	23.2	
Cobalt	7440-48-4	0.5	mg/kg	13.5	14.5	27.3	14.4	12.0	
Lead	7439-92-1	1.0	mg/kg	3.7	5.8	4.4	7.4	8.4	
Manganese	7439-96-5	10	mg/kg	227	219	393	350	322	
Nickel	7440-02-0	1.0	mg/kg	8.2	12.3	11.3	13.9	10.9	
Selenium	7782-49-2	0.1	mg/kg	0.3	0.3	0.2	0.4	0.4	
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Vanadium	7440-62-2	2.0	mg/kg	42.1	52.2	53.6	57.5	50.2	
Zinc	7440-66-6	1.0	mg/kg	27.4	38.2	44.4	45.0	36.4	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg	0.01	0.01	<0.01	0.02	0.01	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg	340	430	180	500	610	
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg	340	430	180	500	610	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	393	336	290	348	317	
EK255A SD: Ammonia in Sediment									

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_0.0_0.5	BH07_0.5_1.0	BH07_1.0_2.0	BH07_2.0_3.0	BH07_3.0_4.0
Client sampling date / time				15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	
Compound	CAS Number	LOR	Unit	EB1804407-001	EB1804407-002	EB1804407-003	EB1804407-004	EB1804407-005	
				Result	Result	Result	Result	Result	
EK255A SD: Ammonia in Sediment - Continued									
Ammonia as N	7664-41-7	0.2	mg/kg	3.8	13.4	30.0	67.1	103	
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%	0.61	0.71	0.67	0.63	0.63	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3	
>C16 - C34 Fraction	----	3	mg/kg	6	6	4	3	4	
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5	
>C10 - C40 Fraction (sum)	----	3	mg/kg	6	6	4	3	4	
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg	<3	<3	<3	<3	<3	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3	
C10 - C14 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3	
C15 - C28 Fraction	----	3	mg/kg	4	4	<3	<3	3	
C29 - C36 Fraction	----	5	mg/kg	5	<5	<5	<5	<5	
^ C10 - C36 Fraction (sum)	----	3	mg/kg	9	4	<3	<3	3	
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3	
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	<3.0	<3.0	<3.0	<3.0	
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	<1	
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	<1	<1	<1	
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP130A: Organophosphorus Pesticides (Ultra-trace)									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH07_0.0_0.5	BH07_0.5_1.0	BH07_1.0_2.0	BH07_2.0_3.0	BH07_3.0_4.0
Client sampling date / time				15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804407-001	EB1804407-002	EB1804407-003	EB1804407-004	EB1804407-005
				Result	Result	Result	Result	Result

EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued

Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg	<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg	<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg	<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg	<10	<10	<10	<10	<10
Dimethoate	60-51-5	10	µg/kg	<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg	<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg	<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg	<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg	<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg	<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg	<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg	<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg	<10	<10	<10	<10	<10

EP131A: Organochlorine Pesticides

Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_0.0_0.5	BH07_0.5_1.0	BH07_1.0_2.0	BH07_2.0_3.0	BH07_3.0_4.0
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804407-001	EB1804407-002	EB1804407-003	EB1804407-004	EB1804407-005
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin	72-20-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<4	<4	<4
Pyrene	129-00-0	4	µg/kg		<4	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	<4	<4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_0.0_0.5	BH07_0.5_1.0	BH07_1.0_2.0	BH07_2.0_3.0	BH07_3.0_4.0
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804407-001	EB1804407-002	EB1804407-003	EB1804407-004	EB1804407-005
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg		<4	<4	<4	22	15
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<4
Indeno(1,2,3-cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		<4	<4	<4	22	15
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		66.6	54.4	65.7	60.0	66.8
Toluene-D8	2037-26-5	0.2	%		73.7	62.9	74.0	71.2	78.4
4-Bromofluorobenzene	460-00-4	0.2	%		78.5	71.3	77.0	74.3	79.8
EP090S: Organotin Surrogate									
Tripopyltin	----	0.5	%		91.3	64.6	82.9	73.9	100
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		51.2	54.9	51.2	50.5	90.5
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		106	106	94.6	99.4	122
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		92.6	91.1	89.4	87.2	124
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		103	97.0	108	100	107
Anthracene-d10	1719-06-8	10	%		112	106	117	109	120
4-Terphenyl-d14	1718-51-0	10	%		114	104	114	109	116



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_4.0_4.4	BH08_0.0_0.5	BH08_0.5_1.0	BH08_1.0_2.0	BH08_2.0_3.0
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804407-006	EB1804407-007	EB1804407-008	EB1804407-009	EB1804407-010
				Result	Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit	----	9.1	----	8.4	----	----
pH OX (23B)	----	0.1	pH Unit	----	8.6	----	7.9	----	----
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t	----	<2	----	<2	----	----
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t	----	<2	----	<2	----	----
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	<2	----	<2	----	----
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S	----	<0.020	----	<0.020	----	----
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S	----	<0.020	----	<0.020	----	----
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S	----	<0.020	----	<0.020	----	----
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S	----	0.060	----	0.118	----	----
Peroxide Sulfur (23De)	----	0.020	% S	----	0.176	----	0.900	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S	----	0.115	----	0.782	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	72	----	488	----	----
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca	----	0.197	----	0.297	----	----
Peroxide Calcium (23Wh)	----	0.020	% Ca	----	3.00	----	3.14	----	----
Acid Reacted Calcium (23X)	----	0.020	% Ca	----	2.81	----	2.84	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	1400	----	1420	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S	----	2.24	----	2.27	----	----
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg	----	0.073	----	0.136	----	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg	----	0.144	----	0.265	----	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg	----	0.071	----	0.129	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	59	----	106	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S	----	0.094	----	0.170	----	----
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3	----	7.41	----	5.89	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	1480	----	1180	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S	----	2.37	----	1.88	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_4.0_4.4	BH08_0.0_0.5	BH08_0.5_1.0	BH08_1.0_2.0	BH08_2.0_3.0
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804407-006	EB1804407-007	EB1804407-008	EB1804407-009	EB1804407-010	
				Result	Result	Result	Result	Result	
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-	----	1.5	----	1.5	----	
Net Acidity (sulfur units)	----	0.02	% S	----	<0.02	----	<0.02	----	
Net Acidity (acidity units)	----	10	mole H+ / t	----	<10	----	<10	----	
Liming Rate	----	1	kg CaCO3/t	----	<1	----	<1	----	
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	0.12	----	0.78	----	
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	72	----	488	----	
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	5	----	36	----	
EA037: Ass Field Screening Analysis									
ø pH (F)	----	0.1	pH Unit	8.9	----	8.8	----	8.8	
ø pH (Fox)	----	0.1	pH Unit	2.8	----	6.1	----	3.2	
ø Reaction Rate	----	1	-	2	----	3	----	3	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	40.6	32.0	28.9	38.7	44.3	
EA150: Particle Sizing									
+75µm	----	1	%	----	83	----	46	----	
+150µm	----	1	%	----	78	----	35	----	
+300µm	----	1	%	----	55	----	10	----	
+425µm	----	1	%	----	38	----	7	----	
+600µm	----	1	%	----	27	----	5	----	
+1180µm	----	1	%	----	14	----	3	----	
+2.36mm	----	1	%	----	7	----	<1	----	
+4.75mm	----	1	%	----	2	----	<1	----	
+9.5mm	----	1	%	----	<1	----	<1	----	
+19.0mm	----	1	%	----	<1	----	<1	----	
+37.5mm	----	1	%	----	<1	----	<1	----	
+75.0mm	----	1	%	----	<1	----	<1	----	
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%	----	12	----	29	----	
Silt (2-60 µm)	----	1	%	----	3	----	21	----	
Sand (0.06-2.00 mm)	----	1	%	----	76	----	48	----	
Gravel (>2mm)	----	1	%	----	9	----	2	----	
Cobbles (>6cm)	----	1	%	----	<1	----	<1	----	
EA152: Soil Particle Density									

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_4.0_4.4	BH08_0.0_0.5	BH08_0.5_1.0	BH08_1.0_2.0	BH08_2.0_3.0
Client sampling date / time				15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	
Compound	CAS Number	LOR	Unit	EB1804407-006	EB1804407-007	EB1804407-008	EB1804407-009	EB1804407-010	
				Result	Result	Result	Result	Result	
EA152: Soil Particle Density - Continued									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	2.65	----	2.67	----	
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	11300	4760	6040	12900	12800	
Iron	7439-89-6	50	mg/kg	20400	23000	23300	33600	34400	
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	
Arsenic	7440-38-2	1.00	mg/kg	7.41	16.5	13.5	13.3	11.9	
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium	7440-47-3	1.0	mg/kg	20.3	12.7	15.2	21.3	24.2	
Copper	7440-50-8	1.0	mg/kg	21.2	7.4	7.6	27.2	20.7	
Cobalt	7440-48-4	0.5	mg/kg	11.0	15.8	13.9	13.5	13.1	
Lead	7439-92-1	1.0	mg/kg	7.4	3.6	4.2	6.4	7.2	
Manganese	7439-96-5	10	mg/kg	243	234	254	294	275	
Nickel	7440-02-0	1.0	mg/kg	9.7	6.5	7.1	12.0	12.3	
Selenium	7782-49-2	0.1	mg/kg	0.4	0.4	0.3	0.5	0.4	
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
Vanadium	7440-62-2	2.0	mg/kg	44.6	51.0	47.1	68.0	58.3	
Zinc	7440-66-6	1.0	mg/kg	32.4	27.2	24.9	40.0	38.0	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg	0.01	<0.01	<0.01	0.01	0.01	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg	570	260	540	560	690	
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg	570	260	540	560	690	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	270	250	293	355	352	
EK255A SD: Ammonia in Sediment									

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_4.0_4.4	BH08_0.0_0.5	BH08_0.5_1.0	BH08_1.0_2.0	BH08_2.0_3.0
Client sampling date / time				15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	
Compound	CAS Number	LOR	Unit	EB1804407-006	EB1804407-007	EB1804407-008	EB1804407-009	EB1804407-010	
				Result	Result	Result	Result	Result	
EK255A SD: Ammonia in Sediment - Continued									
Ammonia as N	7664-41-7	0.2	mg/kg	118	5.6	6.0	91.9	52.6	
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%	0.62	0.48	0.74	1.17	0.74	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3	
>C16 - C34 Fraction	----	3	mg/kg	<3	5	<3	<3	<3	
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5	
>C10 - C40 Fraction (sum)	----	3	mg/kg	<3	5	<3	<3	<3	
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg	<3	<3	<3	<3	<3	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3	
C10 - C14 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3	
C15 - C28 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3	
C29 - C36 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5	
^ C10 - C36 Fraction (sum)	----	3	mg/kg	<3	<3	<3	<3	<3	
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3	
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	<3.0	<3.0	<3.0	<3.0	
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	<1	
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	<1	<1	<1	
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP130A: Organophosphorus Pesticides (Ultra-trace)									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_4.0_4.4	BH08_0.0_0.5	BH08_0.5_1.0	BH08_1.0_2.0	BH08_2.0_3.0
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804407-006	EB1804407-007	EB1804407-008	EB1804407-009	EB1804407-010
					Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg		<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg		<10	<10	<10	<10	<10
Dimethoate	60-51-5	10	µg/kg		<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg		<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg		<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg		<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg		<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg		<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg		<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg		<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg		<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg		<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg		<10	<10	<10	<10	<10
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4,4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4,4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4,4`-DDT	50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH07_4.0_4.4	BH08_0.0_0.5	BH08_0.5_1.0	BH08_1.0_2.0	BH08_2.0_3.0
Client sampling date / time				15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EB1804407-006	EB1804407-007	EB1804407-008	EB1804407-009	EB1804407-010
				Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued								
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg	<4	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg	<4	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg	<4	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg	<4	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg	<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg	<4	<4	<4	<4	<4
Pyrene	129-00-0	4	µg/kg	<4	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg	<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	<4	<4	<4	<4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH07_4.0_4.4	BH08_0.0_0.5	BH08_0.5_1.0	BH08_1.0_2.0	BH08_2.0_3.0
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EB1804407-006	EB1804407-007	EB1804407-008	EB1804407-009	EB1804407-010
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg		13	<4	<4	<4	<4
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<4
Indeno(1,2,3-cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		13	<4	<4	<4	<4
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		70.0	67.1	62.1	62.6	73.3
Toluene-D8	2037-26-5	0.2	%		80.3	73.2	71.4	73.2	82.9
4-Bromofluorobenzene	460-00-4	0.2	%		80.4	79.4	76.8	78.2	89.7
EP090S: Organotin Surrogate									
Tripopyltin	----	0.5	%		93.2	87.8	72.1	84.7	93.4
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		48.9	56.0	58.0	53.0	54.2
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		81.0	96.1	111	126	88.8
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		76.6	80.0	90.2	110	82.8
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		104	96.6	86.9	105	89.5
Anthracene-d10	1719-06-8	10	%		114	116	105	123	100
4-Terphenyl-d14	1718-51-0	10	%		111	110	101	121	95.8



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH08_3.0_3.7	ASS_DUP7	Trip04	----	----
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804407-011	EB1804407-012	EB1804407-014	-----	-----
					Result	Result	Result	----	----
EA029-A: pH Measurements									
pH KCl (23A)	----	0.1	pH Unit		8.4	9.0	----	----	----
pH OX (23B)	----	0.1	pH Unit		4.2	8.2	----	----	----
EA029-B: Acidity Trail									
Titrateable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	----	----	----
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t		63	<2	----	----	----
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t		63	<2	----	----	----
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S		<0.020	<0.020	----	----	----
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S		0.101	<0.020	----	----	----
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S		0.101	<0.020	----	----	----
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	----	0.020	% S		0.089	0.076	----	----	----
Peroxide Sulfur (23De)	----	0.020	% S		0.677	0.225	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S		0.587	0.148	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t		366	92	----	----	----
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	----	0.020	% Ca		0.246	0.233	----	----	----
Peroxide Calcium (23Wh)	----	0.020	% Ca		0.447	3.82	----	----	----
Acid Reacted Calcium (23X)	----	0.020	% Ca		0.200	3.59	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t		100	1790	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S		0.160	2.87	----	----	----
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg		0.162	0.094	----	----	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg		0.284	0.169	----	----	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg		0.122	0.075	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t		101	62	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S		0.162	0.099	----	----	----
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3		----	9.37	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t		----	1870	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S		----	3.00	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH08_3.0_3.7	ASS_DUP7	Trip04	----	----
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804407-011	EB1804407-012	EB1804407-014	-----	-----
					Result	Result	Result	----	----
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	----	----	----
Net Acidity (sulfur units)	----	0.02	% S		0.26	<0.02	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t		164	<10	----	----	----
Liming Rate	----	1	kg CaCO3/t		12	<1	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		0.26	0.15	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		164	92	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t		12	7	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		36.3	----	----	----	----
EA150: Particle Sizing									
+75µm	----	1	%		3	----	----	----	----
+150µm	----	1	%		1	----	----	----	----
+300µm	----	1	%		<1	----	----	----	----
+425µm	----	1	%		<1	----	----	----	----
+600µm	----	1	%		<1	----	----	----	----
+1180µm	----	1	%		<1	----	----	----	----
+2.36mm	----	1	%		<1	----	----	----	----
+4.75mm	----	1	%		<1	----	----	----	----
+9.5mm	----	1	%		<1	----	----	----	----
+19.0mm	----	1	%		<1	----	----	----	----
+37.5mm	----	1	%		<1	----	----	----	----
+75.0mm	----	1	%		<1	----	----	----	----
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		54	----	----	----	----
Silt (2-60 µm)	----	1	%		36	----	----	----	----
Sand (0.06-2.00 mm)	----	1	%		10	----	----	----	----
Gravel (>2mm)	----	1	%		<1	----	----	----	----
Cobbles (>6cm)	----	1	%		<1	----	----	----	----
EA152: Soil Particle Density									
ø Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.69	----	----	----	----
EG005-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		10800	----	----	----	----
Iron	7439-89-6	50	mg/kg		29700	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH08_3.0_3.7	ASS_DUP7	Trip04	----	----
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804407-011	EB1804407-012	EB1804407-014	-----	-----
					Result	Result	Result	----	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	----	----	----	----
Arsenic	7440-38-2	1.00	mg/kg		15.4	----	----	----	----
Cadmium	7440-43-9	0.1	mg/kg		<0.1	----	----	----	----
Chromium	7440-47-3	1.0	mg/kg		22.7	----	----	----	----
Copper	7440-50-8	1.0	mg/kg		16.2	----	----	----	----
Cobalt	7440-48-4	0.5	mg/kg		13.8	----	----	----	----
Lead	7439-92-1	1.0	mg/kg		8.1	----	----	----	----
Manganese	7439-96-5	10	mg/kg		536	----	----	----	----
Nickel	7440-02-0	1.0	mg/kg		11.4	----	----	----	----
Selenium	7782-49-2	0.1	mg/kg		0.5	----	----	----	----
Silver	7440-22-4	0.1	mg/kg		<0.1	----	----	----	----
Vanadium	7440-62-2	2.0	mg/kg		72.1	----	----	----	----
Zinc	7440-66-6	1.0	mg/kg		32.7	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg		<0.1	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg		<0.1	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.1	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		510	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		510	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		326	----	----	----	----
EK255A SD: Ammonia in Sediment									
Ammonia as N	7664-41-7	0.2	mg/kg		55.4	----	----	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.63	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	<10	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH08_3.0_3.7	ASS_DUP7	Trip04	----	----
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804407-011	EB1804407-012	EB1804407-014	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	<10	----	----
>C10 - C16 Fraction	----	3	mg/kg		<3	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	<10	----	----
>C16 - C34 Fraction	----	3	mg/kg		<3	----	----	----	----
>C34 - C40 Fraction	----	5	mg/kg		<5	----	----	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		----	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		----	----	<1	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	----	----	----	----
C10 - C14 Fraction	----	3	mg/kg		<3	----	----	----	----
C15 - C28 Fraction	----	3	mg/kg		<3	----	----	----	----
C29 - C36 Fraction	----	5	mg/kg		<5	----	----	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	----	----	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.2	mg/kg		<0.2	----	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	----	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH08_3.0_3.7	ASS_DUP7	Trip04	----	----
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804407-011	EB1804407-012	EB1804407-014	-----	-----
					Result	Result	Result	----	----
EP080-SD: BTEXN - Continued									
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	----	----	----	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	----	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	----	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	----	----	----
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	----	----	----	----
Carbophenothion	786-19-6	10	µg/kg		<10	----	----	----	----
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	----	----	----	----
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	----	----	----	----
Chlorpyrifos	2921-88-2	10	µg/kg		<10	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	----	----	----	----
Demeton-S-methyl	919-86-8	10	µg/kg		<10	----	----	----	----
Diazinon	333-41-5	10	µg/kg		<10	----	----	----	----
Dichlorvos	62-73-7	10	µg/kg		<10	----	----	----	----
Dimethoate	60-51-5	10	µg/kg		<10	----	----	----	----
Ethion	563-12-2	10	µg/kg		<10	----	----	----	----
Fenamiphos	22224-92-6	10	µg/kg		<10	----	----	----	----
Fenthion	55-38-9	10	µg/kg		<10	----	----	----	----
Malathion	121-75-5	10	µg/kg		<10	----	----	----	----
Azinphos Methyl	86-50-0	10	µg/kg		<10	----	----	----	----
Monocrotophos	6923-22-4	10	µg/kg		<10	----	----	----	----
Parathion	56-38-2	10	µg/kg		<10	----	----	----	----
Parathion-methyl	298-00-0	10	µg/kg		<10	----	----	----	----
Pirimphos-ethyl	23505-41-1	10	µg/kg		<10	----	----	----	----
Prothiofos	34643-46-4	10	µg/kg		<10	----	----	----	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	----	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	----	----	----	----
beta-BHC	319-85-7	0.50	µg/kg		<0.50	----	----	----	----
delta-BHC	319-86-8	0.50	µg/kg		<0.50	----	----	----	----
4,4`-DDD	72-54-8	0.50	µg/kg		<0.50	----	----	----	----
4,4`-DDE	72-55-9	0.50	µg/kg		<0.50	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH08_3.0_3.7	ASS_DUP7	Trip04	----	----
Client sampling date / time				15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1804407-011	EB1804407-012	EB1804407-014	-----	-----
				Result	Result	Result	----	----
EP131A: Organochlorine Pesticides - Continued								
4,4'-DDT	50-29-3	0.50	µg/kg	<0.50	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.50	µg/kg	<0.50	----	----	----	----
Dieldrin	60-57-1	0.50	µg/kg	<0.50	----	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	----	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	----	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	----	----	----	----
Endrin	72-20-8	0.50	µg/kg	<0.50	----	----	----	----
Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	----	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	----	----	----	----
Heptachlor	76-44-8	0.50	µg/kg	<0.50	----	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	----	----	----	----
gamma-BHC	58-89-9	0.25	µg/kg	<0.25	----	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg	<0.50	----	----	----	----
cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	----	----	----	----
trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	----	----	----	----
^ Total Chlordane (sum)	-----	0.25	µg/kg	<0.25	----	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	-----	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	----	----	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	----	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	----	----	----	----
Acenaphthylene	208-96-8	4	µg/kg	<4	----	----	----	----
Acenaphthene	83-32-9	4	µg/kg	<4	----	----	----	----
Fluorene	86-73-7	4	µg/kg	<4	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH08_3.0_3.7	ASS_DUP7	Trip04	----	----
Client sampling date / time					15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804407-011	EB1804407-012	EB1804407-014	-----	-----
					Result	Result	Result	----	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Phenanthrene	85-01-8	4	µg/kg		<4	----	----	----	----
Anthracene	120-12-7	4	µg/kg		<4	----	----	----	----
Fluoranthene	206-44-0	4	µg/kg		<4	----	----	----	----
Pyrene	129-00-0	4	µg/kg		<4	----	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	----	----	----	----
Chrysene	218-01-9	4	µg/kg		<4	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	----	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	----	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	----	----	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	----	----	----	----
Perylene	198-55-0	4	µg/kg		8	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	4	µg/kg		<4	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	4	µg/kg		<4	----	----	----	----
Indeno(1,2,3-cd)pyrene	193-39-5	4	µg/kg		<4	----	----	----	----
Coronene	191-07-1	5	µg/kg		<5	----	----	----	----
^ Sum of PAHs	----	4	µg/kg		8	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	70.5	----	----
Toluene-D8	2037-26-5	0.2	%		----	----	75.0	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	85.2	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		70.3	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		76.0	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		84.8	----	----	----	----
EP090S: Organotin Surrogate									
Tripolytin	----	0.5	%		93.5	----	----	----	----
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		57.6	----	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		97.0	----	----	----	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		85.4	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		75.9	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH08_3.0_3.7	ASS_DUP7	Trip04	----	----
				Client sampling date / time	15-Feb-2018 00:00	15-Feb-2018 00:00	15-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EB1804407-011	EB1804407-012	EB1804407-014	-----	-----
					Result	Result	Result	----	----
EP132T: Base/Neutral Extractable Surrogates - Continued									
Anthracene-d10	1719-06-8	10	%		94.8	----	----	----	----
4-Terphenyl-d14	1718-51-0	10	%		98.5	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RIN04	----	----	----	----
Client sampling date / time				15-Feb-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1804407-013	-----	-----	-----	-----
				Result	----	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----
Barium	7440-39-3	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RIN04	----	----	----	----
				15-Feb-2018 00:00	----	----	----	----
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	EB1804407-013	-----	-----	-----	-----
				Result	----	----	----	----

EP068A: Organochlorine Pesticides (OC) - Continued

4,4'-DDD	72-54-8	0.5	µg/L	<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	----	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	----	----	----	----

EP068B: Organophosphorus Pesticides (OP)

Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RIN04	----	----	----	----
Client sampling date / time					15-Feb-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1804407-013	-----	-----	-----	-----
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RIN04	----	----	----	----
Client sampling date / time					15-Feb-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1804407-013	-----	-----	-----	-----
					Result	----	----	----	----
EP080: BTEXN - Continued									
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		90.0	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		90.5	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		106	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		28.0	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		73.7	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		75.9	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		92.1	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		92.4	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		103	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		83.4	----	----	----	----
Toluene-D8	2037-26-5	2	%		102	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		96.0	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP080-SD: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	145
Toluene-D8	2037-26-5	42	144
4-Bromofluorobenzene	460-00-4	58	142
EP090S: Organotin Surrogate			
Tripropyltin	----	35	130
EP130S: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	14	102
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	119
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	106
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	55	135
Anthracene-d10	1719-06-8	70	136
4-Terphenyl-d14	1718-51-0	57	127

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	37	138
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	40	134
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	42	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			

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Work Order : EB1804407
Client : AURECON AUSTRALASIA PTY LTD
Project : 237374



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates - Continued			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EB1804407	Page	: 1 of 17
Client	: AURECON AUSTRALASIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MS GEORGINA KERR	Telephone	: +61-7-3243 7222
Project	: 237374	Date Samples Received	: 16-Feb-2018
Site	: ----	Issue Date	: 26-Feb-2018
Sampler	: KAITLIN MULCAHY	No. of samples received	: 14
Order number	: ----	No. of samples analysed	: 14

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- Duplicate outliers exist - please see following pages for full details.
- Laboratory Control outliers exist - please see following pages for full details.
- Matrix Spike outliers exist - please see following pages for full details.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005-SD: Total Metals in Sediments by ICP-AES	EB1804288--021	Anonymous	Iron	7439-89-6	33.6 %	0% - 20%	RPD exceeds LOR based limits
EG020-SD: Total Metals in Sediments by ICPMS	EB1804288--021	Anonymous	Manganese	7439-96-5	56.6 %	0% - 20%	RPD exceeds LOR based limits
EG020-SD: Total Metals in Sediments by ICPMS	EB1804288--021	Anonymous	Zinc	7440-66-6	27.9 %	0% - 20%	RPD exceeds LOR based limits
Matrix Spike (MS) Recoveries							
EK255A SD: Ammonia in Sediment	EB1804288--021	Anonymous	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK255A SD: Ammonia in Sediment	EB1804407--006	BH07_4.0_4.4	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons	EB1804288--022	Anonymous	C6 - C9 Fraction	----	60.8 %	70-130%	Recovery less than lower data quality objective
EP080-SD / EP071-SD: Total Recoverable Hydrocarbon	EB1804288--022	Anonymous	C6 - C10 Fraction	C6_C10	59.6 %	70-130%	Recovery less than lower data quality objective
EP080-SD: BTEXN	EB1804288--022	Anonymous	Benzene	71-43-2	59.8 %	70-130%	Recovery less than lower data quality objective
EP090: Organotin Compounds	EB1804407--002	BH07_0.5_1.0	Monobutyltin	78763-54-9	14.7 %	35-130%	Recovery less than lower data quality objective
EP090: Organotin Compounds	EB1804407--006	BH07_4.0_4.4	Monobutyltin	78763-54-9	2.49 %	35-130%	Recovery less than lower data quality objective

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068B: Organophosphorus Pesticides (OP)	QC-1444372-002	----	Monocrotophos	6923-22-4	10.0 %	16-49%	Recovery less than lower control limit

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP131S: OC Pesticide Surrogate	EB1804407-005	BH07_3.0_4.0	Dibromo-DDE	21655-73-2	122 %	10-119 %	Recovery greater than upper data quality objective
EP131S: OC Pesticide Surrogate	EB1804407-009	BH08_1.0_2.0	Dibromo-DDE	21655-73-2	126 %	10-119 %	Recovery greater than upper data quality objective
EP131T: PCB Surrogate	EB1804407-005	BH07_3.0_4.0	Decachlorobiphenyl	2051-24-3	124 %	10-106 %	Recovery greater than upper data quality objective
EP131T: PCB Surrogate	EB1804407-009	BH08_1.0_2.0	Decachlorobiphenyl	2051-24-3	110 %	10-106 %	Recovery greater than upper data quality objective

Outliers : Frequency of Quality Control Samples



Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	1	18	5.56	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	1	19	5.26	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Pesticides by GCMS	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA029-A: pH Measurements								
Snap Lock Bag - frozen (EA029) BH07_0.0_0.5, BH07_3.0_4.0, BH08_1.0_2.0, ASS_DUP7	BH07_1.0_2.0, BH08_0.0_0.5, BH08_3.0_3.7,	15-Feb-2018	22-Feb-2018	10-Nov-2020	✔	22-Feb-2018	23-May-2018	✔
EA029-B: Acidity Trail								
Snap Lock Bag - frozen (EA029) BH07_0.0_0.5, BH07_3.0_4.0, BH08_1.0_2.0, ASS_DUP7	BH07_1.0_2.0, BH08_0.0_0.5, BH08_3.0_3.7,	15-Feb-2018	22-Feb-2018	10-Nov-2020	✔	22-Feb-2018	23-May-2018	✔
EA029-C: Sulfur Trail								
Snap Lock Bag - frozen (EA029) BH07_0.0_0.5, BH07_3.0_4.0, BH08_1.0_2.0, ASS_DUP7	BH07_1.0_2.0, BH08_0.0_0.5, BH08_3.0_3.7,	15-Feb-2018	22-Feb-2018	10-Nov-2020	✔	22-Feb-2018	23-May-2018	✔



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-D: Calcium Values								
Snap Lock Bag - frozen (EA029) BH07_0.0_0.5, BH07_3.0_4.0, BH08_1.0_2.0, ASS_DUP7	BH07_1.0_2.0, BH08_0.0_0.5, BH08_3.0_3.7,	15-Feb-2018	22-Feb-2018	10-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
EA029-E: Magnesium Values								
Snap Lock Bag - frozen (EA029) BH07_0.0_0.5, BH07_3.0_4.0, BH08_1.0_2.0, ASS_DUP7	BH07_1.0_2.0, BH08_0.0_0.5, BH08_3.0_3.7,	15-Feb-2018	22-Feb-2018	10-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
EA029-F: Excess Acid Neutralising Capacity								
Snap Lock Bag - frozen (EA029) BH07_0.0_0.5, BH07_3.0_4.0, BH08_1.0_2.0, ASS_DUP7	BH07_1.0_2.0, BH08_0.0_0.5, BH08_3.0_3.7,	15-Feb-2018	22-Feb-2018	10-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
EA029-G: Retained Acidity								
Snap Lock Bag - frozen (EA029) BH07_0.0_0.5, BH07_3.0_4.0, BH08_1.0_2.0, ASS_DUP7	BH07_1.0_2.0, BH08_0.0_0.5, BH08_3.0_3.7,	15-Feb-2018	22-Feb-2018	10-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
EA029-H: Acid Base Accounting								
Snap Lock Bag - frozen (EA029) BH07_0.0_0.5, BH07_3.0_4.0, BH08_1.0_2.0, ASS_DUP7	BH07_1.0_2.0, BH08_0.0_0.5, BH08_3.0_3.7,	15-Feb-2018	22-Feb-2018	10-Nov-2020	✓	22-Feb-2018	23-May-2018	✓
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037) BH07_0.5_1.0, BH07_4.0_4.4, BH08_2.0_3.0	BH07_2.0_3.0, BH08_0.5_1.0,	15-Feb-2018	22-Feb-2018	14-Aug-2018	✓	22-Feb-2018	14-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		15-Feb-2018	----	----	----	19-Feb-2018	01-Mar-2018	✓
BH07_0.0_0.5,	BH07_0.5_1.0,							
BH07_1.0_2.0,	BH07_2.0_3.0,							
BH07_3.0_4.0,	BH07_4.0_4.4,							
BH08_0.0_0.5,	BH08_0.5_1.0,							
BH08_1.0_2.0,	BH08_2.0_3.0,							
BH08_3.0_3.7								
EA150: Particle Sizing								
80* dried soil (EA150H)		15-Feb-2018	----	----	----	22-Feb-2018	14-Aug-2018	✓
BH07_0.0_0.5,	BH07_1.0_2.0,							
BH07_3.0_4.0,	BH08_0.0_0.5,							
BH08_1.0_2.0,	BH08_3.0_3.7							
EA150: Soil Classification based on Particle Size								
80* dried soil (EA150H)		15-Feb-2018	----	----	----	22-Feb-2018	14-Aug-2018	✓
BH07_0.0_0.5,	BH07_1.0_2.0,							
BH07_3.0_4.0,	BH08_0.0_0.5,							
BH08_1.0_2.0,	BH08_3.0_3.7							
EA152: Soil Particle Density								
80* dried soil (EA152)		15-Feb-2018	----	----	----	22-Feb-2018	14-Aug-2018	✓
BH07_0.0_0.5,	BH07_1.0_2.0,							
BH07_3.0_4.0,	BH08_0.0_0.5,							
BH08_1.0_2.0,	BH08_3.0_3.7							
EG005-SD: Total Metals in Sediments by ICP-AES								
Soil Glass Jar - Unpreserved (EG005-SD)		15-Feb-2018	20-Feb-2018	14-Aug-2018	✓	21-Feb-2018	14-Aug-2018	✓
BH07_0.0_0.5,	BH07_0.5_1.0,							
BH07_1.0_2.0,	BH07_2.0_3.0							
Soil Glass Jar - Unpreserved (EG005-SD)		15-Feb-2018	21-Feb-2018	14-Aug-2018	✓	21-Feb-2018	14-Aug-2018	✓
BH07_3.0_4.0,	BH07_4.0_4.4,							
BH08_0.0_0.5,	BH08_0.5_1.0,							
BH08_1.0_2.0,	BH08_2.0_3.0,							
BH08_3.0_3.7								
EG020-SD: Total Metals in Sediments by ICPMS								
Soil Glass Jar - Unpreserved (EG020-SD)		15-Feb-2018	20-Feb-2018	14-Aug-2018	✓	21-Feb-2018	14-Aug-2018	✓
BH07_0.0_0.5,	BH07_0.5_1.0,							
BH07_1.0_2.0,	BH07_2.0_3.0							
Soil Glass Jar - Unpreserved (EG020-SD)		15-Feb-2018	21-Feb-2018	14-Aug-2018	✓	21-Feb-2018	14-Aug-2018	✓
BH07_3.0_4.0,	BH07_4.0_4.4,							
BH08_0.0_0.5,	BH08_0.5_1.0,							
BH08_1.0_2.0,	BH08_2.0_3.0,							
BH08_3.0_3.7								



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T-LL) BH07_0.0_0.5, BH07_1.0_2.0,	BH07_0.5_1.0, BH07_2.0_3.0	15-Feb-2018	20-Feb-2018	15-Mar-2018	✓	21-Feb-2018	15-Mar-2018	✓
Soil Glass Jar - Unpreserved (EG035T-LL) BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0, BH08_3.0_3.7	BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0,	15-Feb-2018	21-Feb-2018	15-Mar-2018	✓	21-Feb-2018	15-Mar-2018	✓
EK057G: Nitrite as N by Discrete Analyser								
Soil Glass Jar - Unpreserved (EK057G) BH07_0.0_0.5, BH07_1.0_2.0,	BH07_0.5_1.0, BH07_2.0_3.0	15-Feb-2018	20-Feb-2018	14-Aug-2018	✓	21-Feb-2018	14-Aug-2018	✓
Soil Glass Jar - Unpreserved (EK057G) BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0, BH08_3.0_3.7	BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0,	15-Feb-2018	21-Feb-2018	14-Aug-2018	✓	23-Feb-2018	14-Aug-2018	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Soil Glass Jar - Unpreserved (EK059G) BH07_0.0_0.5, BH07_1.0_2.0,	BH07_0.5_1.0, BH07_2.0_3.0	15-Feb-2018	20-Feb-2018	14-Aug-2018	✓	21-Feb-2018	14-Aug-2018	✓
Soil Glass Jar - Unpreserved (EK059G) BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0, BH08_3.0_3.7	BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0,	15-Feb-2018	21-Feb-2018	14-Aug-2018	✓	23-Feb-2018	14-Aug-2018	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Soil Glass Jar - Unpreserved (EK061G) BH07_0.0_0.5, BH07_1.0_2.0,	BH07_0.5_1.0, BH07_2.0_3.0	15-Feb-2018	20-Feb-2018	14-Aug-2018	✓	21-Feb-2018	14-Aug-2018	✓
Soil Glass Jar - Unpreserved (EK061G) BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0, BH08_3.0_3.7	BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0,	15-Feb-2018	21-Feb-2018	14-Aug-2018	✓	21-Feb-2018	14-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser							
Soil Glass Jar - Unpreserved (EK067G) BH07_0.0_0.5, BH07_1.0_2.0, BH07_0.5_1.0, BH07_2.0_3.0	15-Feb-2018	20-Feb-2018	14-Aug-2018	✓	21-Feb-2018	14-Aug-2018	✓
Soil Glass Jar - Unpreserved (EK067G) BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0, BH08_3.0_3.7 BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0	15-Feb-2018	21-Feb-2018	14-Aug-2018	✓	21-Feb-2018	14-Aug-2018	✓
EK255A SD: Ammonia in Sediment							
Soil Glass Jar - Unpreserved (EK255A SD) BH07_0.0_0.5, BH07_1.0_2.0, BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0, BH08_3.0_3.7 BH07_0.5_1.0, BH07_2.0_3.0, BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0	15-Feb-2018	----	----	----	22-Feb-2018	14-Aug-2018	✓
EP003: Total Organic Carbon (TOC) in Soil							
Pulp Bag (EP003) BH07_0.0_0.5, BH07_1.0_2.0, BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0, BH08_3.0_3.7 BH07_0.5_1.0, BH07_2.0_3.0, BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0	15-Feb-2018	21-Feb-2018	15-Mar-2018	✓	21-Feb-2018	15-Mar-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) Trip04	15-Feb-2018	19-Feb-2018	01-Mar-2018	✓	20-Feb-2018	01-Mar-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) Trip04	15-Feb-2018	19-Feb-2018	01-Mar-2018	✓	20-Feb-2018	01-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP071-SD) BH07_0.0_0.5, BH07_1.0_2.0, BH07_0.5_1.0, BH07_2.0_3.0	15-Feb-2018	20-Feb-2018	01-Mar-2018	✓	22-Feb-2018	01-Apr-2018	✓
Soil Glass Jar - Unpreserved (EP071-SD) BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0, BH08_3.0_3.7 BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0	15-Feb-2018	21-Feb-2018	01-Mar-2018	✓	22-Feb-2018	02-Apr-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) Trip04	15-Feb-2018	19-Feb-2018	01-Mar-2018	✓	20-Feb-2018	01-Mar-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080-SD)		15-Feb-2018	19-Feb-2018	01-Mar-2018	✓	20-Feb-2018	01-Mar-2018	✓
BH07_0.0_0.5,	BH07_0.5_1.0,							
BH07_1.0_2.0,	BH07_2.0_3.0,							
BH07_3.0_4.0,	BH07_4.0_4.4,							
BH08_0.0_0.5,	BH08_0.5_1.0,							
BH08_1.0_2.0,	BH08_2.0_3.0,							
BH08_3.0_3.7								
Soil Glass Jar - Unpreserved (EP071-SD)		15-Feb-2018	20-Feb-2018	01-Mar-2018	✓	22-Feb-2018	01-Apr-2018	✓
BH07_0.0_0.5,	BH07_0.5_1.0,							
BH07_1.0_2.0,	BH07_2.0_3.0							
Soil Glass Jar - Unpreserved (EP071-SD)		15-Feb-2018	21-Feb-2018	01-Mar-2018	✓	22-Feb-2018	02-Apr-2018	✓
BH07_3.0_4.0,	BH07_4.0_4.4,							
BH08_0.0_0.5,	BH08_0.5_1.0,							
BH08_1.0_2.0,	BH08_2.0_3.0,							
BH08_3.0_3.7								
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080-SD)		15-Feb-2018	19-Feb-2018	01-Mar-2018	✓	20-Feb-2018	01-Mar-2018	✓
BH07_0.0_0.5,	BH07_0.5_1.0,							
BH07_1.0_2.0,	BH07_2.0_3.0,							
BH07_3.0_4.0,	BH07_4.0_4.4,							
BH08_0.0_0.5,	BH08_0.5_1.0,							
BH08_1.0_2.0,	BH08_2.0_3.0,							
BH08_3.0_3.7								
EP080-SD: BTEXN								
Soil Glass Jar - Unpreserved (EP080-SD)		15-Feb-2018	19-Feb-2018	01-Mar-2018	✓	20-Feb-2018	01-Mar-2018	✓
BH07_0.0_0.5,	BH07_0.5_1.0,							
BH07_1.0_2.0,	BH07_2.0_3.0,							
BH07_3.0_4.0,	BH07_4.0_4.4,							
BH08_0.0_0.5,	BH08_0.5_1.0,							
BH08_1.0_2.0,	BH08_2.0_3.0,							
BH08_3.0_3.7								
EP090: Organotin Compounds								
Soil Glass Jar - Unpreserved (EP090)		15-Feb-2018	21-Feb-2018	01-Mar-2018	✓	23-Feb-2018	02-Apr-2018	✓
BH07_0.0_0.5,	BH07_0.5_1.0,							
BH07_1.0_2.0,	BH07_2.0_3.0,							
BH07_3.0_4.0,	BH07_4.0_4.4,							
BH08_0.0_0.5,	BH08_0.5_1.0,							
BH08_1.0_2.0,	BH08_2.0_3.0,							
BH08_3.0_3.7								



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Soil Glass Jar - Unpreserved (EP130) BH07_0.0_0.5, BH07_1.0_2.0, BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0,	BH07_0.5_1.0, BH07_2.0_3.0, BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0	15-Feb-2018	21-Feb-2018	01-Mar-2018	✔	21-Feb-2018	02-Apr-2018	✔
Soil Glass Jar - Unpreserved (EP130) BH08_3.0_3.7		15-Feb-2018	22-Feb-2018	01-Mar-2018	✔	22-Feb-2018	03-Apr-2018	✔
EP131A: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP131A) BH07_0.0_0.5, BH07_1.0_2.0, BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0,	BH07_0.5_1.0, BH07_2.0_3.0, BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0	15-Feb-2018	21-Feb-2018	01-Mar-2018	✔	21-Feb-2018	02-Apr-2018	✔
Soil Glass Jar - Unpreserved (EP131A) BH08_3.0_3.7		15-Feb-2018	22-Feb-2018	01-Mar-2018	✔	22-Feb-2018	03-Apr-2018	✔
EP131B: Polychlorinated Biphenyls (as Aroclors)								
Soil Glass Jar - Unpreserved (EP131B) BH07_0.0_0.5, BH07_1.0_2.0, BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0,	BH07_0.5_1.0, BH07_2.0_3.0, BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0	15-Feb-2018	21-Feb-2018	01-Mar-2018	✔	21-Feb-2018	02-Apr-2018	✔
Soil Glass Jar - Unpreserved (EP131B) BH08_3.0_3.7		15-Feb-2018	22-Feb-2018	01-Mar-2018	✔	22-Feb-2018	03-Apr-2018	✔
EP132B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP132B-SD) BH07_0.0_0.5, BH07_1.0_2.0, BH07_3.0_4.0, BH08_0.0_0.5, BH08_1.0_2.0,	BH07_0.5_1.0, BH07_2.0_3.0, BH07_4.0_4.4, BH08_0.5_1.0, BH08_2.0_3.0	15-Feb-2018	20-Feb-2018	01-Mar-2018	✔	21-Feb-2018	01-Apr-2018	✔
Soil Glass Jar - Unpreserved (EP132B-SD) BH08_3.0_3.7		15-Feb-2018	21-Feb-2018	01-Mar-2018	✔	22-Feb-2018	02-Apr-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T) RIN04	15-Feb-2018	20-Feb-2018	14-Aug-2018	✓	20-Feb-2018	14-Aug-2018	✓



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T) RIN04	15-Feb-2018	----	----	----	20-Feb-2018	15-Mar-2018	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066) RIN04	15-Feb-2018	20-Feb-2018	22-Feb-2018	✓	21-Feb-2018	01-Apr-2018	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068) RIN04	15-Feb-2018	20-Feb-2018	22-Feb-2018	✓	21-Feb-2018	01-Apr-2018	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) RIN04	15-Feb-2018	20-Feb-2018	22-Feb-2018	✓	21-Feb-2018	01-Apr-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) RIN04	15-Feb-2018	20-Feb-2018	22-Feb-2018	✓	21-Feb-2018	01-Apr-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) RIN04	15-Feb-2018	20-Feb-2018	22-Feb-2018	✓	21-Feb-2018	01-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RIN04	15-Feb-2018	20-Feb-2018	01-Mar-2018	✓	20-Feb-2018	01-Mar-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) RIN04	15-Feb-2018	20-Feb-2018	22-Feb-2018	✓	21-Feb-2018	01-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RIN04	15-Feb-2018	20-Feb-2018	01-Mar-2018	✓	20-Feb-2018	01-Mar-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) RIN04	15-Feb-2018	20-Feb-2018	01-Mar-2018	✓	20-Feb-2018	01-Mar-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ***** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Ammonia in Sediments	EK255A SD	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
ASS Field Screening Analysis	EA037	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fe and Al in Sediments by ICPAES	EG005-SD	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	4	26	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia in Sediments	EK255A SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	2	11	18.18	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	4	26	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
Total Metals in Sediments by ICPMS	EG020-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	4	26	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia in Sediments	EK255A SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	2	11	18.18	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fe and Al in Sediments by ICPAES	EG005-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia in Sediments	EK255A SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	2	11	18.18	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Phosphorus By Discrete Analyser	EK067G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.56	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	SOIL	In house: Referenced to Ahern et al 2004 - a suspension peroxide oxidation method following the 'sulfur trail' by determining the level of 1M KCL extractable sulfur and the sulfur level after oxidation of soil sulphides. The 'acidity trail' is followed by measurement of TAA, TPA and TSA. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Soil Particle Density	* EA152	SOIL	Soil Particle Density by AS 1289.3.5.1-2006 : Methods of testing soils for engineering purposes - Soil classification tests - Determination of the soil particle density of a soil - Standard method
Total Fe and Al in Sediments by ICPAES	EG005-SD	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3). LORs per NODG
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N - Soluble by Discrete Analyser	EK057G	SOIL	In house: Referenced to APHA 4500-NO ₃ - B. Nitrite in a water extract is determined by direct colourimetry by Discrete Analyser.
Nitrate as N - Soluble by Discrete Analyser	EK058G	SOIL	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate in the 1:5 soil:water extract is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N (NO _x)- Soluble by Discrete Analyser	EK059G	SOIL	In house: Thermo Scientific Method D08727 and NEMI (National Environmental Method Index) Method ID: 9171. This method covers the determination of total oxidised nitrogen (NO _x -N) and nitrate (NO ₃ -N) by calculation, Combined oxidised Nitrogen (NO ₂ +NO ₃) in a water extract is determined by direct colourimetry by Discrete Analyser.
TKN as N By Discrete Analyser	EK061G	SOIL	In house: Referenced to APHA 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Discrete Analyser.
Total Nitrogen as N (TKN + NO _x) By Discrete Analyser	EK062G	SOIL	In house: Referenced to APHA 4500 Norg/NO ₃ - Total Nitrogen is determined as the sum of TKN and Oxidised Nitrogen, each determined separately as N.



Analytical Methods	Method	Matrix	Method Descriptions
Total Phosphorus By Discrete Analyser	EK067G	SOIL	In house: Referenced to APHA 4500 P-B&F This procedure involves sulfuric acid digestion and quantification using Discrete Analyser.
Ammonia in Sediments	EK255A SD	SOIL	In house: Referenced to Rayment and Higginson (1992) Method 7C1 and 7C2. This method measures exchangeable ammonium which is defined by the amount of ammonium released by shaking sediment with an un-buffered 2M potassium chloride solution.
Total Organic Carbon	EP003	SOIL	In house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.
TPH - Semivolatile Fraction	EP071-SD	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
TRH Volatiles/BTEX in Sediments	EP080-SD	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Organotin Analysis	EP090	SOIL	In house: Referenced to USEPA SW 846 - 8270D Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quantified against an established calibration curve.
Organophosphorus Pesticides (Ultra-trace)	EP130	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup), 8141 (GC/FPD - Capillary Column) This technique is compliant with NEPM (2013) Schedule B(3).
Organochlorine Pesticides (Ultra-trace)	EP131A	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/μECD/μECD) This technique is compliant with NEPM (2013) Schedule B(3)
PCB's (Ultra-trace)	EP131B	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/μECD/μECD) This technique is compliant with NEPM (2013) Schedule B(3)
PAHs in Sediments by GCMS(SIM)	EP132B-SD	SOIL	In house: Referenced to USEPA 8270D GCMS Capillary column, SIM mode using large volume programmed temperature vaporisation injection.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	SOIL	In house: Referenced to APHA 4500 Norg- D; APHA 4500 P - H. Macro Kjeldahl digestion.
Drying only	EN020D	SOIL	In house
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Dry and Pulverise (up to 100g)	GEO30	SOIL	#
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In house: Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids for LVI (Non-concentrating)	ORG17D	SOIL	In house: 10g of sample, Na2SO4 and surrogate are extracted with 50mL 1:1 DCM/Acetone by end over end tumbling. An aliquot is concentrated by nitrogen blowdown to a reduced volume for analysis if required.
Organotin Sample Preparation	ORG35	SOIL	In house: 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

QUALITY CONTROL REPORT

Work Order	: EB1804407	Page	: 1 of 35
Client	: AURECON AUSTRALASIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MS GEORGINA KERR	Contact	: John Pickering
Address	: LOCKED BAG 331 32 TURBOT STREET BRISBANE QLD, AUSTRALIA 4001	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3173 8396	Telephone	: +61-7-3243 7222
Project	: 237374	Date Samples Received	: 16-Feb-2018
Order number	: ----	Date Analysis Commenced	: 19-Feb-2018
C-O-C number	: ----	Issue Date	: 26-Feb-2018
Sampler	: KAITLIN MULCAHY		
Site	: ----		
Quote number	: BN/004/18		
No. of samples received	: 14		
No. of samples analysed	: 14		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
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Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils, Stafford, QLD
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Inorganics, Stafford, QLD



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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 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
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-A: pH Measurements (QC Lot: 1447184)									
EB1804288-029	Anonymous	EA029: pH KCl (23A)	----	0.1	pH Unit	8.1	8.2	1.23	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	3.0	3.0	0.00	0% - 20%
EB1804407-009	BH08_1.0_2.0	EA029: pH KCl (23A)	----	0.1	pH Unit	8.4	8.5	1.18	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	7.9	7.8	0.00	0% - 20%
EA029-B: Acidity Trail (QC Lot: 1447184)									
EB1804288-029	Anonymous	EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	0.296	0.281	5.16	0% - 50%
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	0.296	0.281	5.16	0% - 50%
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	185	175	5.16	0% - 20%
		EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	185	175	5.16	0% - 20%
EB1804407-009	BH08_1.0_2.0	EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	0.00	No Limit
EA029-C: Sulfur Trail (QC Lot: 1447184)									
EB1804288-029	Anonymous	EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.072	0.074	3.70	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.735	0.717	2.48	0% - 20%
		EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.663	0.642	3.17	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA029-H: Acid Base Accounting (QC Lot: 1447184) - continued									
EB1804288-029	Anonymous	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	0.42	0.40	4.10	0% - 20%
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.42	0.40	4.10	0% - 20%
		EA029: Liming Rate	----	1	kg CaCO3/t	20	19	0.00	0% - 50%
		EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	20	19	0.00	0% - 50%
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	261	250	4.10	0% - 20%
		EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	261	250	4.10	0% - 20%
EB1804407-009	BH08_1.0_2.0	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.78	0.81	3.22	0% - 20%
		EA029: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.00	No Limit
		EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	36	38	3.22	0% - 20%
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit
		EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	488	504	3.22	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 1448282)									
EB1804288-006	Anonymous	EA037: pH (F)	----	0.1	pH Unit	8.8	8.8	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.6	5.7	0.00	0% - 20%
EB1804407-006	BH07_4.0_4.4	EA037: pH (F)	----	0.1	pH Unit	8.9	8.9	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.8	2.8	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1440725)									
EB1804288-021	Anonymous	EA055: Moisture Content	----	1	%	24.0	23.6	1.64	0% - 20%
EB1804288-032	Anonymous	EA055: Moisture Content	----	1	%	45.2	44.4	1.82	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1440746)									
EB1804407-005	BH07_3.0_4.0	EA055: Moisture Content	----	1	%	41.8	42.1	0.687	0% - 20%
EB1804453-004	Anonymous	EA055: Moisture Content	----	1	%	9.6	9.8	1.42	No Limit
EG005-SD: Total Metals in Sediments by ICP-AES (QC Lot: 1440714)									
EB1804288-021	Anonymous	EG005-SD: Aluminium	7429-90-5	50	mg/kg	16000	13600	16.8	0% - 20%
		EG005-SD: Iron	7439-89-6	50	mg/kg	46700	# 33200	33.6	0% - 20%
EB1804288-032	Anonymous	EG005-SD: Aluminium	7429-90-5	50	mg/kg	18600	18100	3.01	0% - 20%
		EG005-SD: Iron	7439-89-6	50	mg/kg	26700	28000	4.56	0% - 20%
EG005-SD: Total Metals in Sediments by ICP-AES (QC Lot: 1440732)									
EB1804407-005	BH07_3.0_4.0	EG005-SD: Aluminium	7429-90-5	50	mg/kg	13300	13000	2.36	0% - 20%
		EG005-SD: Iron	7439-89-6	50	mg/kg	24100	24100	0.00	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1440715)									
EB1804288-021	Anonymous	EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	21.5	25.4	16.8	0% - 20%
		EG020-SD: Copper	7440-50-8	1	mg/kg	26.0	31.5	18.9	0% - 20%
		EG020-SD: Lead	7439-92-1	1	mg/kg	6.0	9.3	42.4	No Limit
		EG020-SD: Zinc	7440-66-6	1	mg/kg	36.9	# 48.8	27.9	0% - 20%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	1370	# 2460	56.6	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1440715) - continued									
EB1804288-021	Anonymous	EG020-SD: Vanadium	7440-62-2	2	mg/kg	86.3	103	17.5	0% - 20%
EB1804288-021	Anonymous	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.3	0.3	0.00	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	<0.50	0.00	No Limit
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	11.2	7.92	34.5	0% - 50%
		EG020-SD: Chromium	7440-47-3	1	mg/kg	21.5	20.4	5.50	0% - 20%
		EG020-SD: Nickel	7440-02-0	1	mg/kg	17.1	13.5	23.6	0% - 50%
		EB1804288-032	Anonymous	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1
EG020-SD: Selenium	7782-49-2			0.1	mg/kg	0.3	0.3	0.00	No Limit
EG020-SD: Silver	7440-22-4			0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG020-SD: Antimony	7440-36-0			0.5	mg/kg	<0.50	<0.50	0.00	No Limit
EG020-SD: Cobalt	7440-48-4			0.5	mg/kg	11.1	11.0	1.03	0% - 20%
EG020-SD: Arsenic	7440-38-2			1	mg/kg	8.16	8.50	4.15	No Limit
EG020-SD: Chromium	7440-47-3			1	mg/kg	29.0	27.8	4.24	0% - 20%
EG020-SD: Copper	7440-50-8			1	mg/kg	21.3	20.4	4.06	0% - 20%
EG020-SD: Lead	7439-92-1			1	mg/kg	8.4	8.0	4.74	No Limit
EG020-SD: Nickel	7440-02-0			1	mg/kg	12.6	12.3	2.78	0% - 50%
EG020-SD: Zinc	7440-66-6			1	mg/kg	41.5	40.2	3.17	0% - 20%
EG020-SD: Manganese	7439-96-5			10	mg/kg	220	214	2.59	0% - 20%
EG020-SD: Vanadium	7440-62-2			2	mg/kg	53.2	50.9	4.47	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1440733)									
EB1804407-005	BH07_3.0_4.0	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.4	0.4	0.00	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	<0.50	0.00	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	12.0	12.2	1.86	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	7.05	7.74	9.33	No Limit
		EG020-SD: Chromium	7440-47-3	1	mg/kg	23.3	23.3	0.00	0% - 20%
		EG020-SD: Copper	7440-50-8	1	mg/kg	23.2	24.0	3.50	0% - 20%
		EG020-SD: Lead	7439-92-1	1	mg/kg	8.4	8.2	2.79	No Limit
		EG020-SD: Nickel	7440-02-0	1	mg/kg	10.9	10.9	0.00	0% - 50%
		EG020-SD: Zinc	7440-66-6	1	mg/kg	36.4	37.0	1.34	0% - 20%
		EG020-SD: Manganese	7439-96-5	10	mg/kg	322	282	13.0	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2	mg/kg	50.2	50.8	1.19	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1440716)									
EB1804288-021	Anonymous	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.01	0.02	0.00	0% - 20%
EB1804288-032	Anonymous	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.02	0.02	0.00	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1440734)									
EB1804407-005	BH07_3.0_4.0	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.01	0.01	0.00	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 1440720)									
EB1804288-021	Anonymous	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1804288-032	Anonymous	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 1440740)									
EB1804407-005	BH07_3.0_4.0	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 1440719)									
EB1804288-021	Anonymous	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.4	0.2	64.4	No Limit
EB1804288-032	Anonymous	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 1440739)									
EB1804407-005	BH07_3.0_4.0	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 1440718)									
EB1804288-021	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	210	240	14.4	0% - 50%
EB1804288-032	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	460	480	4.62	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 1440738)									
EB1804407-005	BH07_3.0_4.0	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	610	590	3.26	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 1440717)									
EB1804288-021	Anonymous	EK067G: Total Phosphorus as P	----	2	mg/kg	496	591	17.5	0% - 20%
EB1804288-032	Anonymous	EK067G: Total Phosphorus as P	----	2	mg/kg	209	214	2.51	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 1440737)									
EB1804407-005	BH07_3.0_4.0	EK067G: Total Phosphorus as P	----	2	mg/kg	317	261	19.3	0% - 20%
EK255A SD: Ammonia in Sediment (QC Lot: 1450343)									
EB1804288-021	Anonymous	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	2.9	2.4	18.7	0% - 50%
EB1804288-032	Anonymous	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	21.4	19.9	7.22	0% - 20%
EK255A SD: Ammonia in Sediment (QC Lot: 1450344)									
EB1804407-006	BH07_4.0_4.4	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	118	114	3.76	0% - 20%
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 1447556)									
EB1804407-001	BH07_0.0_0.5	EP003: Total Organic Carbon	----	0.02	%	0.61	0.58	4.73	0% - 20%
EB1804407-011	BH08_3.0_3.7	EP003: Total Organic Carbon	----	0.02	%	0.63	0.66	5.25	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1440730)									
EB1804407-014	Trip04	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1440730)									
EB1804407-014	Trip04	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 1440730)									
EB1804407-014	Trip04	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1440730) - continued									
EB1804407-014	Trip04	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1440721)									
EB1804288-021	Anonymous	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	3	4	0.00	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	3	4	28.6	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EB1804288-031	Anonymous	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	4	29.8	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	9	100	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	5	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1440722)									
EB1804288-021	Anonymous	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
EB1804288-031	Anonymous	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1440728)									
EB1804407-005	BH07_3.0_4.0	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	3	<3	0.00	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	3	<3	0.00	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 1440729)									
EB1804407-005	BH07_3.0_4.0	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1440721)									
EB1804288-021	Anonymous	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	5	5	0.00	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	5	5	0.00	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EB1804288-031	Anonymous	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	5	6	28.4	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	5	6	18.2	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1440722)									
EB1804288-021	Anonymous	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	No Limit
EB1804288-031	Anonymous	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1440728)									
EB1804407-005	BH07_3.0_4.0	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	4	4	0.00	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	4	4	0.00	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 1440729)									
EB1804407-005	BH07_3.0_4.0	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080-SD: BTEXN (QC Lot: 1440722)									
EB1804288-021	Anonymous	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
			106-42-3						
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EB1804288-031	Anonymous	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
			106-42-3						
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP080-SD: BTEXN (QC Lot: 1440729)									
EB1804407-005	BH07_3.0_4.0	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
			106-42-3						
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP090: Organotin Compounds (QC Lot: 1440724)									
EB1804407-001	BH07_0.0_0.5	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.00	No Limit
		EP090: Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	0.00	No Limit
		EP090: Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	0.00	No Limit
EP090: Organotin Compounds (QC Lot: 1440741)									
EB1804407-005	BH07_3.0_4.0	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.00	No Limit
		EP090: Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	0.00	No Limit
		EP090: Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	0.00	No Limit
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1444819)									
EB1804288-021	Anonymous	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1444819) - continued									
EB1804288-021	Anonymous	EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EB1804288-032	Anonymous	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1444825)									
EB1804407-001	BH07_0.0_0.5	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 1444825) - continued									
EB1804407-001	BH07_0.0_0.5	EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EP131A: Organochlorine Pesticides (QC Lot: 1444821)									
EB1804288-021	Anonymous	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131A: Organochlorine Pesticides (QC Lot: 1444821) - continued									
EB1804288-021	Anonymous	EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EB1804288-032	Anonymous	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EP131A: Organochlorine Pesticides (QC Lot: 1444827)									
EB1804407-001	BH07_0.0_0.5	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131A: Organochlorine Pesticides (QC Lot: 1444827) - continued									
EB1804407-001	BH07_0.0_0.5	EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1444820)									
EB1804288-021	Anonymous	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
EB1804288-032	Anonymous	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1444826)									
EB1804407-001	BH07_0.0_0.5	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	<5.0	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	<5.0	0.00	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1444835)									
EB1804288-021	Anonymous	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1444835) - continued									
EB1804288-021	Anonymous	EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	<4	0.00	No Limit
			205-82-3						
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenzo(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1,2,3,cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit
EB1804288-032	Anonymous	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	<4	0.00	No Limit
			205-82-3						
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	47	37	24.0	0% - 50%
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenzo(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1,2,3,cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	47	37	23.8	0% - 50%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1444835) - continued									
EB1804288-032	Anonymous	EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1444836)									
EB1804407-001	BH07_0.0_0.5	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	<4	0.00	No Limit
		205-82-3							
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1,2,3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1443490)									
EB1804323-010	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.005	0.004	0.00	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.025	0.025	0.00	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.006	0.005	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.060	0.058	2.03	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.078	0.076	3.18	0% - 50%

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1443490) - continued									
EB1804323-010	Anonymous	EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EB1804439-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.013	0.013	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.007	0.007	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.009	0.009	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.026	<0.026	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.05	<0.05	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.05	<0.05	0.00	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	3.88	3.98	2.36	0% - 20%
		EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1443495)							
EB1804288-041	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EB1804374-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1444368)									
EB1804277-022	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	0.00	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1441038)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1441038) - continued									
EB1804225-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<0.02 mg/L	<20	0.00	No Limit
EB1804407-013	RIN04	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1444369)									
EB1804277-022	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	460	510	11.2	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	200	230	14.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1441038)									
EB1804225-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<0.02 mg/L	<20	0.00	No Limit
EB1804407-013	RIN04	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1444369)									
EB1804277-022	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	570	640	12.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	140	160	13.1	No Limit
EP080: BTEXN (QC Lot: 1441038)									
EB1804225-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<0.001 mg/L	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<0.005 mg/L	<5	0.00	No Limit
EB1804407-013	RIN04	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)
				Concentration		LCS	Low	High
EA029-A: pH Measurements (QCLot: 1447184)								
EA029: pH KCl (23A)	----	0.1	pH Unit	<0.1	4.6 pH Unit	102	70	130
EA029: pH OX (23B)	----	0.1	pH Unit	<0.1	4.3 pH Unit	100	70	130
EA029-B: Acidity Trail (QCLot: 1447184)								
EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	17.7 mole H+ / t	89.7	70	130
EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	35.2 mole H+ / t	100	70	130
EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	----	----	----	----
EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029-C: Sulfur Trail (QCLot: 1447184)								
EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.020	0.052 % S	94.3	70	130
EA029: Peroxide Sulfur (23De)	----	0.02	% S	<0.020	0.158 % S	101	70	130
EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.020	----	----	----	----
EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	----	----	----	----
EA029-D: Calcium Values (QCLot: 1447184)								
EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	<0.020	0.097 % Ca	113	70	130
EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	<0.020	0.22 % Ca	99.5	70	130
EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.020	----	----	----	----
EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.020	----	----	----	----
EA029-E: Magnesium Values (QCLot: 1447184)								
EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	<0.020	0.25 % Mg	97.0	70	130
EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	<0.020	0.234 % Mg	93.9	70	130
EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.020	----	----	----	----
EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	<0.020	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity (QCLot: 1447184)								
EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	<0.020	----	----	----	----
EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	<0.020	----	----	----	----
EA029-H: Acid Base Accounting (QCLot: 1447184)								
EA029: ANC Fineness Factor	----	0.5	-	<0.5	----	----	----	----
EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EA029-H: Acid Base Accounting (QCLot: 1447184) - continued								
EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	----	----	----	----
EG005-SD: Total Metals in Sediments by ICP-AES (QCLot: 1440714)								
EG005-SD: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005-SD: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005-SD: Total Metals in Sediments by ICP-AES (QCLot: 1440732)								
EG005-SD: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005-SD: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1440715)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1	mg/kg	<1.00	116.3 mg/kg	90.9	80	124
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	1.43 mg/kg	93.2	87	122
EG020-SD: Chromium	7440-47-3	1	mg/kg	<1.0	20.5 mg/kg	101	79	129
EG020-SD: Copper	7440-50-8	1	mg/kg	<1.0	52.9 mg/kg	93.2	85	118
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	----	----	----	----
EG020-SD: Lead	7439-92-1	1	mg/kg	<1.0	66.3 mg/kg	119	86	119
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	----	----	----	----
EG020-SD: Nickel	7440-02-0	1	mg/kg	<1.0	14.72 mg/kg	99.4	77	123
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	----	----	----	----
EG020-SD: Zinc	7440-66-6	1	mg/kg	<1.0	182.3 mg/kg	97.8	71	127
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1440733)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1	mg/kg	<1.00	116.3 mg/kg	80.9	80	124
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	1.43 mg/kg	98.5	87	122
EG020-SD: Chromium	7440-47-3	1	mg/kg	<1.0	20.5 mg/kg	91.0	79	129
EG020-SD: Copper	7440-50-8	1	mg/kg	<1.0	52.9 mg/kg	86.9	85	118
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	----	----	----	----
EG020-SD: Lead	7439-92-1	1	mg/kg	<1.0	66.3 mg/kg	95.5	86	119
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	----	----	----	----
EG020-SD: Nickel	7440-02-0	1	mg/kg	<1.0	14.72 mg/kg	82.1	77	123
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	----	----	----	----

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1440733) - continued								
EG020-SD: Zinc	7440-66-6	1	mg/kg	<1.0	182.3 mg/kg	90.0	71	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1440716)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.0555 mg/kg	95.5	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1440734)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.0555 mg/kg	82.2	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1440720)								
EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	2.5 mg/kg	94.8	83	111
EK057G: Nitrite as N by Discrete Analyser (QCLot: 1440740)								
EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	2.5 mg/kg	93.2	83	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1440719)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	93.2	86	115
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 1440739)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	93.0	86	115
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 1440718)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20 <20	877 mg/kg 3644 mg/kg	101 90.1	70 70	110 110
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 1440738)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20 <20	877 mg/kg 3644 mg/kg	99.6 90.3	70 70	110 110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1440717)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2 <2	766 mg/kg 1200 mg/kg	86.2 100	70 70	110 110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1440737)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2 <2	766 mg/kg 1200 mg/kg	82.6 107	70 70	110 110
EK255A SD: Ammonia in Sediment (QCLot: 1450343)								
EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	<0.2	1 mg/kg	116	79	121
EK255A SD: Ammonia in Sediment (QCLot: 1450344)								
EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	<0.2	1 mg/kg	120	79	121
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 1447556)								
EP003: Total Organic Carbon	----	0.02	%	<0.02	0.44 %	106	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1440730)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	75.9	72	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1440730)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	73.0	70	119
EP080: BTEXN (QCLot: 1440730)								



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080: BTEXN (QCLot: 1440730) - continued								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	84.1	69	118
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	89.5	73	123
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	88.7	73	115
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	93.5	75	115
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	94.4	75	115
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	89.4	71	113
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440721)								
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	159 mg/kg	95.0	43	126
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	266 mg/kg	95.8	66	140
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440722)								
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	16 mg/kg	76.2	66	120
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440728)								
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	159 mg/kg	100	43	126
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	266 mg/kg	101	66	140
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440729)								
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	16 mg/kg	75.0	66	120
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440721)								
EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	214 mg/kg	97.2	40	134
EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	198 mg/kg	95.1	66	136
EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440722)								
EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	18.5 mg/kg	73.8	66	119
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440728)								
EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	214 mg/kg	102	40	134
EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	198 mg/kg	101	66	136
EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	----	----	----	----
EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440729)								
EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	18.5 mg/kg	71.2	66	119
EP080-SD: BTEXN (QCLot: 1440722)								
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	86.8	73	105



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080-SD: BTEXN (QCLot: 1440722) - continued								
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	1 mg/kg	99.1	73	105
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	1 mg/kg	94.0	67	104
EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	2 mg/kg	98.9	66	106
	106-42-3							
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	1 mg/kg	93.8	68	105
EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	1 mg/kg	98.7	72	115
EP080-SD: BTEXN (QCLot: 1440729)								
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	85.8	73	105
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	1 mg/kg	94.4	73	105
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	1 mg/kg	95.0	67	104
EP080-SD: meta- & para-Xylene	108-38-3	0.2	mg/kg	<0.2	2 mg/kg	99.8	66	106
	106-42-3							
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	1 mg/kg	94.8	68	105
EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	1 mg/kg	93.3	72	115
EP090: Organotin Compounds (QCLot: 1440724)								
EP090: Monobutyltin	78763-54-9	1	µgSn/kg	<1	1.25 µgSn/kg	107	36	128
EP090: Dibutyltin	1002-53-5	1	µgSn/kg	<1	1.25 µgSn/kg	93.8	42	132
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	1.25 µgSn/kg	122	52	139
EP090: Organotin Compounds (QCLot: 1440741)								
EP090: Monobutyltin	78763-54-9	1	µgSn/kg	<1	1.25 µgSn/kg	71.1	36	128
EP090: Dibutyltin	1002-53-5	1	µgSn/kg	<1	1.25 µgSn/kg	83.4	42	132
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	1.25 µgSn/kg	94.2	52	139
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444819)								
EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	50 µg/kg	89.2	49	117
EP130: Carbophenothion	786-19-6	10	µg/kg	<10	50 µg/kg	76.3	54	104
EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	5 µg/kg	91.1	48	156
EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	50 µg/kg	89.5	53	119
EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	50 µg/kg	91.2	54	112
EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	50 µg/kg	86.8	52	108
EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	50 µg/kg	95.1	51	109
EP130: Diazinon	333-41-5	10	µg/kg	<10	50 µg/kg	88.9	57	121
EP130: Dichlorvos	62-73-7	10	µg/kg	<10	50 µg/kg	79.7	48	104
EP130: Dimethoate	60-51-5	10	µg/kg	<10	50 µg/kg	95.6	52	120
EP130: Ethion	563-12-2	10	µg/kg	<10	50 µg/kg	89.3	51	121



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444819) - continued								
EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	50 µg/kg	93.0	50	120
EP130: Fenthion	55-38-9	10	µg/kg	<10	50 µg/kg	92.2	48	112
EP130: Malathion	121-75-5	10	µg/kg	<10	50 µg/kg	91.6	51	121
EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	50 µg/kg	69.2	45	127
EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	50 µg/kg	83.0	48	128
EP130: Parathion	56-38-2	10	µg/kg	<10	50 µg/kg	91.4	49	125
EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	50 µg/kg	86.2	51	119
EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	50 µg/kg	89.6	48	120
EP130: Prothiofos	34643-46-4	10	µg/kg	<10	50 µg/kg	89.6	51	117
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444825)								
EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	50 µg/kg	70.5	49	117
EP130: Carbophenothion	786-19-6	10	µg/kg	<10	50 µg/kg	78.1	54	104
EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	5 µg/kg	86.0	48	156
EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	50 µg/kg	85.8	53	119
EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	50 µg/kg	72.8	54	112
EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	50 µg/kg	82.9	52	108
EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	50 µg/kg	70.7	51	109
EP130: Diazinon	333-41-5	10	µg/kg	<10	50 µg/kg	79.2	57	121
EP130: Dichlorvos	62-73-7	10	µg/kg	<10	50 µg/kg	77.4	48	104
EP130: Dimethoate	60-51-5	10	µg/kg	<10	50 µg/kg	91.6	52	120
EP130: Ethion	563-12-2	10	µg/kg	<10	50 µg/kg	74.9	51	121
EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	50 µg/kg	78.0	50	120
EP130: Fenthion	55-38-9	10	µg/kg	<10	50 µg/kg	64.4	48	112
EP130: Malathion	121-75-5	10	µg/kg	<10	50 µg/kg	86.1	51	121
EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	50 µg/kg	70.4	45	127
EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	50 µg/kg	77.9	48	128
EP130: Parathion	56-38-2	10	µg/kg	<10	50 µg/kg	70.4	49	125
EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	50 µg/kg	77.5	51	119
EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	50 µg/kg	71.7	48	120
EP130: Prothiofos	34643-46-4	10	µg/kg	<10	50 µg/kg	72.0	51	117
EP131A: Organochlorine Pesticides (QCLot: 1444821)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	99.0	38	139
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	88.6	18	136
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	103	31	131
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	92.3	37	140
EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	85.2	26	141
EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	54.6	35	129
EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	5 µg/kg	94.7	23	138



Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP131A: Organochlorine Pesticides (QCLot: 1444821) - continued								
EP131A: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	5 µg/kg	93.1	30	140
EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	5 µg/kg	78.8	38	140
EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	5 µg/kg	89.2	32	152
EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	5 µg/kg	92.0	36	155
EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	5 µg/kg	107	26	158
EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	5 µg/kg	82.2	20	118
EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	5 µg/kg	82.7	13	135
EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	5 µg/kg	96.4	39	155
EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	5 µg/kg	92.0	34	148
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	5 µg/kg	103	26	152
EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	5 µg/kg	90.9	31	137
EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	5 µg/kg	98.3	36	152
EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	5 µg/kg	86.1	36	142
EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	5 µg/kg	93.6	30	138
EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	----	----	----	----
EP131A: Organochlorine Pesticides (QCLot: 1444827)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	79.5	38	139
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	75.0	18	136
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	87.7	31	131
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	76.9	37	140
EP131A: 4,4'-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	67.9	26	141
EP131A: 4,4'-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	57.3	35	129
EP131A: 4,4'-DDT	50-29-3	0.5	µg/kg	<0.50	5 µg/kg	78.7	23	138
EP131A: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	5 µg/kg	75.7	30	140
EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	5 µg/kg	68.0	38	140
EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	5 µg/kg	74.8	32	152
EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	5 µg/kg	61.2	36	155
EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	5 µg/kg	103	26	158
EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	5 µg/kg	63.4	20	118
EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	5 µg/kg	74.9	13	135
EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	5 µg/kg	78.7	39	155
EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	5 µg/kg	76.1	34	148
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	5 µg/kg	87.3	26	152



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP131A: Organochlorine Pesticides (QCLot: 1444827) - continued								
EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	5 µg/kg	76.2	31	137
EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	5 µg/kg	81.4	36	152
EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	5 µg/kg	79.6	36	142
EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	5 µg/kg	76.9	30	138
EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1444820)								
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	50 µg/kg	102	45	115
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	102	45	115
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1444826)								
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	50 µg/kg	114	45	115
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	114	45	115
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444835)								
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	108	63	129
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	110	64	128
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	76.0	65	129
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	78.5	68	132
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	77.3	68	124
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	90.4	64	134
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	84.6	65	131
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	85.1	64	130
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	84.8	67	133
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	75.8	62	130
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	73.1	65	133
EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	80.2	68	120
	205-82-3							
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	81.7	61	133



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444835) - continued								
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	80.3	63	127
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	76.9	66	118
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	79.9	69	119
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	85.0	66	120
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	84.5	64	122
EP132B-SD: Indeno(1,2,3.cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	81.1	64	120
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	81.1	68	136
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444836)								
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	90.7	63	129
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	25 µg/kg	101	64	128
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	79.2	65	129
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	81.4	68	132
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	82.6	68	124
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	74.3	64	134
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	76.2	65	131
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	72.4	64	130
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	73.9	67	133
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	73.2	62	130
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	75.5	65	133
EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	4	µg/kg	<4	25 µg/kg	77.5	68	120
	205-82-3							
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	81.2	61	133
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25 µg/kg	90.1	63	127
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	78.1	66	118
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	25 µg/kg	81.8	69	119
EP132B-SD: Benzo(g,h,i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	82.1	66	120
EP132B-SD: Dibenz(a,h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	79.9	64	122
EP132B-SD: Indeno(1,2,3.cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	77.6	64	120
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	25 µg/kg	87.4	68	136
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG020T: Total Metals by ICP-MS (QCLot: 1443490)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.1	88	112
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	92.7	81	119
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.5 mg/L	108	70	130



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EG020T: Total Metals by ICP-MS (QCLot: 1443490) - continued								
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	105	88	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	107	89	115
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	106	89	115
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.2 mg/L	113	88	116
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	104	89	112
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	99.3	88	114
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	101	88	116
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	103	79	111
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	106	87	114
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.2 mg/L	100	84	114
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	106	82	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1443495)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.1	84	118
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1444373)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	90.6	55	131
EP068A: Organochlorine Pesticides (OC) (QCLot: 1444372)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	100	45	125
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	84.2	41	121
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	99.2	39	122
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	100	42	119
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	91.1	53	112
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	92.4	45	118
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	83.3	52	123
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	96.8	52	124
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	95.7	48	125
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	89.6	54	128
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	96.6	51	125
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	89.8	50	124
EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	89.0	56	122
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	98.0	47	129
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	88.7	50	126
EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	89.2	52	124
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	90.8	49	131
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	95.0	37	124
EP068: 4,4'-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	88.6	35	131
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	99.0	45	129
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	103	32	135
EP068: Total Chlordane (sum)	----	0.5	µg/L	<0.5	----	----	----	----



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit	Result					
EP068A: Organochlorine Pesticides (OC) (QCLot: 1444372) - continued								
EP068: Sum of DDD + DDE + DDT 72-54-8/72-5 5-9/50-2	0.5	µg/L	<0.5		----	----	----	----
EP068: Sum of Aldrin + Dieldrin 309-00-2/60- 57-1	0.5	µg/L	<0.5		----	----	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1444372)								
EP068: Dichlorvos 62-73-7	0.5	µg/L	<0.5		5 µg/L	88.0	49	115
EP068: Demeton-S-methyl 919-86-8	0.5	µg/L	<0.5		5 µg/L	117	44	118
EP068: Monocrotophos 6923-22-4	2	µg/L	<2.0		5 µg/L	# 10.0	16	49
EP068: Dimethoate 60-51-5	0.5	µg/L	<0.5		5 µg/L	97.0	41	111
EP068: Diazinon 333-41-5	0.5	µg/L	<0.5		5 µg/L	102	44	129
EP068: Chlorpyrifos-methyl 5598-13-0	0.5	µg/L	<0.5		5 µg/L	99.0	50	118
EP068: Parathion-methyl 298-00-0	----	µg/L	----		5 µg/L	88.1	50	118
EP068: Malathion 121-75-5	0.5	µg/L	<0.5		5 µg/L	93.2	51	122
EP068: Fenthion 55-38-9	0.5	µg/L	<0.5		5 µg/L	99.5	49	121
EP068: Chlorpyrifos 2921-88-2	0.5	µg/L	<0.5		5 µg/L	92.9	54	119
EP068: Parathion 56-38-2	2	µg/L	<2.0		5 µg/L	91.8	43	123
EP068: Pirimphos-ethyl 23505-41-1	0.5	µg/L	<0.5		5 µg/L	95.7	52	126
EP068: Chlorfenvinphos 470-90-6	0.5	µg/L	<0.5		5 µg/L	89.6	50	127
EP068: Bromophos-ethyl 4824-78-6	0.5	µg/L	<0.5		5 µg/L	93.1	52	124
EP068: Fenamiphos 22224-92-6	0.5	µg/L	<0.5		5 µg/L	83.9	43	121
EP068: Prothiofos 34643-46-4	0.5	µg/L	<0.5		5 µg/L	91.6	53	126
EP068: Ethion 563-12-2	0.5	µg/L	<0.5		5 µg/L	90.9	50	127
EP068: Carbophenothion 786-19-6	0.5	µg/L	<0.5		5 µg/L	93.2	48	128
EP068: Azinphos Methyl 86-50-0	0.5	µg/L	<0.5		5 µg/L	98.9	44	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444368)								
EP075(SIM): Naphthalene 91-20-3	1	µg/L	<1.0		10 µg/L	81.8	47	101
EP075(SIM): Acenaphthylene 208-96-8	1	µg/L	<1.0		10 µg/L	93.3	46	109
EP075(SIM): Acenaphthene 83-32-9	1	µg/L	<1.0		10 µg/L	90.4	50	104
EP075(SIM): Fluorene 86-73-7	1	µg/L	<1.0		10 µg/L	101	50	114
EP075(SIM): Phenanthrene 85-01-8	1	µg/L	<1.0		10 µg/L	97.5	49	114
EP075(SIM): Anthracene 120-12-7	1	µg/L	<1.0		10 µg/L	106	48	113
EP075(SIM): Fluoranthene 206-44-0	1	µg/L	<1.0		10 µg/L	105	48	120
EP075(SIM): Pyrene 129-00-0	1	µg/L	<1.0		10 µg/L	103	48	119
EP075(SIM): Benz(a)anthracene 56-55-3	1	µg/L	<1.0		10 µg/L	89.9	48	125
EP075(SIM): Chrysene 218-01-9	1	µg/L	<1.0		10 µg/L	103	45	119
EP075(SIM): Benzo(b+j)fluoranthene 205-99-2 205-82-3	1	µg/L	<1.0		10 µg/L	87.6	43	130
EP075(SIM): Benzo(k)fluoranthene 207-08-9	1	µg/L	<1.0		10 µg/L	110	46	130
EP075(SIM): Benzo(a)pyrene 50-32-8	0.5	µg/L	<0.5		10 µg/L	86.7	49	125



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
CAS Number	LOR	Unit	Result			LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444368) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	10 µg/L	100	40	132
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	10 µg/L	98.1	42	140
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	10 µg/L	102	39	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1441038)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	160 µg/L	102	76	122
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1444369)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	1211 µg/L	85.1	38	114
EP071: C15 - C28 Fraction	----	100	µg/L	<100	2103 µg/L	106	50	132
EP071: C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1441038)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	185 µg/L	103	75	123
EP080: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1444369)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	1696 µg/L	91.4	43	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	1496 µg/L	110	49	134
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
EP080: BTEXN (QCLot: 1441038)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	106	77	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	102	78	122
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	98.2	78	119
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	20 µg/L	94.0	77	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	93.8	76	121
EP080: Total Xylenes	----	2	µg/L	<2	----	----	----	----
EP080: Sum of BTEX	----	1	µg/L	<1	----	----	----	----
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	82.7	75	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
Client sample ID	Method: Compound	CAS Number			MS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1440715)							
EB1804288-022	Anonymous	EG020-SD: Arsenic	7440-38-2	50 mg/kg	89.6	70	130
		EG020-SD: Cadmium	7440-43-9	25 mg/kg	96.1	70	130

Matrix Spike (MS) Report

SpikeRecovery(%)

Recovery Limits (%)

Client sample ID

Method: Compound

CAS Number

Concentration

MS

Low

High

EB1804288-022	Anonymous	EG020-SD: Chromium	7440-47-3	50 mg/kg	103	70	130
		EG020-SD: Copper	7440-50-8	50 mg/kg	95.1	70	130
		EG020-SD: Cobalt	7440-48-4	50 mg/kg	97.2	70	130
		EG020-SD: Lead	7439-92-1	50 mg/kg	113	70	130
		EG020-SD: Manganese	7439-96-5	50 mg/kg	73.1	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	95.7	70	130
		EG020-SD: Vanadium	7440-62-2	50 mg/kg	105	70	130
		EG020-SD: Zinc	7440-66-6	50 mg/kg	97.2	70	130

EB1804407-006	BH07_4.0_4.4	EG020-SD: Arsenic	7440-38-2	50 mg/kg	82.6	70	130
		EG020-SD: Cadmium	7440-43-9	25 mg/kg	97.3	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	105	70	130
		EG020-SD: Copper	7440-50-8	50 mg/kg	93.7	70	130
		EG020-SD: Cobalt	7440-48-4	50 mg/kg	99.6	70	130
		EG020-SD: Lead	7439-92-1	50 mg/kg	86.7	70	130
		EG020-SD: Manganese	7439-96-5	50 mg/kg	95.5	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	86.0	70	130
		EG020-SD: Vanadium	7440-62-2	50 mg/kg	101	70	130
		EG020-SD: Zinc	7440-66-6	50 mg/kg	86.0	70	130

EB1804288-022	Anonymous	EG035T-LL: Mercurv	7439-97-6	0.5 mg/kg	74.2	70	130

EB1804407-006	BH07 4.0 4.4	EG035T-LL: Mercurv	7439-97-6	0.5 mg/kg	71.8	70	130

EB1804288-022	Anonymous	EK057G: Nitrite as N (Sol.)	14797-65-0	2 mg/kg	105	70	130

EB1804407-006	BH07 4.0 4.4	EK057G: Nitrite as N (Sol.)	14797-65-0	2 mg/kg	96.7	70	130

EB1804288-022	Anonymous	EK059G: Nitrite + Nitrate as N (Sol.)	----	2 mg/kg	93.6	70	130

EB1804407-006	BH07 4.0 4.4	EK059G: Nitrite + Nitrate as N (Sol.)	----	2 mg/kg	88.5	70	130

EB1804288-022	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	500 mg/kg	105	70	130

EB1804407-006	BH07 4.0 4.4	EK061G: Total Kjeldahl Nitrogen as N	----	500 mg/ka	91.1	70	130

EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1440717)



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1440717) - continued							
EB1804288-022	Anonymous	EK067G: Total Phosphorus as P	----	100 mg/kg	118	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 1440737)							
EB1804407-006	BH07_4.0_4.4	EK067G: Total Phosphorus as P	----	100 mg/kg	74.5	70	130
EK255A SD: Ammonia in Sediment (QCLot: 1450343)							
EB1804288-021	Anonymous	EK255A: Ammonia as N	7664-41-7	0.5 mg/kg	# Not Determined	70	130
EK255A SD: Ammonia in Sediment (QCLot: 1450344)							
EB1804407-006	BH07_4.0_4.4	EK255A: Ammonia as N	7664-41-7	0.5 mg/kg	# Not Determined	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1440730)							
EB1804453-001	Anonymous	EP080: C6 - C9 Fraction	----	8 mg/kg	92.3	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1440730)							
EB1804453-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	110	70	130
EP080: BTEXN (QCLot: 1440730)							
EB1804453-001	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	113	70	130
		EP080: Toluene	108-88-3	2 mg/kg	119	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440721)							
EB1804288-022	Anonymous	EP071-SD: C10 - C14 Fraction	----	159 mg/kg	91.8	70	130
		EP071-SD: C15 - C28 Fraction	----	266 mg/kg	90.3	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440722)							
EB1804288-022	Anonymous	EP080-SD: C6 - C9 Fraction	----	8 mg/kg	# 60.8	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440728)							
EB1804407-006	BH07_4.0_4.4	EP071-SD: C10 - C14 Fraction	----	159 mg/kg	102	70	130
		EP071-SD: C15 - C28 Fraction	----	266 mg/kg	103	70	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 1440729)							
EB1804407-006	BH07_4.0_4.4	EP080-SD: C6 - C9 Fraction	----	8 mg/kg	87.8	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440721)							
EB1804288-022	Anonymous	EP071-SD: >C10 - C16 Fraction	----	214 mg/kg	93.7	70	130
		EP071-SD: >C16 - C34 Fraction	----	198 mg/kg	89.0	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440722)							
EB1804288-022	Anonymous	EP080-SD: C6 - C10 Fraction	C6_C10	8 mg/kg	# 59.6	70	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440728)							
EB1804407-006	BH07_4.0_4.4	EP071-SD: >C10 - C16 Fraction	----	214 mg/kg	105	70	130
		EP071-SD: >C16 - C34 Fraction	----	198 mg/kg	102	70	130

Sub-Matrix: SOIL				Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Recovery Limits (%)			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 1440729)									
EB1804407-006	BH07_4.0_4.4	EP080-SD: C6 - C10 Fraction	C6_C10	8 mg/kg	86.2	70	130		
EP080-SD: BTEXN (QCLot: 1440722)									
EB1804288-022	Anonymous	EP080-SD: Benzene	71-43-2	2 mg/kg	# 59.8	70	130		
		EP080-SD: Toluene	108-88-3	2 mg/kg	73.1	70	130		
EP080-SD: BTEXN (QCLot: 1440729)									
EB1804407-006	BH07_4.0_4.4	EP080-SD: Benzene	71-43-2	2 mg/kg	111	70	130		
		EP080-SD: Toluene	108-88-3	2 mg/kg	115	70	130		
EP090: Organotin Compounds (QCLot: 1440724)									
EB1804407-002	BH07_0.5_1.0	EP090: Monobutyltin	78763-54-9	1.25 µgSn/kg	# 14.7	35	130		
		EP090: Dibutyltin	1002-53-5	1.25 µgSn/kg	69.6	20	130		
		EP090: Tributyltin	56573-85-4	1.25 µgSn/kg	94.2	20	130		
EP090: Organotin Compounds (QCLot: 1440741)									
EB1804407-006	BH07_4.0_4.4	EP090: Monobutyltin	78763-54-9	1.25 µgSn/kg	# 2.49	35	130		
		EP090: Dibutyltin	1002-53-5	1.25 µgSn/kg	50.5	20	130		
		EP090: Tributyltin	56573-85-4	1.25 µgSn/kg	105	20	130		
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444819)									
EB1804288-021	Anonymous	EP130: Bromophos-ethyl	4824-78-6	50 µg/kg	60.8	36	144		
		EP130: Carbophenothion	786-19-6	50 µg/kg	68.2	38	120		
		EP130: Chlorfenvinphos (E)	18708-86-6	5 µg/kg	66.0	49	157		
		EP130: Chlorfenvinphos (Z)	18708-87-7	50 µg/kg	60.8	53	145		
		EP130: Chlorpyrifos	2921-88-2	50 µg/kg	74.3	60	140		
		EP130: Chlorpyrifos-methyl	5598-13-0	50 µg/kg	79.4	56	126		
		EP130: Demeton-S-methyl	919-86-8	50 µg/kg	74.8	10	148		
		EP130: Diazinon	333-41-5	50 µg/kg	60.3	60	122		
		EP130: Dichlorvos	62-73-7	50 µg/kg	65.2	33	123		
		EP130: Dimethoate	60-51-5	50 µg/kg	57.6	36	142		
		EP130: Ethion	563-12-2	50 µg/kg	61.1	48	136		
		EP130: Fenamiphos	22224-92-6	50 µg/kg	61.4	42	136		
		EP130: Fenthion	55-38-9	50 µg/kg	65.2	35	131		
		EP130: Malathion	121-75-5	50 µg/kg	62.9	55	141		
		EP130: Azinphos Methyl	86-50-0	50 µg/kg	63.2	24	132		
		EP130: Monocrotophos	6923-22-4	50 µg/kg	67.6	35	153		
		EP130: Parathion	56-38-2	50 µg/kg	61.3	57	147		
		EP130: Parathion-methyl	298-00-0	50 µg/kg	64.5	48	140		
		EP130: Pirimphos-ethyl	23505-41-1	50 µg/kg	61.1	45	137		
		EP130: Prothiofos	34643-46-4	50 µg/kg	74.8	51	137		
		EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444825)							



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 1444825) - continued							
EB1804407-001	BH07_0.0_0.5	EP130: Bromophos-ethyl	4824-78-6	50 µg/kg	69.8	36	144
		EP130: Carbophenothion	786-19-6	50 µg/kg	70.8	38	120
		EP130: Chlorfenvinphos (E)	18708-86-6	5 µg/kg	93.6	49	157
		EP130: Chlorfenvinphos (Z)	18708-87-7	50 µg/kg	76.3	53	145
		EP130: Chlorpyrifos	2921-88-2	50 µg/kg	79.9	60	140
		EP130: Chlorpyrifos-methyl	5598-13-0	50 µg/kg	91.1	56	126
		EP130: Demeton-S-methyl	919-86-8	50 µg/kg	80.8	10	148
		EP130: Diazinon	333-41-5	50 µg/kg	92.0	60	122
		EP130: Dichlorvos	62-73-7	50 µg/kg	71.5	33	123
		EP130: Dimethoate	60-51-5	50 µg/kg	91.8	36	142
		EP130: Ethion	563-12-2	50 µg/kg	78.5	48	136
		EP130: Fenamiphos	22224-92-6	50 µg/kg	80.0	42	136
		EP130: Fenthion	55-38-9	50 µg/kg	66.5	35	131
		EP130: Malathion	121-75-5	50 µg/kg	87.6	55	141
		EP130: Azinphos Methyl	86-50-0	50 µg/kg	76.4	24	132
		EP130: Monocrotophos	6923-22-4	50 µg/kg	91.6	35	153
		EP130: Parathion	56-38-2	50 µg/kg	80.8	57	147
		EP130: Parathion-methyl	298-00-0	50 µg/kg	76.4	48	140
		EP130: Pirimphos-ethyl	23505-41-1	50 µg/kg	85.0	45	137
		EP130: Prothiofos	34643-46-4	50 µg/kg	89.1	51	137
EP131A: Organochlorine Pesticides (QCLot: 1444821)							
EB1804288-021	Anonymous	EP131A: Aldrin	309-00-2	5 µg/kg	84.7	23	153
		EP131A: alpha-BHC	319-84-6	5 µg/kg	62.5	18	156
		EP131A: beta-BHC	319-85-7	5 µg/kg	72.0	25	153
		EP131A: delta-BHC	319-86-8	5 µg/kg	64.2	25	147
		EP131A: 4,4'-DDD	72-54-8	5 µg/kg	64.7	26	150
		EP131A: 4,4'-DDE	72-55-9	5 µg/kg	60.1	31	125
		EP131A: 4,4'-DDT	50-29-3	5 µg/kg	95.6	23	163
		EP131A: Dieldrin	60-57-1	5 µg/kg	66.4	30	140
		EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	69.5	29	135
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	70.4	23	141
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	53.6	16	156
		EP131A: Endrin	72-20-8	5 µg/kg	76.8	18	162
		EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	69.5	20	116
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	67.9	13	151
		EP131A: Heptachlor	76-44-8	5 µg/kg	91.9	24	170
		EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	64.8	28	140
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	76.1	18	144
		EP131A: gamma-BHC	58-89-9	5 µg/kg	46.8	22	158



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 1444821) - continued							
EB1804288-021	Anonymous	EP131A: Methoxychlor	72-43-5	5 µg/kg	104	24	158
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	70.4	27	139
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	71.8	30	138
EP131A: Organochlorine Pesticides (QCLot: 1444827)							
EB1804407-001	BH07_0.0_0.5	EP131A: Aldrin	309-00-2	5 µg/kg	73.0	23	153
		EP131A: alpha-BHC	319-84-6	5 µg/kg	81.1	18	156
		EP131A: beta-BHC	319-85-7	5 µg/kg	80.9	25	153
		EP131A: delta-BHC	319-86-8	5 µg/kg	73.5	25	147
		EP131A: 4,4'-DDD	72-54-8	5 µg/kg	75.6	26	150
		EP131A: 4,4'-DDE	72-55-9	5 µg/kg	57.3	31	125
		EP131A: 4,4'-DDT	50-29-3	5 µg/kg	40.5	23	163
		EP131A: Dieldrin	60-57-1	5 µg/kg	74.7	30	140
		EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	69.4	29	135
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	64.1	23	141
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	28.1	16	156
		EP131A: Endrin	72-20-8	5 µg/kg	73.7	18	162
		EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	71.8	20	116
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	47.9	13	151
		EP131A: Heptachlor	76-44-8	5 µg/kg	69.6	24	170
		EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	65.5	28	140
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	75.6	18	144
		EP131A: gamma-BHC	58-89-9	5 µg/kg	54.9	22	158
		EP131A: Methoxychlor	72-43-5	5 µg/kg	44.0	24	158
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	78.7	27	139
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	67.4	30	138
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1444820)							
EB1804288-021	Anonymous	EP131B: Total Polychlorinated biphenyls	----	50 µg/kg	113	44	136
		EP131B: Aroclor 1254	11097-69-1	50 µg/kg	113	44	136
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1444826)							
EB1804407-001	BH07_0.0_0.5	EP131B: Total Polychlorinated biphenyls	----	50 µg/kg	86.0	44	136
		EP131B: Aroclor 1254	11097-69-1	50 µg/kg	86.0	44	136
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444835)							
EB1804288-021	Anonymous	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	89.2	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	81.2	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	96.3	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	92.2	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	97.4	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	92.8	70	130



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444835) - continued							
EB1804288-021	Anonymous	EP132B-SD: Anthracene	120-12-7	25 µg/kg	93.4	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	95.4	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	93.7	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	96.2	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	95.1	70	130
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	25 µg/kg	95.8	70	130
			205-82-3				
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	96.3	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	96.0	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	96.8	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	97.7	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	98.2	70	130
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	98.2	70	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	97.9	70	130
		EP132B-SD: Coronene	191-07-1	25 µg/kg	103	70	130
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444836)							
EB1804407-001	BH07_0.0_0.5	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	87.1	70	130
		EP132B-SD: 2-Methylnaphthalene	91-57-6	25 µg/kg	78.4	70	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	92.4	70	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	88.6	70	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	93.3	70	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	89.8	70	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	89.4	70	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	91.3	70	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	89.5	70	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	92.4	70	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	91.6	70	130
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2	25 µg/kg	99.7	70	130
			205-82-3				
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	97.5	70	130
		EP132B-SD: Benzo(e)pyrene	192-97-2	25 µg/kg	99.2	70	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	98.3	70	130
		EP132B-SD: Perylene	198-55-0	25 µg/kg	98.6	70	130
		EP132B-SD: Benzo(g,h,i)perylene	191-24-2	25 µg/kg	98.1	70	130
		EP132B-SD: Dibenz(a,h)anthracene	53-70-3	25 µg/kg	97.2	70	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	97.3	70	130
		EP132B-SD: Coronene	191-07-1	25 µg/kg	96.5	70	130

Sub-Matrix: **WATER**

Matrix Spike (MS) Report		
Spike	SpikeRecovery(%)	Recovery Limits (%)



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1443490)							
EB1804323-011	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	96.4	70	130
		EG020A-T: Beryllium	7440-41-7	0.1 mg/L	95.1	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	113	70	130
		EG020A-T: Cadmium	7440-43-9	0.5 mg/L	106	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	103	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	103	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	105	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	106	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	94.2	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	98.8	70	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	103	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	103	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1443495)							
EB1804288-042	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	89.5	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444368)							
EB1804277-020	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 µg/L	70.0	70	130
		EP075(SIM): Pyrene	129-00-0	10 µg/L	97.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1441038)							
EB1804227-002	Anonymous	EP080: C6 - C9 Fraction	----	40 µg/L	78.6	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1444369)							
EB1804277-019	Anonymous	EP071: C10 - C14 Fraction	----	1211 µg/L	74.7	49	134
		EP071: C15 - C28 Fraction	----	2103 µg/L	96.0	50	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1441038)							
EB1804227-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	40 µg/L	78.0	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1444369)							
EB1804277-019	Anonymous	EP071: >C10 - C16 Fraction	----	1696 µg/L	81.0	43	119
		EP071: >C16 - C34 Fraction	----	1496 µg/L	96.0	38	114
EP080: BTEXN (QCLot: 1441038)							
EB1804227-002	Anonymous	EP080: Benzene	71-43-2	10 µg/L	79.6	70	130
		EP080: Toluene	108-88-3	10 µg/L	82.5	70	130

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB1890014**

Client : **AURECON AUSTRALASIA PTY LTD**
 Contact : **MS GEORGINA KERR**
 Address : **LOCKED BAG 331**
32 TURBOT STREET
BRISBANE QLD, AUSTRALIA 4001

Laboratory : Environmental Division Brisbane
 Contact : Customer Services Brisbane
 Address : **2 Byth Street Stafford QLD Australia**
4053

E-mail : **georgina.kerr@aurecongroup.com**
 Telephone : **+61 07 3173 8396**
 Facsimile : **+61 07 3173 8001**

E-mail : **ALSEnviro.Brisbane@alsglobal.com**
 Telephone : **+61 7 3243 7222**
 Facsimile : **+61 7 3243 7218**

Project : **237374**

Page : **1 of 2**

Order number : **---**

Quote number : **EP2014CONWAG0374 (EN/057/14 BQ)**

C-O-C number : **---**

Site : **---**

Sampler : **K. O'NEILL MULCAHY**

QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **16-FEB-2018**
 Client Requested Due Date : **02-MAR-2018**

Issue Date : **16-FEB-2018 22:41**
 Scheduled Reporting Date : **02-MAR-2018**

Delivery Details

Mode of Delivery : **Carrier**
 No. of coolers/boxes : **---**
 Security Seal : **Intact.**

Temperature : **---**
 No. of samples received : **1**
 No. of samples analysed : **1**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' etc. suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to John Pickering (Samples.Brisbane@alsglobal.com)
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958),
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - HRMS - Combined Dioxins and Furans (SOIL-S)
EB1890014-001	15-FEB-2018 15:00	BH074_0.0-0.5	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL ACCOUNTS ADDRESS

- A4 - AU Tax Invoice (INV)

Email creditors@aurecongroup.com

MS GEORGINA KERR

- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- AU Certificate of Analysis - DIOXINS/HRMS (DIONA)
- AU QC Report - DIOXINS/HRMS (DQCNA)
- Chain of Custody (CoC) (COC)

Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com
Email georgina.kerr@aurecongroup.com

CERTIFICATE OF ANALYSIS

Client	AURECON AUSTRALASIA PTY LTD	Laboratory :	Environmental Division Brisbane	1 of 2
Contact	MS GEORGINA KERR	Contact	CUSTOMER.SERVICES.EB	Work Order: EB1890014
Address:	LOCKED BAG 331 32 TURBOT STREET BRISBANE QLD, AUSTRALIA 4001	Address:	2 Byth Street Stafford QLD 4053 Australia	
Project	237374	Quote #	EN/057/14 BQ	Received: 16 Feb 2018
Order #	- Not provided -			Issued 2 Mar 2018
C-O-C #	- Not provided -			
Site	- Not provided -			
E-mail	georgina.kerr@aurecongroup.com	E-mail	ALSEnviro.Brisbane@alsglobal.com	Number of Samples
Phone	3173 8396	Phone	+61-7-3243 7222	Received: 1
Fax	3173 8001	Fax	+61-7-3243 7218	Analysed: 1

Notes

LOR = Limit of reporting

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

Samples analysed 'as received', results reported on 'dry weight' basis.

- 1 I -TEQ_(zero) and WHO-TEQ_(zero) calculated treating <LOR as zero concentration
- 2 I -TEQ_(0.5 LOR) and WHO-TEQ_(0.5 zero) calculated treating <LOR as 0.5 LoR concentration
- 3 I-TEQ_(LOR) and WHO-TEQ_(LOR) calculated treating <LOR as LoR concentration
- 4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
- 5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

ALSE - Excellence in Analytical Testing



NATA Accredited Laboratory - 825

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

Accredited for compliance with ISO/IEC 17025

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

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890014
ALS Quote Reference : EN/057/14 BQ



ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890014001
Client Sample ID: BH074 0.0-0.5

Qc Lot Number: 4530164
Sample Matrix: SOIL

Date Sampled: 15-Feb-2018
Date Extracted: 28-Feb-2018
Date Analysed: 28-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ ₁ (zero)	WHO-TEQ ₂ (0.5 LOR)	WHO-TEQ ₃ (LOR)	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	51.3
12378-PeCDD	<2.5	2.5	1	0.00	1.23	2.46	0.5	0.00	0.61	1.23	80.5
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	75.8
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.3
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	21.0	2.5	0.01	0.21	0.21	0.21	0.01	0.21	0.21	0.21	82.6
OCDD	307.0	9.8	0.0003	0.09	0.09	0.09	0.001	0.31	0.31	0.31	52.2
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	54.0
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	74.1
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.61	1.23	73.1
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	79.0
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	89.2
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	79.2
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	67.3
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	74.4
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	67.5
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	0.30	3.09	5.88	-	0.52	2.96	5.41	-

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	20.0	2.5	5
Penta-Dioxins	26.4	19.6	8
Hexa-Dioxins	141.0	19.6	8
Hepta-Dioxins	120.0	4.9	2
Octa-Dioxin	307.0	9.8	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<4.9	4.9	1
S PCDD/Fs	614.4		

QUALITY CONTROL REPORT

Client	AURECON AUSTRALASIA PTY LTD	Laboratory :	Environmental Division Brisbane	1 of 5
Contact	MS GEORGINA KERR	Contact	CUSTOMER.SERVICES.EB	
Address:	LOCKED BAG 331 32 TURBOT STREET BRISBANE QLD, AUSTRALIA 4001	Address:	Stafford QLD 4053 Australia	Work Order: EB1890014

Project	237374	Quote #	EN/057/14 BQ	Received:	16 Feb 2018
Order #	- Not provided -			Issued	2 Mar 2018
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	georgina.kerr@aurecongroup.com	E-mail	ALSEnviro.Brisbane@alsglobal.	Number of Samples	
Phone	3173 8396	Phone	+61-7-3243 7222	Received:	1
Fax	3173 8001	Fax	+61-7-3243 7218	Analysed:	2

Samples analysed 'as received', results reported on 'dry weight' basis.

ALSE - Excellence in Analytical Testing



NATA Accredited Laboratory - 825

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

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)



Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890014
ALS Quote Reference : EN/057/14 BQ



Quality Control Report Laboratory Duplicates (DUP)

	Original Result		Duplicate Result		
	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	
Laboratory Sample Id :	EB1890014001		5572468-007		
Client Sample Id :	BH074 0.0-0.5		BH074 0.0-0.5		
Sample Mass (g) :	10.0		10.0		
Qc Lot Number :	4530165		4530165		
Moisture Content (%) :					
Compound	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
2378-TCDD	<0.5	0.5	<0.5	0.5	-
12378-PeCDD	<2.5	2.5	<2.5	2.5	-
123478-HxCDD	<2.5	2.5	<2.5	2.5	-
123678-HxCDD	<2.5	2.5	<2.5	2.5	-
123789-HxCDD	<2.5	2.5	<2.5	2.5	-
1234678-HpCDD	21.0	2.5	22.6	2.5	7.3
OCDD	307.0	9.8	306.0	9.8	0.3
2378-TCDF	<0.5	0.5	<0.5	0.5	-
12378-PeCDF	<2.5	2.5	<2.5	2.5	-
23478-PeCDF	<2.5	2.5	<2.5	2.5	-
123478-HxCDF	<2.5	2.5	<2.5	2.5	-
123678-HxCDF	<2.5	2.5	<2.5	2.5	-
234678-HxCDF	<2.5	2.5	<2.5	2.5	-
123789-HxCDF	<2.5	2.5	<2.5	2.5	-
1234678-HpCDF	<2.5	2.5	<2.5	2.5	-
1234789-HpCDF	<2.5	2.5	<2.5	2.5	-
OCDF	<4.9	4.9	<4.9	4.9	-

Group Totals	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
Tetra-Dioxins	20.0	2.5	16.4	3.9	19.8
Penta-Dioxins	26.4	19.6	23.5	17.2	11.6
Hexa-Dioxins	141.0	19.6	125.0	19.6	12.0
Hepta-Dioxins	120.0	4.9	111.0	4.9	7.8
Octa-Dioxin	307.0	9.8	306.0	9.8	0.3
Tetra-Furans	<0.5	0.5	<0.5	0.5	-
Penta-Furans	<2.5	2.5	<2.5	2.5	-
Hexa-Furans	<2.5	2.5	<2.5	2.5	-
Hepta-Furans	<2.5	2.5	<2.5	2.5	-
Octa-Furan	<4.9	4.9	<4.9	4.9	-
Σ PCDD/Fs	614.4		581.9		5.4

Notes

LOR = Limit of reporting

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated debenzo-p-dioxin

CDF, furan = chlorinated debenzofuran

RPD = relative per cent difference

Permitted ranges for RPD are dependant upon the magnitude of the result in comparison to the LOR.

Result < 10x LOR - no limit, result between 10x and 20x LOR - 50%, result > 20x LOR - 20%

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890014
ALS Quote Reference : EN/057/14 BQ



Quality Control Report

Laboratory Duplicates (DUP)

	Original Result		Duplicate Result		
	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	
Laboratory Sample Id :	ES1890003001		5572468-026		
Client Sample Id :	Anonymous		Anonymous		
Sample Mass (g) :	10.0		10.0		
Qc Lot Number :	4530165		4530165		
Moisture Content (%) :					
Compound	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
2378-TCDD	<0.5	0.5	<0.5	0.5	-
12378-PeCDD	<2.5	2.5	<2.5	2.5	-
123478-HxCDD	<2.5	2.5	<2.5	2.5	-
123678-HxCDD	<2.5	2.5	<2.5	2.5	-
123789-HxCDD	<2.5	2.5	<2.5	2.5	-
1234678-HpCDD	18.9	2.5	20.7	2.5	9.1
OCDD	1050.0	10.0	1160.0	9.8	10.0
2378-TCDF	<0.5	0.5	<0.5	0.5	-
12378-PeCDF	<2.5	2.5	<2.5	2.5	-
23478-PeCDF	<2.5	2.5	<2.5	2.5	-
123478-HxCDF	<2.5	2.5	<2.5	2.5	-
123678-HxCDF	<2.5	2.5	<2.5	2.5	-
234678-HxCDF	<2.5	2.5	<2.5	2.5	-
123789-HxCDF	<2.5	2.5	<2.5	2.5	-
1234678-HpCDF	<2.5	2.5	<2.5	2.5	-
1234789-HpCDF	<2.5	2.5	<2.5	2.5	-
OCDF	<5.0	5.0	<4.9	4.9	-

Group Totals	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
Tetra-Dioxins	<0.5	0.5	<0.5	0.5	-
Penta-Dioxins	<12.5	12.5	<9.8	9.8	-
Hexa-Dioxins	17.6	17.5	<19.7	19.7	-
Hepta-Dioxins	39.8	5.0	46.7	4.9	16.0
Octa-Dioxin	1050.0	10.0	1160.0	9.8	10.0
Tetra-Furans	<0.5	0.5	<0.5	0.5	-
Penta-Furans	<2.5	2.5	<2.5	2.5	-
Hexa-Furans	<2.5	2.5	<2.5	2.5	-
Hepta-Furans	<2.5	2.5	<2.5	2.5	-
Octa-Furan	<5.0	5.0	<4.9	4.9	-
Σ PCDD/Fs	1107.4		1206.7		8.6

Notes

LOR = Limit of reporting

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated debenzo-p-dioxin

CDF, furan = chlorinated debenzofuran

RPD = relative per cent difference

Permitted ranges for RPD are dependant upon the magnitude of the result in comparison to the LOR.

Result < 10x LOR, no limit; result between 10x and 20x LOR, 50%; result > 20x LOR, 20%

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890014
ALS Quote Reference : EN/057/14 BQ



Quality Control Results

Laboratory Control Samples(LCS)

Laboratory Sample Id : 5572468-010
QC Lot Number : 4530165
Sample Name : BCR 529 Sandy soil

Compound	Conc pg/g	Lower 1 pg/g	Upper 1 pg/g	¹³ C ¹² Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	4530.0	3900	5100	60.9	25	164
12378-PeCDD	444.0	390	490	76.5	25	181
123478-HxCDD	1110.0	900	1500	78.6	32	141
123678-HxCDD	5290.0	4500	6300	73.1	28	130
123789-HxCDD	2900.0	2600	3400	-	-	-
2378-TCDF	86.1	65	91	53.0	24	169
12378-PeCDF	116.0	110	170	76.4	24	185
23478-PeCDF	423.0	290	430	74.7	21	178
123478-HxCDF	3620.0	2900	3900	75.2	26	152
123678-HxCDF	1220.0	940	1240	73.8	26	123
234678-HxCDF	355.0	330	410	76.0	28	136
123789-HxCDF	600.0	12	32	74.3	29	147

Notes

- Acceptable concentration limits are as quoted on the analytical certificate for the certified reference material
- Acceptable recovery limits are derived from EPA1613 Revision B

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

Client : AURECON AUSTRALASIA PTY LTD
Project : 237374

Work Order : EB1890014
ALS Quote Reference : EN/057/14 BQ



Quality Control Report Method Blank (MB)

Laboratory Sample ID: 5572468-001
Qc Lot Number : 4530165

Sample Matrix: SOIL
Date Extracted: 28-Feb-2018
Date Analysed: 28-Feb-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ 1	WHO-TEQ 2	WHO-TEQ 3	I-TEF	I-TEQ ₁ (zero)	I-TEQ ₂ (0.5 LOR)	I-TEQ ₃ (LOR)	¹³ C ₁₂ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	63.6
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.50	0.5	0.00	0.63	1.25	97.2
123478-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	80.3
123678-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	84.8
123789-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	-
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	98.1
OCDD	<10.0	10.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.01	0.01	74.8
2378-TCDF	<0.5	0.5	0.1	0.00	0.03	0.05	0.1	0.00	0.03	0.05	67.5
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.08	0.05	0.00	0.06	0.13	90.1
23478-PeCDF	<2.5	2.5	0.3	0.00	0.38	0.75	0.5	0.00	0.63	1.25	91.2
123478-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	80.0
123678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	96.3
234678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	82.0
123789-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	72.2
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	92.4
1234789-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	76.4
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.01	-
Σ TEQ _(WHO)				0.00	2.89	5.72	Σ TEQ _(I)	0.00	2.55	5.04	

Group Totals	Conc pg/g	LOR ₄ pg/g	No. of Peaks
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	<2.5	2.5	1
Hexa-Dioxins	<2.5	2.5	1
Hepta-Dioxins	<5.0	5.0	2
Octa-Dioxin	<10.0	10.0	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
Σ PCDD/Fs	0.00		

Notes

LOR = Limit of reporting

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence (pg/g)

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence (pg/g)

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

1 I-TEQ_(zero) and WHO-TEQ_(zero) calculated treating <LOR as zero concentration (pg/g)

2 I-TEQ_(0.5 LOR) and WHO-TEQ_(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/g)

3 I-TEQ_(LOR) and WHO-TEQ_(LOR) calculated treating <LOR as LoR concentration (pg/g)

4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound

The background features a large green parallelogram tilted at an angle. In the bottom-left corner, there is a smaller yellow parallelogram, also tilted, which overlaps with the green one. The overall composition is minimalist and geometric.

E

Summary
geochemical
results

Matrix:	SOIL	Sample Type:	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:	EB1804131001	EB1804131003	EB1804131004	EB1804131005	EB1804131006	EB1804131007	EB1804131008	EB1804131009	EB1804288009	EB1804288010	EB1804288011	EB1804288012	EB1804288004	EB1804288005	EB1804288006	EB1804288007	EB1804288008	
Project name/number:	237374	Sample Date:	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	
		Client sample ID (1st):	BH01_0.0_0.5	BH01_0.5_1.0	BH01_1.0_2.0	BH01_2.0_3.0	BH01_3.0_3.5	BH02_0.0_0.5	BH02_0.5_1.0	BH02_1.0_1.4	BH03_0.0_0.5	BH03_0.5_1.0	BH03_1.0_2.0	BH03_2.0_2.8	BH04_0.0_0.5	BH04_0.5_1.0	BH04_1.0_2.0	BH04_2.0_3.0	BH04_3.0_3.7	
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting																	
EA055: Moisture Content (Dried @ 105-110°C)																				
Moisture Content		%	1.0	41.7	45	42.8	41.2	42.3	43.1	18.7	23	43.9	42.9	39.6	23.9	41.8	41.8	40.8	40.6	34.5
EG005-SD: Total Metals in Sediments by ICP-AES																				
Aluminium	7429-90-5	mg/kg	50	13200	16400	13700	15000	14100	14600	8410	10400	14900	14000	13600	11000	14200	12600	11100	11400	10200
Iron	7439-89-6	mg/kg	50	25300	30800	23400	27700	26700	28600	12600	11600	26900	26300	23800	24200	25000	24200	45300	22200	98600
EG020-SD: Total Metals in Sediments by ICPMS																				
Antimony	7440-36-0	mg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	mg/kg	1.00	11.3	14.7	12.3	10.4	11.8	9.73	2.69	1.39	8.6	9.39	9.1	7.19	9.22	9.08	9.09	11.4	11.3
Cadmium	7440-43-9	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	mg/kg	1.0	20.2	24.4	22.1	21.6	21.2	20.6	10.2	10.8	22.8	20.9	19.9	13.7	21.3	21	18	18.7	16.8
Copper	7440-50-8	mg/kg	1.0	20	32.9	23.9	29.9	26.4	28.9	57.9	21	24.4	24.9	23.6	38	22.5	21.9	21.7	23.4	18.8
Cobalt	7440-48-4	mg/kg	0.5	12.2	16.8	12.8	13.4	13.2	12.9	5	4.7	11.4	12.2	11.4	66.7	11.5	10.8	10.8	11.9	11.7
Lead	7439-92-1	mg/kg	1.0	8.4	9.4	9.5	9.1	9.7	8.6	5	4.7	9.4	9.6	9	5.6	9	9.5	8.8	9.9	8
Manganese	7439-96-5	mg/kg	10	260	354	289	607	565	430	111	36	254	457	356	266	304	413	1270	383	813
Nickel	7440-02-0	mg/kg	1.0	11.2	15	12.2	13	12.2	12.4	5.8	6	11.5	11.2	10.8	32.8	11	10.6	9.8	10.2	9.1
Selenium	7782-49-2	mg/kg	0.1	0.5	0.6	0.5	0.6	0.5	0.5	0.8	0.7	0.3	0.3	0.3	0.8	0.3	0.3	0.3	0.3	0.3
Silver	7440-22-4	mg/kg	0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	mg/kg	2.0	51.1	67.5	54.4	56.8	61.2	59.2	41.3	27.5	49.3	50.1	48.6	40	49.8	46.5	45.8	45.8	54.6
Zinc	7440-66-6	mg/kg	1.0	37.9	51.3	40.4	45.1	40.8	45.3	25.3	33.9	39.8	37.1	35.4	66.4	37.2	35.6	32.6	34.5	32.4
EG035T: Total Recoverable Mercury by FIMS																				
Mercury	7439-97-6	mg/kg	0.01	0.01	0.02	0.01	0.01	0.01	0.01	<0.01	<0.01	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02
EK057G: Nitrite as N by Discrete Analyser																				
Nitrite as N (Sol.)	14797-65-0	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EK058G: Nitrate as N by Discrete Analyser																				
Nitrate as N (Sol.)	14797-55-8	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser																				
Nitrite + Nitrate as N (Sol.)		mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser																				
Total Kjeldahl Nitrogen as N		mg/kg	20	470	540	490	530	560	780	140	200	510	520	470	250	480	500	490	520	420
EK062: Total Nitrogen as N (TKN + NOx)																				
Total Nitrogen as N		mg/kg	20	470	540	490	530	560	780	140	200	510	520	470	250	480	500	490	520	420
EK067G: Total Phosphorus as P by Discrete Analyser																				
Total Phosphorus as P		mg/kg	2	220	281	288	450	300	320	84	172	190	268	270	230	226	239	546	269	680
EK255A SD: Ammonia in Sediment																				
Ammonia as N	7664-41-7	mg/kg	0.2	11	18.9	41	80	98.8	8.2	5.7	6.4	5.6	9.2	14.1	19.9	7.1	13	15.5	32.9	31.4
EP003: Total Organic Carbon (TOC) in Soil																				
Total Organic Carbon		%	0.02								0.89	0.62	0.66	0.17	0.71	0.68	0.68	0.67	0.23	
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons																				
C6 - C9 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
C10 - C14 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
C15 - C28 Fraction		mg/kg	3	<3	<3	<3	<3	<3	6	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
C29 - C36 Fraction		mg/kg	5	<5	<5	<5	<5	<5	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
C10 - C36 Fraction (sum)		mg/kg	3	<3	<3	<3	<3	<3	11	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
EP080-SD: BTEXN																				
Benzene	71-43-2	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Xylenes		mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of BTEX		mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds																				
Monobutyltin	78763-54-9	µgSn/kg	1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-
Dibutyltin	1002-53-5	µgSn/kg	1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-
Tributyltin	56573-85-4	µgSn/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-

[illegible]

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804131001	EB1804131003	EB1804131004	EB1804131005	EB1804131006	EB1804131007	EB1804131008	EB1804131009	EB1804288009	EB1804288010	EB1804288011	EB1804288012	EB1804288004	EB1804288005	EB1804288006	EB1804288007	EB1804288008
Project name/number:	237374	Sample Date:		13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018
		Client sample ID (1st):		BH01_0.0_0.5	BH01_0.5_1.0	BH01_1.0_2.0	BH01_2.0_3.0	BH01_3.0_3.5	BH02_0.0_0.5	BH02_0.5_1.0	BH02_1.0_1.4	BH03_0.0_0.5	BH03_0.5_1.0	BH03_1.0_2.0	BH03_2.0_2.8	BH04_0.0_0.5	BH04_0.5_1.0	BH04_1.0_2.0	BH04_2.0_3.0	BH04_3.0_3.7
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting																	
EP132B: Polynuclear Aromatic Hydrocarbons																				
Naphthalene	91-20-3	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Acenaphthene	83-32-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Fluorene	86-73-7	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Phenanthrene	85-01-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Anthracene	120-12-7	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Fluoranthene	206-44-0	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Pyrene	129-00-0	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(a)anthracene	56-55-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Chrysene	218-01-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Perylene	198-55-0	µg/kg	4	<4	10	8	7	7	<4	<4	<4	<4	<4	8	<4	<4	<4	<4	<4	<4
Benzo(g,h,i)perylene	191-24-2	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Coronene	191-07-1	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Sum of PAHs		µg/kg	4	<4	10	8	7	7	<4	<4	<4	<4	<4	8	<4	<4	<4	<4	<4	<4
Sum of PAHs (TOC normalised)		µg/kg	4											12.12						
Dioxins - Total																				
		pg/g	0.25	80.3	-	-	-	-	129	-	-	72.7	-	-	-	-	-	-	-	-
		pg/g	1.25	146	-	-	-	-	158	-	-	121	-	-	-	-	-	-	-	-
		pg/g	1.25	1160	-	-	-	-	1060	-	-	732	-	-	-	-	-	-	-	-
		pg/g	1.25	663	-	-	-	-	884	-	-	614	-	-	-	-	-	-	-	-
		pg/g	5	1030	-	-	-	-	1040	-	-	1410	-	-	-	-	-	-	-	-
		pg/g	0.25	<0.5	-	-	-	-	<0.5	-	-	<0.5	-	-	-	-	-	-	-	-
		pg/g	1.25	<2.5	-	-	-	-	<2.5	-	-	<2.5	-	-	-	-	-	-	-	-
		pg/g	1.25	<2.5	-	-	-	-	<2.5	-	-	<2.5	-	-	-	-	-	-	-	-
		pg/g	1.25	<2.5	-	-	-	-	<2.5	-	-	<2.5	-	-	-	-	-	-	-	-
		pg/g	2.5	<5.0	-	-	-	-	<4.9	-	-	<5.0	-	-	-	-	-	-	-	-
				3079.3					3271			2949.7								
WHO-TEQ (zero)				1.5					1.54			2.24								

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804288025	EB1804288026	EB1804288027	EB1804288028	EB1804288029	EB1804288030	EB1804288031	EB1804288032	EB1804288033	EB1804288034	EB1804288035	EB1804407001	EB1804407002	EB1804407003	EB1804407004	EB1804407005	EB1804407006
Project name/number:	237374	Sample Date:		14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018
		Client sample ID (1st):		BH05_0.0_0.5	BH05_0.5_1.0	BH05_1.0_2.0	BH05_2.0_3.0	BH05_3.0_4.0	BH05_4.0_4.3	BH06_0.0_0.5	BH06_0.5_1.0	BH06_1.0_2.0	BH06_2.0_3.0	BH06_3.0_4.0	BH07_0.0_0.5	BH07_0.5_1.0	BH07_1.0_2.0	BH07_2.0_3.0	BH07_3.0_4.0	BH07_4.0_4.4
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting																	
EA055: Moisture Content (Dried @ 105-110°C)																				
Moisture Content		%	1.0	44.6	40.4	42.6	40.8	38.1	21.4	38.7	45.2	43.4	40.4	40.6	33.4	34.8	28.4	41.6	41.8	40.6
EG005-SD: Total Metals in Sediments by ICP-AES																				
Aluminium	7429-90-5	mg/kg	50	18800	17400	17600	16500	17000	8810	13200	18600	20400	21600	19500	7650	13300	9710	18500	13300	11300
Iron	7439-89-6	mg/kg	50	30500	27100	28700	28400	27700	21400	27000	26700	30500	36200	32400	21900	29200	32900	31400	24100	20400
EG020-SD: Total Metals in Sediments by ICPMS																				
Antimony	7440-36-0	mg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	mg/kg	1.00	9.61	8.71	8.25	8.18	10.7	6.81	17.7	8.16	10.5	8.49	8.71	12.9	12.5	9.65	12.2	7.05	7.41
Cadmium	7440-43-9	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	mg/kg	1.0	26.4	25.4	25.7	23.8	24.4	14.3	22.6	29	29.5	27	27.9	15.8	24.2	19.7	28.2	23.3	20.3
Copper	7440-50-8	mg/kg	1.0	24.9	21.8	23	26.7	25	51.2	14.7	21.3	27.8	35.2	26.9	8	12.8	10	23.6	23.2	21.2
Cobalt	7440-48-4	mg/kg	0.5	13	10.9	11.8	11.9	12.3	24.4	12.2	11.1	13.3	14.4	12.6	13.5	14.5	27.3	14.4	12	11
Lead	7439-92-1	mg/kg	1.0	8.6	8	8.3	7.5	8.8	8.9	6.1	8.4	7.9	6.5	7.4	3.7	5.8	4.4	7.4	8.4	7.4
Manganese	7439-96-5	mg/kg	10	519	280	441	396	504	50	636	220	261	364	672	227	219	393	350	322	243
Nickel	7440-02-0	mg/kg	1.0	12.8	11.6	12.1	11.9	12	18.5	11.5	12.6	13.9	14.4	13.1	8.2	12.3	11.3	13.9	10.9	9.7
Selenium	7782-49-2	mg/kg	0.1	0.3	0.3	0.4	0.3	0.4	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.4	0.4	0.4
Silver	7440-22-4	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	mg/kg	2.0	57	49.1	52.9	53.7	55.7	60.2	50.8	53.2	60.5	63.3	57.6	42.1	52.2	53.6	57.5	50.2	44.6
Zinc	7440-66-6	mg/kg	1.0	44.2	39.4	40.8	40.1	40.6	46.5	33.6	41.5	48.1	51.6	44.4	27.4	38.2	44.4	45	36.4	32.4
EG035T: Total Recoverable Mercury by FIMS																				
Mercury	7439-97-6	mg/kg	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.01	0.02	0.02	0.02	0.02	0.01	0.01	<0.01	0.02	0.01	0.01
EK057G: Nitrite as N by Discrete Analyser																				
Nitrite as N (Sol.)	14797-65-0	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EK058G: Nitrate as N by Discrete Analyser																				
Nitrate as N (Sol.)	14797-55-8	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser																				
Nitrite + Nitrate as N (Sol.)		mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser																				
Total Kjeldahl Nitrogen as N		mg/kg	20	510	460	500	510	490	210	530	460	420	570	580	340	430	180	500	610	570
EK062: Total Nitrogen as N (TKN + NOx)																				
Total Nitrogen as N		mg/kg	20	510	460	500	510	490	210	530	460	420	570	580	340	430	180	500	610	570
EK067G: Total Phosphorus as P by Discrete Analyser																				
Total Phosphorus as P		mg/kg	2	368	226	302	302	219	154	230	209	225	265	276	393	336	290	348	317	270
EK255A SD: Ammonia in Sediment																				
Ammonia as N	7664-41-7	mg/kg	0.2	12.8	18.8	35.1	48.3	62.8	47.2	7.7	21.4	48.8	74.2	62.9	3.8	13.4	30	67.1	103	118
EP003: Total Organic Carbon (TOC) in Soil																				
Total Organic Carbon		%	0.02	0.78	0.68	0.65	0.65	0.69	0.09	0.84	0.7	0.67	0.68	0.76	0.61	0.71	0.67	0.63	0.63	0.62
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons																				
C6 - C9 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
C10 - C14 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
C15 - C28 Fraction		mg/kg	3	5	<3	3	<3	<3	<3	<3	<3	<3	3	<3	4	4	<3	<3	3	<3
C29 - C36 Fraction		mg/kg	5	<5	<5	6	<5	<5	<5	<5	<5	<5	<5	<5	5	<5	<5	<5	<5	<5
C10 - C36 Fraction (sum)		mg/kg	3	5	<3	9	<3	<3	<3	<3	<3	<3	3	<3	9	4	<3	<3	3	<3
EP080-SD: BTEXN																				
Benzene	71-43-2	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Xylenes		mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of BTEX		mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds																				
Monobutyltin	78763-54-9	µgSn/kg	1	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	µgSn/kg	1	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1
Tributyltin	56573-85-4	µgSn/kg	0.5	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Matrix:	SOIL	Sample Type:	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:	EB1804288025	EB1804288026	EB1804288027	EB1804288028	EB1804288029	EB1804288030	EB1804288031	EB1804288032	EB1804288033	EB1804288034	EB1804288035	EB1804407001	EB1804407002	EB1804407003	EB1804407004	EB1804407005	EB1804407006	
Project name/number:	237374	Sample Date:	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	
		Client sample ID (1st):	BH05_0.0_0.5	BH05_0.5_1.0	BH05_1.0_2.0	BH05_2.0_3.0	BH05_3.0_4.0	BH05_4.0_4.3	BH06_0.0_0.5	BH06_0.5_1.0	BH06_1.0_2.0	BH06_2.0_3.0	BH06_3.0_4.0	BH07_0.0_0.5	BH07_0.5_1.0	BH07_1.0_2.0	BH07_2.0_3.0	BH07_3.0_4.0	BH07_4.0_4.4	
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting																	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions																				
C6 - C10 Fraction	C6_C10	mg/kg	10	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
>C10 - C16 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	mg/kg	10	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	
>C16 - C34 Fraction		mg/kg	3	7	5	6	3	4	<3	5	5	4	4	4	6	6	4	3	4	
>C34 - C40 Fraction		mg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
>C10 - C40 Fraction (sum)		mg/kg	3	7	5	6	3	4	<3	5	5	4	4	4	6	6	4	3	4	
>C10 - C16 Fraction minus Naphthalene (F2)		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
>C10 - C40 Fraction (sum) (TOC normalised)		mg/kg	3	8.97	7.35	9.23	4.62	5.80		5.95	7.14	5.97	5.88	5.26	9.84	8.45	5.97	4.76	6.35	
EP130A: Organophosphorus Pesticides (Ultra-trace)																				
Bromophos-ethyl	4824-78-6	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Carbophenothion	786-19-6	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Chlorfenvinphos (E)	18708-86-6	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Chlorfenvinphos (Z)	18708-87-7	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Chlorpyrifos	2921-88-2	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Chlorpyrifos-methyl	5598-13-0	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Demeton-S-methyl	919-86-8	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Diazinon	333-41-5	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Dichlorvos	62-73-7	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Dimethoate	60-51-5	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Ethion	563-12-2	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Fenamiphos	22224-92-6	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Fenthion	55-38-9	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Malathion	121-75-5	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Azinphos Methyl	86-50-0	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Monocrotophos	6923-22-4	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Parathion	56-38-2	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Parathion-methyl	298-00-0	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Pirimphos-ethyl	23505-41-1	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Prothiofos	34643-46-4	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
EP131A: Organochlorine Pesticides																				
Aldrin	309-00-2	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
alpha-BHC	319-84-6	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
beta-BHC	319-85-7	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
delta-BHC	319-86-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
4,4'-DDD	72-54-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
4,4'-DDE	72-55-9	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
4,4'-DDT	50-29-3	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Dieldrin	60-57-1	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
alpha-Endosulfan	959-98-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
beta-Endosulfan	33213-65-9	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Endosulfan sulfate	1031-07-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Endosulfan (sum)	115-29-7	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Endrin	72-20-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Endrin aldehyde	7421-93-4	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Endrin ketone	53494-70-5	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Heptachlor	76-44-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Heptachlor epoxide	1024-57-3	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Hexachlorobenzene (HCB)	118-74-1	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
gamma-BHC	58-89-9	µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
Methoxychlor	72-43-5	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
cis-Chlordane	5103-71-9	µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
trans-Chlordane	5103-74-2	µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
Total Chlordane (sum)		µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
Oxychlordane	27304-13-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
EP131B: Polychlorinated Biphenyls (as Aroclors)																				
Total Polychlorinated biphenyls		µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Aroclor 1016	12674-11-2	µg/clor	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Aroclor 1221	11104-28-2	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0											

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804288025	EB1804288026	EB1804288027	EB1804288028	EB1804288029	EB1804288030	EB1804288031	EB1804288032	EB1804288033	EB1804288034	EB1804288035	EB1804407001	EB1804407002	EB1804407003	EB1804407004	EB1804407005	EB1804407006
Project name/number:	237374	Sample Date:		14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018
		Client sample ID (1st):		BH05_0.0_0.5	BH05_0.5_1.0	BH05_1.0_2.0	BH05_2.0_3.0	BH05_3.0_4.0	BH05_4.0_4.3	BH06_0.0_0.5	BH06_0.5_1.0	BH06_1.0_2.0	BH06_2.0_3.0	BH06_3.0_4.0	BH07_0.0_0.5	BH07_0.5_1.0	BH07_1.0_2.0	BH07_2.0_3.0	BH07_3.0_4.0	BH07_4.0_4.4
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting																	
EP132B: Polynuclear Aromatic Hydrocarbons																				
Napthalene	91-20-3	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Methylnapthalene	91-57-6	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Acenaphthene	83-32-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Fluorene	86-73-7	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Phenanthrene	85-01-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Anthracene	120-12-7	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Fluoranthene	206-44-0	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Pyrene	129-00-0	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(a)anthracene	56-55-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Chrysene	218-01-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Perylene	198-55-0	µg/kg	4	<4	10	4	8	9	<4	<4	47	24	62	110	<4	<4	<4	22	15	13
Benzo(g,h,i)perylene	191-24-2	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Indeno(1,2,3.cd)pyrene	193-39-5	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Coronene	191-07-1	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Sum of PAHs		µg/kg	4	<4	10	4	8	9	<4	<4	47	24	62	110	<4	<4	<4	22	15	13
Sum of PAHs (TOC normalised)		µg/kg	4		14.71	6.15	12.31	13.04			67.14	35.82	91.18	144.74				34.92	23.81	20.97
Dioxins - Total																				
Tetra-Dioxins		pg/g	0.25	96.6	-	-	-	-	-	-	-	-	-	-	20	-	-	-	-	-
Penta-Dioxins		pg/g	1.25	141	-	-	-	-	-	-	-	-	-	-	26.4	-	-	-	-	-
Hexa-Dioxins		pg/g	1.25	795	-	-	-	-	-	-	-	-	-	-	141	-	-	-	-	-
Hepta-Dioxins		pg/g	1.25	683	-	-	-	-	-	-	-	-	-	-	120	-	-	-	-	-
Octa-Dioxin		pg/g	5	1270	-	-	-	-	-	-	-	-	-	-	307	-	-	-	-	-
Tetra-Furans		pg/g	0.25	6	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-
Penta-Furans		pg/g	1.25	<2.5	-	-	-	-	-	-	-	-	-	-	<2.5	-	-	-	-	-
Hexa-Furans		pg/g	1.25	<2.5	-	-	-	-	-	-	-	-	-	-	<2.5	-	-	-	-	-
Hepta-Furans		pg/g	1.25	<2.5	-	-	-	-	-	-	-	-	-	-	<2.5	-	-	-	-	-
Octa-Furan		pg/g	2.5	<5.0	-	-	-	-	-	-	-	-	-	-	<4.9	-	-	-	-	-
				2991.6											614.4					
WHO-TEQ (zero)				2.43											0.3					

Matrix:	SOIL	Sample Type:	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:	EB1804407007	EB1804407008	EB1804407009	EB1804407010	EB1804407011	EB1804288016	EB1804288017	EB1804288018	EB1804288013	EB1804288014	EB1804288015	EB1804131019	EB1804131020	EB1804131021	EB1804131022	EB1804131010	EB1804131011	
Project name/number:	237374	Sample Date:	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	
		Client sample ID (1st):	BH08_0.0_0.5	BH08_0.5_1.0	BH08_1.0_2.0	BH08_2.0_3.0	BH08_3.0_3.7	BH09_0.0_0.5	BH09_0.5_1.0	BH09_1.0_1.65	BH10_0.0_0.5	BH10_0.5_1.0	BH10_1.0_1.45	BH11_0.0-0.5	BH11_0.5-1.0	BH11_1.0-2.0	BH11_2.0-2.7	BH12_0.0_0.5	BH12_0.5_1.0	
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting																	
EA055: Moisture Content (Dried @ 105-110°C)																				
Moisture Content		%	1.0	32	28.9	38.7	44.3	36.3	31.8	28.2	25.9	30	24.1	19.3	34.5	20.4	26.6	24.3	55.2	54
EG005-SD: Total Metals in Sediments by ICP-AES																				
Aluminium	7429-90-5	mg/kg	50	4760	6040	12900	12800	10800	8470	9470	9880	10600	8670	7540	11500	4640	9380	7210	14600	15700
Iron	7439-89-6	mg/kg	50	23000	23300	33600	34400	29700	24600	31100	30400	23200	37700	23800	31400	13400	20500	18800	32400	32100
EG020-SD: Total Metals in Sediments by ICPMS																				
Antimony	7440-36-0	mg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	mg/kg	1.00	16.5	13.5	13.3	11.9	15.4	8.14	12.6	8.47	5.2	23.1	21	18.8	10.2	4.57	5.08	15.9	15
Cadmium	7440-43-9	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	mg/kg	1.0	12.7	15.2	21.3	24.2	22.7	15.4	17	19	21.4	17.3	18.6	20.8	8.6	21	13.6	23.2	22.7
Copper	7440-50-8	mg/kg	1.0	7.4	7.6	27.2	20.7	16.2	16.4	20	16.1	16.3	26.2	23.8	18.4	6	11.4	10.9	29	32.4
Cobalt	7440-48-4	mg/kg	0.5	15.8	13.9	13.5	13.1	13.8	20	18.6	27.2	14.9	35.9	56.4	34.3	9.2	9.7	9	15.9	16.5
Lead	7439-92-1	mg/kg	1.0	3.6	4.2	6.4	7.2	8.1	8.7	8.8	10.1	8.2	20.3	9	8.4	4.2	4	4.2	9.1	9
Manganese	7439-96-5	mg/kg	10	234	254	294	275	536	643	738	598	132	406	1240	5510	874	938	544	442	816
Nickel	7440-02-0	mg/kg	1.0	6.5	7.1	12	12.3	11.4	12.8	17	26.4	16.4	30.4	17.8	20.7	6.5	9.2	7.6	15	15.2
Selenium	7782-49-2	mg/kg	0.1	0.4	0.3	0.5	0.4	0.5	0.3	0.3	0.2	0.2	0.4	2	0.4	0.2	0.3	0.2	0.6	0.6
Silver	7440-22-4	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	mg/kg	2.0	51	47.1	68	58.3	72.1	52.8	61.7	50.2	35.1	51	38.6	66.2	45.5	34.9	28.9	71.6	72.1
Zinc	7440-66-6	mg/kg	1.0	27.2	24.9	40	38	32.7	36.1	42.5	49.2	50.2	72.5	54	44.1	20.7	36.4	32.2	54.9	54.8
EG035T: Total Recoverable Mercury by FIMS																				
Mercury	7439-97-6	mg/kg	0.01	<0.01	<0.01	0.01	0.01	<0.01	0.02	0.02	0.06	0.06	<0.01	0.04	0.02	<0.01	<0.01	<0.01	0.02	0.02
EK057G: Nitrite as N by Discrete Analyser																				
Nitrite as N (Sol.)	14797-65-0	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EK058G: Nitrate as N by Discrete Analyser																				
Nitrate as N (Sol.)	14797-55-8	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser																				
Nitrite + Nitrate as N (Sol.)		mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser																				
Total Kjeldahl Nitrogen as N		mg/kg	20	260	540	560	690	510	290	210	170	250	140	170	140	60	120	80	940	1120
EK062: Total Nitrogen as N (TKN + NOx)																				
Total Nitrogen as N		mg/kg	20	260	540	560	690	510	290	210	170	250	140	170	140	60	120	80	940	1120
EK067G: Total Phosphorus as P by Discrete Analyser																				
Total Phosphorus as P		mg/kg	2	250	293	355	352	326	391	404	413	222	482	402	332	148	224	202	366	428
EK255A SD: Ammonia in Sediment																				
Ammonia as N	7664-41-7	mg/kg	0.2	5.6	6	91.9	52.6	55.4	47.2	11.9	4.5	30.5	5.9	5.3	5.8	3.1	4.4	4.8	23.2	166
EP003: Total Organic Carbon (TOC) in Soil																				
Total Organic Carbon		%	0.02	0.48	0.74	1.17	0.74	0.63	0.52	0.1	0.05	0.48	0.04	0.03						
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons																				
C6 - C9 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<4	<5
C10 - C14 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	3	<3	<3	<3	<3	<3
C15 - C28 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	6	<3	<3	<3	11	5
C29 - C36 Fraction		mg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	11	<5
C10 - C36 Fraction (sum)		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	9	<3	<3	<3	22	5
EP080-SD: BTEXN																				
Benzene	71-43-2	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.4	<0.4
ortho-Xylene	95-47-6	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Xylenes		mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of BTEX		mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds																				
Monobutyltin	78763-54-9	µgSn/kg	1	<1	<1	<1	<1	<1	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	µgSn/kg	1	<1	<1	<1	<1	<1	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1
Tributyltin	56573-85-4	µgSn/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

[illegible]

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804407007	EB1804407008	EB1804407009	EB1804407010	EB1804407011	EB1804288016	EB1804288017	EB1804288018	EB1804288013	EB1804288014	EB1804288015	EB1804131019	EB1804131020	EB1804131021	EB1804131022	EB1804131010	EB1804131011
Project name/number:	237374	Sample Date:		15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018
		Client sample ID (1st):		BH08_0.0_0.5	BH08_0.5_1.0	BH08_1.0_2.0	BH08_2.0_3.0	BH08_3.0_3.7	BH09_0.0_0.5	BH09_0.5_1.0	BH09_1.0_1.65	BH10_0.0_0.5	BH10_0.5_1.0	BH10_1.0_1.45	BH11_0.0-0.5	BH11_0.5-1.0	BH11_1.0-2.0	BH11_2.0-2.7	BH12_0.0_0.5	BH12_0.5_1.0
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting																	
EP132B: Polynuclear Aromatic Hydrocarbons																				
Napthalene	91-20-3	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Methylnapthalene	91-57-6	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Acenaphthene	83-32-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Fluorene	86-73-7	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Phenanthrene	85-01-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Anthracene	120-12-7	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Fluoranthene	206-44-0	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Pyrene	129-00-0	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Benzo(a)anthracene	56-55-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Chrysene	218-01-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Benzo(k)fluoranthene	207-08-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Benzo(e)pyrene	192-97-2	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Benzo(a)pyrene	50-32-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Perylene	198-55-0	µg/kg	4	<4	<4	<4	<4	8	<4	4	<4	<4	<4	<4	<4	<4	<4	<4	<5	57
Benzo(g,h,i)perylene	191-24-2	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Dibenz(a,h)anthracene	53-70-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Indeno(1.2.3.cd)pyrene	193-39-5	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<5
Coronene	191-07-1	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Sum of PAHs		µg/kg	4	<4	<4	<4	<4	8	<4	4	<4	<4	<4	<4	<4	<4	<4	<4	<5	57
Sum of PAHs (TOC normalised)		µg/kg	4					12.70		20.00										
Dioxins - Total																				
		pg/g	0.25	-	-	-	-	-	19.9	-	-	-	-	-	12.8	-	-	-	-	-
		pg/g	1.25	-	-	-	-	-	32.1	-	-	-	-	-	19.7	-	-	-	-	-
		pg/g	1.25	-	-	-	-	-	219	-	-	-	-	-	139	-	-	-	-	-
		pg/g	1.25	-	-	-	-	-	271	-	-	-	-	-	171	-	-	-	-	-
		pg/g	5	-	-	-	-	-	1840	-	-	-	-	-	735	-	-	-	-	-
		pg/g	0.25	-	-	-	-	-	<6.0	-	-	-	-	-	<2.5	-	-	-	-	-
		pg/g	1.25	-	-	-	-	-	<2.5	-	-	-	-	-	<2.5	-	-	-	-	-
		pg/g	1.25	-	-	-	-	-	<2.5	-	-	-	-	-	<2.5	-	-	-	-	-
		pg/g	1.25	-	-	-	-	-	<2.5	-	-	-	-	-	<2.5	-	-	-	-	-
		pg/g	2.5	-	-	-	-	-	<5.0	-	-	-	-	-	<5.0	-	-	-	-	-
									2382						1077.5					
WHO-TEQ (zero)									1.52						0.54					

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804131012	EB1804288001	EB1804288002	EB1804288003	EB1804028001	EB1804131015	EB1804131016	EB1804288021	EB1804288020	EB1804288019	EB1804131017	EB1804131018
Project name/number:	237374	Sample Date:		13/02/2018	14/02/2018	14/02/2018	14/02/2018	12/02/2018	13/02/2018	13/02/2018	14/02/2018	14/02/2018	14/02/2018	13/02/2018	13/02/2018
		Client sample ID (1st):		BH12_1.0_2.0	BH13_0.0_0.5	BH13_0.5_1.0	BH13_1.0_2.0	BH14_0.0_00.5	BH15_0.0_0.5	BH16_0.0_0.5	BH17_0.0_0.5	BH18_0.0_0.5	BH19_0.0_0.5	BH20_0.0_0.5	BH21_0.0_0.5
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting												
EA055: Moisture Content (Dried @ 105-110°C)															
Moisture Content		%	1.0	21.9	35.7	29.1	29.8	31	22.7	44.4	24	26.7	23.6	21.4	20.6
EG005-SD: Total Metals in Sediments by ICP-AES															
Aluminium	7429-90-5	mg/kg	50	6830	8380	8520	9220	5940	3580	9060	16000	5340	2440	2220	3940
Iron	7439-89-6	mg/kg	50	14200	23000	27600	36200	10400	9430	20600	46700	10700	10100	10500	10200
EG020-SD: Total Metals in Sediments by ICPMS															
Antimony	7440-36-0	mg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	mg/kg	1.00	3.47	13.4	5.39	9.14	4.02	6.17	9.98	11.2	5.65	8.08	9.74	6.76
Cadmium	7440-43-9	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	mg/kg	1.0	13.2	16	12	21.8	8.5	6.5	13.6	21.5	7	5.4	4.9	6.4
Copper	7440-50-8	mg/kg	1.0	13	14.4	37.1	18	13	7.1	19.4	26	9.2	5.6	4.9	7.9
Cobalt	7440-48-4	mg/kg	0.5	7.4	14.7	18.2	13.5	5.8	6.2	11.3	21.5	5.2	7	7.4	5.8
Lead	7439-92-1	mg/kg	1.0	5.5	6.4	15.9	11	3.2	2.6	5.3	6	5.5	2.9	2	3.3
Manganese	7439-96-5	mg/kg	10	332	362	1560	280	104	396	350	1370	237	424	460	318
Nickel	7440-02-0	mg/kg	1.0	7	10.1	10.6	14.5	5.5	4.3	9.5	17.1	4.1	3.7	4.1	5.1
Selenium	7782-49-2	mg/kg	0.1	0.4	0.3	0.4	0.2	0.2	0.2	0.4	0.3	0.2	<0.1	0.2	0.2
Silver	7440-22-4	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	mg/kg	2.0	32.3	53.3	118	59.4	28.2	25.1	50.3	86.3	29.1	25.9	27.8	25.7
Zinc	7440-66-6	mg/kg	1.0	30.2	33.5	32.6	49	22.4	14.8	34.7	36.9	17.4	13.8	13.4	16.1
EG035T: Total Recoverable Mercury by FIMS															
Mercury	7439-97-6	mg/kg	0.01	<0.01	0.02	0.01	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01
EK057G: Nitrite as N by Discrete Analyser															
Nitrite as N (Sol.)	14797-65-0	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EK058G: Nitrate as N by Discrete Analyser															
Nitrate as N (Sol.)	14797-55-8	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.4	<0.1	0.4	<0.1	1.1	3	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser															
Nitrite + Nitrate as N (Sol.)		mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.4	<0.1	0.4	<0.1	1.1	3	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser															
Total Kjeldahl Nitrogen as N		mg/kg	20	120	480	260	200	240	120	450	210	190	730	100	240
EK062: Total Nitrogen as N (TKN + NOx)															
Total Nitrogen as N		mg/kg	20	120	480	260	200	240	120	450	210	190	730	100	240
EK067G: Total Phosphorus as P by Discrete Analyser															
Total Phosphorus as P		mg/kg	2	254	346	342	261	188	155	284	496	164	350	165	280
EK255A SD: Ammonia in Sediment															
Ammonia as N	7664-41-7	mg/kg	0.2	4	8.8	7.9	5.1	3.1	2.2	5.1	2.9	13.3	6.9	3.7	6.6
EP003: Total Organic Carbon (TOC) in Soil															
Total Organic Carbon		%	0.02		0.85	0.37	0.1	0.55			0.07	0.1	0.09		
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons															
C6 - C9 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
C10 - C14 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
C15 - C28 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	4	3	6	6	<3	<3
C29 - C36 Fraction		mg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	8	<5	<5
C10 - C36 Fraction (sum)		mg/kg	3	<3	<3	<3	<3	<3	<3	4	3	6	14	<3	<3
EP080-SD: BTEXN															
Benzene	71-43-2	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Xylenes		mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of BTEX		mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds															
Monobutyltin	78763-54-9	µgSn/kg	1	<1	-	-	-	<1	<1	<1	-	-	-	<1	<1
Dibutyltin	1002-53-5	µgSn/kg	1	<1	-	-	-	<1	<1	<1	-	-	-	<1	<1
Tributyltin	56573-85-4	µgSn/kg	0.5	<0.5	-	-	-	<0.5	<0.5	<0.5	-	-	-	<0.5	<0.5

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804131012	EB1804288001	EB1804288002	EB1804288003	EB1804028001	EB1804131015	EB1804131016	EB1804288021	EB1804288020	EB1804288019	EB1804131017	EB1804131018
Project name/number:	237374	Sample Date:		13/02/2018	14/02/2018	14/02/2018	14/02/2018	12/02/2018	13/02/2018	13/02/2018	14/02/2018	14/02/2018	14/02/2018	13/02/2018	13/02/2018
		Client sample ID (1st):		BH12_1.0_2.0	BH13_0.0_0.5	BH13_0.5_1.0	BH13_1.0_2.0	BH14_0.0_00.5	BH15_0.0_0.5	BH16_0.0_0.5	BH17_0.0_0.5	BH18_0.0_0.5	BH19_0.0_0.5	BH20_0.0_0.5	BH21_0.0_0.5
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting												
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions															
C6 - C10 Fraction	C6_C10	mg/kg	10	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
>C10 - C16 Fraction		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	mg/kg	10	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
>C16 - C34 Fraction		mg/kg	3	<3	<3	<3	<3	<3	3	6	5	9	8	<3	3
>C34 - C40 Fraction		mg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	6	<5	<5
>C10 - C40 Fraction (sum)		mg/kg	3	<3	<3	<3	<3	<3	3	6	5	9	14	<3	3
>C10 - C16 Fraction minus Naphthalene (F2)		mg/kg	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
>C10 - C40 Fraction (sum) (TOC normalised)		mg/kg	3								25.00	45.00	70.00		
EP130A: Organophosphorus Pesticides (Ultra-trace)															
Bromophos-ethyl	4824-78-6	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Carbophenothion	786-19-6	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chlorfenvinphos (Z)	18708-87-7	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Diazinon	333-41-5	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dichlorvos	62-73-7	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dimethoate	60-51-5	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethion	563-12-2	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fenthion	55-38-9	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Malathion	121-75-5	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Parathion	56-38-2	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Prothiofos	34643-46-4	µg/kg	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
EP131A: Organochlorine Pesticides															
Aldrin	309-00-2	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD	72-54-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDE	72-55-9	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDT	50-29-3	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan (sum)	115-29-7	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin	72-20-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
trans-Chlordane	5103-74-2	µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Total Chlordane (sum)		µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)															
Total Polychlorinated biphenyls		µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804131012	EB1804288001	EB1804288002	EB1804288003	EB1804028001	EB1804131015	EB1804131016	EB1804288021	EB1804288020	EB1804288019	EB1804131017	EB1804131018
Project name/number:	237374	Sample Date:		13/02/2018	14/02/2018	14/02/2018	14/02/2018	12/02/2018	13/02/2018	13/02/2018	14/02/2018	14/02/2018	14/02/2018	13/02/2018	13/02/2018
		Client sample ID (1st):		BH12_1.0_2.0	BH13_0.0_0.5	BH13_0.5_1.0	BH13_1.0_2.0	BH14_0.0_00.5	BH15_0.0_0.5	BH16_0.0_0.5	BH17_0.0_0.5	BH18_0.0_0.5	BH19_0.0_0.5	BH20_0.0_0.5	BH21_0.0_0.5
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting												
EP132B: Polynuclear Aromatic Hydrocarbons															
Naphthalene	91-20-3	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Acenaphthene	83-32-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Fluorene	86-73-7	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Phenanthrene	85-01-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Anthracene	120-12-7	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Fluoranthene	206-44-0	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Pyrene	129-00-0	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(a)anthracene	56-55-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Chrysene	218-01-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Perylene	198-55-0	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Benzo(g,h,i)perylene	191-24-2	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Coronene	191-07-1	µg/kg	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Sum of PAHs		µg/kg	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Sum of PAHs (TOC normalised)		µg/kg	4												
Dioxins - Total															
		pg/g	0.25	-	14.1	-	-	-	<0.5	-	<0.5	-	<0.5	-	-
		pg/g	1.25	-	26.8	-	-	-	10.8	-	<2.5	-	<2.5	-	-
		pg/g	1.25	-	173	-	-	-	101	-	28.5	-	14.5	-	-
		pg/g	1.25	-	186	-	-	-	115	-	69.2	-	31.9	-	-
		pg/g	5	-	918	-	-	-	393	-	651	-	143	-	-
		pg/g	0.25	-	<0.5	-	-	-	<0.5	-	<0.5	-	<0.5	-	-
		pg/g	1.25	-	<2.5	-	-	-	<2.5	-	<2.5	-	<2.5	-	-
		pg/g	1.25	-	<2.5	-	-	-	<2.5	-	<2.5	-	<2.5	-	-
		pg/g	1.25	-	<2.5	-	-	-	<2.5	-	<2.5	-	<2.5	-	-
		pg/g	2.5	-	<4.9	-	-	-	<5.0	-	<5.0	-	<4.9	-	-
					1317.9				619.8		748.7		189.4		
WHO-TEQ (zero)					0.99				0.35		0.33		0.1		



F

Summary
particle size
distribution results

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	
Workgroup:	EB1804131	ALS Sample Number:		EB1804131001	EB1804131004	EB1804131005	EB1804131007	EB1804131009	EB1804288009	EB1804288011	EB1804288004	EB1804288005	EB1804288007	EB1804288025
Project name/number:	237374	Sample Date:		13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018
		Client sample ID (1st):		BH01_0.0_0.5	BH01_1.0_2.0	BH01_2.0_3.0	BH02_0.0_0.5	BH02_1.0_1.4	BH03_0.0_0.5	BH03_1.0_2.0	BH04_0.0_0.5	BH04_0.5_1.0	BH04_2.0_3.0	BH05_0.0_0.5
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting											
EA150: Particle Sizing														
+75µm		%	1	11	3	5	18	2	7	4	16	3	3	35
+150µm		%	1	6	<1	<1	13	1	5	1	13	1	<1	30
+300µm		%	1	5	<1	<1	5	<1	2	<1	8	<1	<1	15
+425µm		%	1	4	<1	<1	4	<1	1	<1	6	<1	<1	10
+600µm		%	1	3	<1	<1	3	<1	1	<1	4	<1	<1	6
+1180µm		%	1	2	<1	<1	2	<1	<1	<1	3	<1	<1	3
+2.36mm		%	1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	1
+4.75mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+9.5mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+19.0mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+37.5mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+75.0mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size														
Clay		%	1	46	50	49	42	60	47	47	42	49	49	36
Silt		%	1	35	42	40	37	37	37	41	35	39	40	23
Sand		%	1	18	8	11	20	3	16	12	21	12	11	39
Gravel		%	1	1	<1	<1	1	<1	<1	<1	2	<1	<1	2
Cobbles		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
EA152: Soil Particle Density														
Soil Particle Density (Clay/Silt/Sand)		g/cm3	0.01	2.57	2.65	2.53	2.55	2.67	2.71	2.72	2.67	2.71	2.7	2.68

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	
Workgroup:	EB1804131	ALS Sample Number:		EB1804288027	EB1804288029	EB1804288031	EB1804288033	EB1804288035	EB1804407001	EB1804407003	EB1804407005	EB1804407007	EB1804407009	EB1804407011
Project name/number:	237374	Sample Date:		14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018
		Client sample ID (1st):		BH05_1.0_2.0	BH05_3.0_4.0	BH06_0.0_0.5	BH06_1.0_2.0	BH06_3.0_4.0	BH07_0.0_0.5	BH07_1.0_2.0	BH07_3.0_4.0	BH08_0.0_0.5	BH08_1.0_2.0	BH08_3.0_3.7
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting											
EA150: Particle Sizing														
+75µm		%	1	2	4	13	5	4	77	58	1	83	46	3
+150µm		%	1	<1	<1	10	3	<1	68	43	<1	78	35	1
+300µm		%	1	<1	<1	5	2	<1	41	15	<1	55	10	<1
+425µm		%	1	<1	<1	3	1	<1	27	11	<1	38	7	<1
+600µm		%	1	<1	<1	2	<1	<1	21	10	<1	27	5	<1
+1180µm		%	1	<1	<1	<1	<1	<1	13	7	<1	14	3	<1
+2.36mm		%	1	<1	<1	<1	<1	<1	6	4	<1	7	<1	<1
+4.75mm		%	1	<1	<1	<1	<1	<1	1	<1	<1	2	<1	<1
+9.5mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+19.0mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+37.5mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+75.0mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size														
Clay		%	1	54	51	46	50	51	14	24	53	12	29	54
Silt		%	1	37	35	34	39	40	7	16	39	3	21	36
Sand		%	1	9	14	20	11	9	71	55	8	76	48	10
Gravel		%	1	<1	<1	<1	<1	<1	8	5	<1	9	2	<1
Cobbles		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
EA152: Soil Particle Density														
Soil Particle Density (Clay/Silt/Sand)		g/cm3	0.01	2.72	2.7	2.71	2.65	2.72	2.66	2.67	2.67	2.65	2.67	2.69

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804288016	EB1804288018	EB1804288013	EB1804288015	EB1804131019	EB1804131021	EB1804131022	EB1804131010	EB1804131012	EB1804288001	EB1804288003
Project name/number:	237374	Sample Date:		14/02/2018	14/02/2018	14/02/2018	14/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	14/02/2018	14/02/2018
		Client sample ID (1st):		BH09_0.0_0.5	BH09_1.0_1.65	BH10_0.0_0.5	BH10_1.0_1.45	BH11_0.0-0.5	BH11_1.0-2.0	BH11_2.0-2.7	BH12_0.0_0.5	BH12_1.0_2.0	BH13_0.0_0.5	BH13_1.0_2.0
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting											
EA150: Particle Sizing														
+75µm		%	1	23	11	43	43	48	40	39	20	33	60	38
+150µm		%	1	14	2	33	15	34	5	4	9	23	50	33
+300µm		%	1	5	<1	15	9	22	4	3	3	13	40	24
+425µm		%	1	3	<1	9	7	17	3	2	2	8	36	20
+600µm		%	1	2	<1	5	4	13	2	2	1	4	32	16
+1180µm		%	1	<1	<1	1	2	6	<1	<1	<1	2	25	9
+2.36mm		%	1	<1	<1	<1	<1	3	<1	<1	<1	<1	21	5
+4.75mm		%	1	<1	<1	<1	<1	2	<1	<1	<1	<1	18	2
+9.5mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	15	<1
+19.0mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	15	<1
+37.5mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+75.0mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size														
Clay		%	1	39	45	32	32	28	22	21	39	34	21	36
Silt		%	1	31	34	20	19	19	24	24	36	29	13	21
Sand		%	1	30	21	47	48	49	54	55	25	36	44	36
Gravel		%	1	<1	<1	1	1	4	<1	<1	<1	1	22	7
Cobbles		%	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
EA152: Soil Particle Density														
Soil Particle Density (Clay/Silt/Sand)		g/cm3	0.01	2.72	2.72	2.68	2.71	2.59	2.7	2.69	2.44	2.68	2.69	2.72

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804028001	EB1804131015	EB1804131016	EB1804288021	EB1804288020	EB1804288019	EB1804131017	EB1804131018
Project name/number:	237374	Sample Date:		12/02/2018	13/02/2018	13/02/2018	14/02/2018	14/02/2018	14/02/2018	13/02/2018	13/02/2018
		Client sample ID (1st):		BH14_0.0_00.5	BH15_0.0_0.5	BH16_0.0_0.5	BH17_0.0_0.5	BH18_0.0_0.5	BH19_0.0_0.5	BH20_0.0_0.5	BH21_0.0_0.5
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting								
EA150: Particle Sizing											
+75µm		%	1	69	90	57	65	91	87	95	25
+150µm		%	1	65	88	53	63	87	85	94	22
+300µm		%	1	60	84	34	55	70	63	62	20
+425µm		%	1	55	78	23	51	59	53	46	19
+600µm		%	1	48	66	13	47	43	45	32	18
+1180µm		%	1	34	36	4	40	16	35	14	16
+2.36mm		%	1	26	20	1	35	4	27	5	12
+4.75mm		%	1	24	13	<1	29	<1	21	2	3
+9.5mm		%	1	22	7	<1	22	<1	17	<1	<1
+19.0mm		%	1	15	4	<1	10	<1	13	<1	<1
+37.5mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1
+75.0mm		%	1	<1	<1	<1	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size											
Clay		%	1	19	7	22	20	6	6	2	45
Silt		%	1	10	3	19	12	3	6	2	29
Sand		%	1	42	65	57	31	84	58	88	13
Gravel		%	1	29	25	2	37	7	30	8	13
Cobbles		%	1	<1	<1	<1	<1	<1	<1	<1	<1
EA152: Soil Particle Density											
Soil Particle Density (Clay/Silt/Sand)		g/cm3	0.01	2.62	2.61	2.6	2.72	2.66	2.68	2.62	2.46

A large green parallelogram with a diagonal line running from the top-left to the bottom-right. The area below the diagonal is a lighter shade of green, and there is a small yellow triangle at the bottom-left corner.

G

Summary
acid sulfate
soil results

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804131001	EB1804131003	EB1804131004	EB1804131005	EB1804131006	EB1804131007	EB1804131008	EB1804131009	EB1804288009	EB1804288010	EB1804288011	EB1804288012	EB1804288004
Project name/number:	237374	Sample Date:		13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018
		Client sample ID (1st):		BH01_0.0_0.5	BH01_0.5_1.0	BH01_1.0_2.0	BH01_2.0_3.0	BH01_3.0_3.5	BH02_0.0_0.5	BH02_0.5_1.0	BH02_1.0_1.4	BH03_0.0_0.5	BH03_0.5_1.0	BH03_1.0_2.0	BH03_2.0_2.8	BH04_0.0_0.5
		Primary sample (where relevant)														
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting													
EA029-A: pH Measurements																
pH KCl (23A)		pH Unit	0.1	8.4	8.5	-	8.3	-	8.5	8.5	7	8.7	-	8.4	7.8	8.5
pH OX (23B)		pH Unit	0.1	8.3	6.2	-	7	-	5.8	3.9	7	8.1	-	3.6	6.4	7.5
Δ pH				0.1	2.3	-	1.3	-	2.7	4.6	0	0.6	-	4.8	1.4	1
EA029-B: Acidity Trail																
Titratable Actual Acidity (23F)		mole H+ / t	2	<2	<2	-	<2	-	<2	<2	<2	<2	-	<2	<2	<2
Titratable Peroxide Acidity (23G)		mole H+ / t	2	<2	17	-	<2	-	11	86	<2	<2	-	122	12	<2
Titratable Sulfidic Acidity (23H)		mole H+ / t	2	<2	17	-	<2	-	11	86	<2	<2	-	122	12	<2
sulfidic - Titratable Actual Acidity (s-23F)		% pyrite S	0.020	<0.020	<0.020	-	<0.020	-	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	<0.020
sulfidic - Titratable Peroxide Acidity (s-23G)		% pyrite S	0.020	<0.020	0.027	-	<0.020	-	<0.020	0.137	<0.020	<0.020	-	0.195	<0.020	<0.020
sulfidic - Titratable Sulfidic Acidity (s-23H)		% pyrite S	0.020	<0.020	0.027	-	<0.020	-	<0.020	0.137	<0.020	<0.020	-	0.195	<0.020	<0.020
EA029-C: Sulfur Trail																
KCl Extractable Sulfur (23Ce)		% S	0.020	0.114	0.097	-	0.06	-	0.112	0.086	0.026	0.103	-	0.095	0.043	0.105
Peroxide Sulfur (23De)		% S	0.020	0.654	0.755	-	0.53	-	0.778	0.658	0.042	0.54	-	0.715	0.309	0.702
Peroxide Oxidisable Sulfur (23E)		% S	0.020	0.54	0.658	-	0.47	-	0.666	0.572	<0.020	0.437	-	0.62	0.266	0.598
acidity - Peroxide Oxidisable Sulfur (a-23E)		mole H+ / t	10	336	411	-	293	-	416	357	10	273	-	387	166	373
EA029-D: Calcium Values																
KCl Extractable Calcium (23Vh)		% Ca	0.020	0.272	0.228	-	0.183	-	0.238	0.206	0.076	0.252	-	0.236	0.092	0.25
Peroxide Calcium (23Wh)		% Ca	0.020	2.42	0.6	-	0.43	-	0.704	0.448	0.108	2.78	-	0.437	0.199	1.17
Acid Reacted Calcium (23X)		% Ca	0.020	2.15	0.372	-	0.248	-	0.465	0.242	0.032	2.53	-	0.201	0.107	0.924
acidity - Acid Reacted Calcium (a-23X)		mole H+ / t	10	1070	186	-	124	-	232	120	16	1260	-	100	53	461
sulfidic - Acid Reacted Calcium (s-23X)		% S	0.020	1.72	0.298	-	0.198	-	0.372	0.193	0.026	2.03	-	0.161	0.086	0.739
EA029-E: Magnesium Values																
KCl Extractable Magnesium (23Sm)		% Mg	0.020	0.167	0.143	-	0.137	-	0.153	0.126	0.12	0.144	-	0.158	0.113	0.149
Peroxide Magnesium (23Tm)		% Mg	0.020	0.428	0.268	-	0.315	-	0.261	0.216	0.163	0.254	-	0.26	0.216	0.284
Acid Reacted Magnesium (23U)		% Mg	0.020	0.261	0.125	-	0.177	-	0.108	0.09	0.043	0.11	-	0.102	0.103	0.135
Acidity - Acid Reacted Magnesium (a-23U)		mole H+ / t	10	215	103	-	146	-	88	74	35	90	-	84	85	111
sulfidic - Acid Reacted Magnesium (s-23U)		% S	0.020	0.345	0.165	-	0.234	-	0.142	0.118	0.056	0.145	-	0.135	0.136	0.178
EA029-F: Excess Acid Neutralising Capacity																
Excess Acid Neutralising Capacity (23Q)		% CaCO3	0.020	5.18	-	-	0.748	-	-	-	0.42	6.34	-	-	-	1.62
acidity - Excess Acid Neutralising Capacity (a-23Q)		mole H+ / t	10	1040	-	-	150	-	-	-	84	1270	-	-	-	324
sulfidic - Excess Acid Neutralising Capacity (s-23Q)		% S	0.020	1.66	-	-	0.239	-	-	-	0.134	2.03	-	-	-	0.519
EA029-H: Acid Base Accounting																
ANC Fineness Factor			0.5	1.5	1.5	-	1.5	-	1.5	1.5	1.5	1.5	-	1.5	1.5	1.5
Net Acidity (sulfur units)		% S	0.02	<0.02	0.24	-	<0.02	-	0.23	0.28	<0.02	<0.02	-	0.34	0.1	<0.02
Net Acidity (acidity units)		mole H+ / t	10	<10	148	-	<10	-	146	176	<10	<10	-	210	63	<10
Liming Rate		kg CaCO3/t	1	<1	11	-	<1	-	11	13	<1	<1	-	16	5	<1
Net Acidity excluding ANC (sulfur units)		% S	0.02	0.54	0.24	-	0.47	-	0.23	0.28	<0.02	0.44	-	0.34	0.1	0.6
Net Acidity excluding ANC (acidity units)		mole H+ / t	10	336	148	-	293	-	146	176	10	273	-	210	63	373
Liming Rate excluding ANC		kg CaCO3/t	1	25	11	-	22	-	11	13	<1	20	-	16	5	28
EA037: Ass Field Screening Analysis																
pH (F)		pH Unit	0.1	-	-	8.2	-	8.5	-	-	-	-	8.7	-	-	-
pH (Fox)		pH Unit	0.1	-	-	4.4	-	3.6	-	-	-	-	2.6	-	-	-
Reaction Rate			1	-	-	3	-	4	-	-	-	-	2	-	-	-
Δ pH				-	-	3.8	-	4.9	-	-	-	-	6.1	-	-	-

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804288005	EB1804288006	EB1804288007	EB1804288008	EB1804288025	EB1804288026	EB1804288027	EB1804288028	EB1804288029	EB1804288030	EB1804288031	EB1804288032	EB1804288033
Project name/number:	237374	Sample Date:		14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018
		Client sample ID (1st):		BH04_0.5_1.0	BH04_1.0_2.0	BH04_2.0_3.0	BH04_3.0_3.7	BH05_0.0_0.5	BH05_0.5_1.0	BH05_1.0_2.0	BH05_2.0_3.0	BH05_3.0_4.0	BH05_4.0_4.3	BH06_0.0_0.5	BH06_0.5_1.0	BH06_1.0_2.0
		Primary sample (where relevant)														
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting													
EA029-A: pH Measurements																
pH KCl (23A)		pH Unit	0.1	8.5	-	8.2	-	8.5	-	8.4	-	8.1	-	8.6	-	8.6
pH OX (23B)		pH Unit	0.1	5.6	-	3.4	-	6.2	-	3.7	-	3	-	8	-	3
Δ pH				2.9	-	4.8	-	2.3	-	4.7	-	5.1	-	0.6	-	5.6
EA029-B: Acidity Trail																
Titratable Actual Acidity (23F)		mole H+ / t	2	<2	-	<2	-	<2	-	<2	-	<2	-	<2	-	<2
Titratable Peroxide Acidity (23G)		mole H+ / t	2	12	-	145	-	4	-	102	-	185	-	<2	-	184
Titratable Sulfidic Acidity (23H)		mole H+ / t	2	12	-	145	-	4	-	102	-	185	-	<2	-	184
sulfidic - Titratable Actual Acidity (s-23F)		% pyrite S	0.020	<0.020	-	<0.020	-	<0.020	-	<0.020	-	<0.020	-	<0.020	-	<0.020
sulfidic - Titratable Peroxide Acidity (s-23G)		% pyrite S	0.020	<0.020	-	0.232	-	<0.020	-	0.163	-	0.296	-	<0.020	-	0.294
sulfidic - Titratable Sulfidic Acidity (s-23H)		% pyrite S	0.020	<0.020	-	0.232	-	<0.020	-	0.163	-	0.296	-	<0.020	-	0.294
EA029-C: Sulfur Trail																
KCl Extractable Sulfur (23Ce)		% S	0.020	0.1	-	0.082	-	0.112	-	0.077	-	0.072	-	0.106	-	0.104
Peroxide Sulfur (23De)		% S	0.020	0.848	-	0.688	-	0.715	-	0.615	-	0.735	-	0.785	-	1.11
Peroxide Oxidisable Sulfur (23E)		% S	0.020	0.748	-	0.606	-	0.604	-	0.538	-	0.663	-	0.678	-	1.01
acidity - Peroxide Oxidisable Sulfur (a-23E)		mole H+ / t	10	466	-	378	-	376	-	336	-	414	-	423	-	629
EA029-D: Calcium Values																
KCl Extractable Calcium (23Vh)		% Ca	0.020	0.244	-	0.213	-	0.266	-	0.226	-	0.228	-	0.251	-	0.236
Peroxide Calcium (23Wh)		% Ca	0.020	0.787	-	0.336	-	0.671	-	0.36	-	0.346	-	1.76	-	0.741
Acid Reacted Calcium (23X)		% Ca	0.020	0.543	-	0.123	-	0.405	-	0.133	-	0.118	-	1.5	-	0.505
acidity - Acid Reacted Calcium (a-23X)		mole H+ / t	10	271	-	61	-	202	-	66	-	59	-	751	-	252
sulfidic - Acid Reacted Calcium (s-23X)		% S	0.020	0.434	-	0.098	-	0.324	-	0.107	-	0.095	-	1.2	-	0.404
EA029-E: Magnesium Values																
KCl Extractable Magnesium (23Sm)		% Mg	0.020	0.155	-	0.158	-	0.164	-	0.151	-	0.151	-	0.148	-	0.152
Peroxide Magnesium (23Tm)		% Mg	0.020	0.259	-	0.266	-	0.268	-	0.249	-	0.244	-	0.284	-	0.273
Acid Reacted Magnesium (23U)		% Mg	0.020	0.104	-	0.108	-	0.103	-	0.098	-	0.093	-	0.136	-	0.121
Acidity - Acid Reacted Magnesium (a-23U)		mole H+ / t	10	86	-	89	-	85	-	80	-	76	-	112	-	100
sulfidic - Acid Reacted Magnesium (s-23U)		% S	0.020	0.138	-	0.143	-	0.136	-	0.129	-	0.123	-	0.179	-	0.16
EA029-F: Excess Acid Neutralising Capacity																
Excess Acid Neutralising Capacity (23Q)		% CaCO3	0.020	-	-	-	-	-	-	-	-	-	-	2.77	-	-
acidity - Excess Acid Neutralising Capacity (a-23Q)		mole H+ / t	10	-	-	-	-	-	-	-	-	-	-	553	-	-
sulfidic - Excess Acid Neutralising Capacity (s-23Q)		% S	0.020	-	-	-	-	-	-	-	-	-	-	0.886	-	-
EA029-H: Acid Base Accounting																
ANC Fineness Factor			0.5	1.5	-	1.5	-	1.5	-	1.5	-	1.5	-	1.5	-	1.5
Net Acidity (sulfur units)		% S	0.02	0.26	-	0.36	-	0.2	-	0.29	-	0.42	-	<0.02	-	0.53
Net Acidity (acidity units)		mole H+ / t	10	164	-	223	-	128	-	180	-	261	-	<10	-	332
Liming Rate		kg CaCO3/t	1	12	-	17	-	10	-	13	-	20	-	<1	-	25
Net Acidity excluding ANC (sulfur units)		% S	0.02	0.26	-	0.36	-	0.2	-	0.29	-	0.42	-	0.68	-	0.53
Net Acidity excluding ANC (acidity units)		mole H+ / t	10	164	-	223	-	128	-	180	-	261	-	423	-	332
Liming Rate excluding ANC		kg CaCO3/t	1	12	-	17	-	10	-	13	-	20	-	32	-	25
EA037: Ass Field Screening Analysis																
pH (F)		pH Unit	0.1	-	8.8	-	8.9	-	8.8	-	8.6	-	9.5	-	8.8	-
pH (Fox)		pH Unit	0.1	-	5.6	-	2.1	-	5.2	-	5	-	2.3	-	2.4	-
Reaction Rate			1	-	2	-	2	-	2	-	2	-	4	-	2	-
Δ pH				-	3.2	-	6.8	-	3.6	-	3.6	-	7.2	-	6.4	-

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804288034	EB1804288035	EB1804407001	EB1804407002	EB1804407003	EB1804407004	EB1804407005	EB1804407006	EB1804407007	EB1804407008	EB1804407009	EB1804407010	EB1804407011
Project name/number:	237374	Sample Date:		14/02/2018	14/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018
		Client sample ID (1st):		BH06_2.0_3.0	BH06_3.0_4.0	BH07_0.0_0.5	BH07_0.5_1.0	BH07_1.0_2.0	BH07_2.0_3.0	BH07_3.0_4.0	BH07_4.0_4.4	BH08_0.0_0.5	BH08_0.5_1.0	BH08_1.0_2.0	BH08_2.0_3.0	BH08_3.0_3.7
		Primary sample (where relevant)														
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting													
EA029-A: pH Measurements																
pH KCl (23A)		pH Unit	0.1	-	8.4	9.1	-	8.8	-	8.5	-	9.1	-	8.4	-	8.4
pH OX (23B)		pH Unit	0.1	-	3.4	8.3	-	7.7	-	3	-	8.6	-	7.9	-	4.2
Δ pH				-	5	0.8	-	1.1	-	5.5	-	0.5	-	0.5	-	4.2
EA029-B: Acidity Trail																
Titratable Actual Acidity (23F)		mole H+ / t	2	-	<2	<2	-	<2	-	<2	-	<2	-	<2	-	<2
Titratable Peroxide Acidity (23G)		mole H+ / t	2	-	137	<2	-	<2	-	208	-	<2	-	<2	-	63
Titratable Sulfidic Acidity (23H)		mole H+ / t	2	-	137	<2	-	<2	-	208	-	<2	-	<2	-	63
sulfidic - Titratable Actual Acidity (s-23F)		% pyrite S	0.020	-	<0.020	<0.020	-	<0.020	-	<0.020	-	<0.020	-	<0.020	-	<0.020
sulfidic - Titratable Peroxide Acidity (s-23G)		% pyrite S	0.020	-	0.219	<0.020	-	<0.020	-	0.334	-	<0.020	-	<0.020	-	0.101
sulfidic - Titratable Sulfidic Acidity (s-23H)		% pyrite S	0.020	-	0.219	<0.020	-	<0.020	-	0.334	-	<0.020	-	<0.020	-	0.101
EA029-C: Sulfur Trail																
KCl Extractable Sulfur (23Ce)		% S	0.020	-	0.048	0.066	-	0.086	-	0.078	-	0.06	-	0.118	-	0.089
Peroxide Sulfur (23De)		% S	0.020	-	0.708	0.307	-	0.706	-	0.814	-	0.176	-	0.9	-	0.677
Peroxide Oxidisable Sulfur (23E)		% S	0.020	-	0.659	0.241	-	0.62	-	0.736	-	0.115	-	0.782	-	0.587
acidity - Peroxide Oxidisable Sulfur (a-23E)		mole H+ / t	10	-	411	150	-	386	-	459	-	72	-	488	-	366
EA029-D: Calcium Values																
KCl Extractable Calcium (23Vh)		% Ca	0.020	-	0.191	0.194	-	0.239	-	0.235	-	0.197	-	0.297	-	0.246
Peroxide Calcium (23Wh)		% Ca	0.020	-	0.396	6.13	-	2.99	-	0.361	-	3	-	3.14	-	0.447
Acid Reacted Calcium (23X)		% Ca	0.020	-	0.205	5.94	-	2.75	-	0.126	-	2.81	-	2.84	-	0.2
acidity - Acid Reacted Calcium (a-23X)		mole H+ / t	10	-	102	2960	-	1370	-	63	-	1400	-	1420	-	100
sulfidic - Acid Reacted Calcium (s-23X)		% S	0.020	-	0.164	4.75	-	2.2	-	0.101	-	2.24	-	2.27	-	0.16
EA029-E: Magnesium Values																
KCl Extractable Magnesium (23Sm)		% Mg	0.020	-	0.147	0.069	-	0.118	-	0.156	-	0.073	-	0.136	-	0.162
Peroxide Magnesium (23Tm)		% Mg	0.020	-	0.271	0.136	-	0.254	-	0.263	-	0.144	-	0.265	-	0.284
Acid Reacted Magnesium (23U)		% Mg	0.020	-	0.124	0.067	-	0.136	-	0.107	-	0.071	-	0.129	-	0.122
Acidity - Acid Reacted Magnesium (a-23U)		mole H+ / t	10	-	102	55	-	111	-	88	-	59	-	106	-	101
sulfidic - Acid Reacted Magnesium (s-23U)		% S	0.020	-	0.163	0.088	-	0.179	-	0.141	-	0.094	-	0.17	-	0.162
EA029-F: Excess Acid Neutralising Capacity																
Excess Acid Neutralising Capacity (23Q)		% CaCO3	0.020	-	-	16.1	-	6.38	-	-	-	7.41	-	5.89	-	-
acidity - Excess Acid Neutralising Capacity (a-23Q)		mole H+ / t	10	-	-	3210	-	1280	-	-	-	1480	-	1180	-	-
sulfidic - Excess Acid Neutralising Capacity (s-23Q)		% S	0.020	-	-	5.14	-	2.04	-	-	-	2.37	-	1.88	-	-
EA029-H: Acid Base Accounting																
ANC Fineness Factor			0.5	-	1.5	1.5	-	1.5	-	1.5	-	1.5	-	1.5	-	1.5
Net Acidity (sulfur units)		% S	0.02	-	0.36	<0.02	-	<0.02	-	0.47	-	<0.02	-	<0.02	-	0.26
Net Acidity (acidity units)		mole H+ / t	10	-	228	<10	-	<10	-	292	-	<10	-	<10	-	164
Liming Rate		kg CaCO3/t	1	-	17	<1	-	<1	-	22	-	<1	-	<1	-	12
Net Acidity excluding ANC (sulfur units)		% S	0.02	-	0.36	0.24	-	0.62	-	0.47	-	0.12	-	0.78	-	0.26
Net Acidity excluding ANC (acidity units)		mole H+ / t	10	-	228	150	-	386	-	292	-	72	-	488	-	164
Liming Rate excluding ANC		kg CaCO3/t	1	-	17	11	-	29	-	22	-	5	-	36	-	12
EA037: Ass Field Screening Analysis																
pH (F)		pH Unit	0.1	8.9	-	-	8.8	-	8.8	-	8.9	-	8.8	-	8.8	-
pH (Fox)		pH Unit	0.1	2.9	-	-	6	-	3.4	-	2.8	-	6.1	-	3.2	-
Reaction Rate			1	3	-	-	2	-	3	-	2	-	3	-	3	-
Δ pH				6	-	-	2.8	-	5.4	-	6.1	-	2.7	-	5.6	-

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804288016	EB1804288017	EB1804288018	EB1804288013	EB1804288014	EB1804288015	EB1804131019	EB1804131020	EB1804131021	EB1804131022	EB1804131010	EB1804131011	EB1804131012
Project name/number:	237374	Sample Date:		14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018
		Client sample ID (1st):		BH09_0.0_0.5	BH09_0.5_1.0	BH09_1.0_1.65	BH10_0.0_0.5	BH10_0.5_1.0	BH10_1.0_1.45	BH11_0.0-0.5	BH11_0.5-1.0	BH11_1.0-2.0	BH11_2.0-2.7	BH12_0.0_0.5	BH12_0.5_1.0	BH12_1.0_2.0
		Primary sample (where relevant)														
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting													
EA029-A: pH Measurements																
pH KCl (23A)		pH Unit	0.1	8.6	8.5	7	8.7	6.6	6.6	8.7	9	-	8.9	8.5	8.4	8.7
pH OX (23B)		pH Unit	0.1	8.3	9	8.1	8.6	7.5	7.6	7.9	8.8	-	8.8	7.8	6.4	8.7
Δ pH				0.3	-0.5	-1.1	0.1	-0.9	-1	0.8	0.2	-	0.1	0.7	2	0
EA029-B: Acidity Trail																
Titratable Actual Acidity (23F)		mole H+ / t	2	<2	<2	<2	<2	<2	<2	<2	<2	-	<2	<2	<2	<2
Titratable Peroxide Acidity (23G)		mole H+ / t	2	<2	<2	<2	<2	<2	<2	<2	<2	-	<2	<2	7	<2
Titratable Sulfidic Acidity (23H)		mole H+ / t	2	<2	<2	<2	<2	<2	<2	<2	<2	-	<2	<2	7	<2
sulfidic - Titratable Actual Acidity (s-23F)		% pyrite S	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	<0.020	<0.020
sulfidic - Titratable Peroxide Acidity (s-23G)		% pyrite S	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	<0.020	<0.020
sulfidic - Titratable Sulfidic Acidity (s-23H)		% pyrite S	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	<0.020	<0.020
EA029-C: Sulfur Trail																
KCl Extractable Sulfur (23Ce)		% S	0.020	0.04	0.028	0.026	0.047	0.031	0.026	0.075	0.033	-	0.039	0.122	0.049	0.031
Peroxide Sulfur (23De)		% S	0.020	0.169	0.038	0.027	0.158	0.041	0.028	0.215	0.034	-	0.04	0.399	0.463	0.041
Peroxide Oxidisable Sulfur (23E)		% S	0.020	0.129	<0.020	<0.020	0.11	<0.020	<0.020	0.14	<0.020	-	<0.020	0.277	0.415	<0.020
acidity - Peroxide Oxidisable Sulfur (a-23E)		mole H+ / t	10	81	<10	<10	69	<10	<10	88	<10	-	<10	173	259	<10
EA029-D: Calcium Values																
KCl Extractable Calcium (23Vh)		% Ca	0.020	0.2	0.202	0.098	0.235	0.102	0.086	0.225	0.192	-	0.212	0.256	0.241	0.171
Peroxide Calcium (23Wh)		% Ca	0.020	0.856	0.313	0.127	1.01	0.133	0.11	1.38	0.198	-	1.18	1.09	0.359	0.293
Acid Reacted Calcium (23X)		% Ca	0.020	0.656	0.11	0.029	0.771	0.031	0.024	1.16	<0.020	-	0.964	0.833	0.118	0.121
acidity - Acid Reacted Calcium (a-23X)		mole H+ / t	10	327	55	14	385	16	12	576	<10	-	481	416	59	61
sulfidic - Acid Reacted Calcium (s-23X)		% S	0.020	0.524	0.088	0.023	0.617	0.025	<0.020	0.924	<0.020	-	0.771	0.666	0.095	0.097
EA029-E: Magnesium Values																
KCl Extractable Magnesium (23Sm)		% Mg	0.020	0.115	0.126	0.11	0.121	0.104	0.105	0.127	0.077	-	0.11	0.208	0.245	0.108
Peroxide Magnesium (23Tm)		% Mg	0.020	0.222	0.172	0.138	0.191	0.134	0.118	0.205	0.081	-	0.141	0.312	0.36	0.152
Acid Reacted Magnesium (23U)		% Mg	0.020	0.107	0.046	0.028	0.069	0.029	<0.020	0.078	<0.020	-	0.032	0.104	0.115	0.044
Acidity - Acid Reacted Magnesium (a-23U)		mole H+ / t	10	88	38	23	57	24	11	64	<10	-	26	85	94	36
sulfidic - Acid Reacted Magnesium (s-23U)		% S	0.020	0.141	0.061	0.038	0.091	0.039	<0.020	0.103	<0.020	-	0.042	0.137	0.151	0.057
EA029-F: Excess Acid Neutralising Capacity																
Excess Acid Neutralising Capacity (23Q)		% CaCO3	0.020	2.28	0.998	0.598	2.47	0.588	0.431	3.43	4.57	-	3.44	2.24	-	1.42
acidity - Excess Acid Neutralising Capacity (a-23Q)		mole H+ / t	10	455	199	119	494	117	86	686	913	-	688	447	-	284
sulfidic - Excess Acid Neutralising Capacity (s-23Q)		% S	0.020	0.729	0.319	0.191	0.79	0.188	0.138	1.1	1.46	-	1.1	0.716	-	0.455
EA029-H: Acid Base Accounting																
ANC Fineness Factor			0.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	-	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)		% S	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	0.14	<0.02
Net Acidity (acidity units)		mole H+ / t	10	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	91	<10
Liming Rate		kg CaCO3/t	1	<1	<1	<1	<1	<1	<1	<1	<1	-	<1	<1	7	<1
Net Acidity excluding ANC (sulfur units)		% S	0.02	0.13	<0.02	<0.02	0.11	<0.02	<0.02	0.14	<0.02	-	<0.02	0.28	0.14	<0.02
Net Acidity excluding ANC (acidity units)		mole H+ / t	10	81	<10	<10	69	<10	<10	88	<10	-	<10	173	91	<10
Liming Rate excluding ANC		kg CaCO3/t	1	6	<1	<1	5	<1	<1	6	<1	-	<1	13	7	<1
EA037: Ass Field Screening Analysis																
pH (F)		pH Unit	0.1	-	-	-	-	-	-	-	-	9.1	-	-	-	-
pH (Fox)		pH Unit	0.1	-	-	-	-	-	-	-	-	8.9	-	-	-	-
Reaction Rate			1	-	-	-	-	-	-	-	-	4	-	-	-	-
Δ pH				-	-	-	-	-	-	-	-	0.2	-	-	-	-

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804288001	EB1804288002	EB1804288003	EB1804028001	EB1804131015	EB1804131016	EB1804288021	EB1804288020	EB1804288019	EB1804131017	EB1804131018	EB1804131002	EB1804131023
Project name/number:	237374	Sample Date:		14/02/2018	14/02/2018	14/02/2018	12/02/2018	13/02/2018	13/02/2018	14/02/2018	14/02/2018	14/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018
		Client sample ID (1st):		BH13_0_0_0.5	BH13_0_5_1.0	BH13_1_0_2.0	BH14_0_0_00.5	BH15_0_0_0.5	BH16_0_0_0.5	BH17_0_0_0.5	BH18_0_0_0.5	BH19_0_0_0.5	BH20_0_0_0.5	BH21_0_0_0.5	ASS_DUP1	ASS_DUP2
		Primary sample (where relevant)													BH01_0_0_0.5	BH20_0_0_0.5
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting													
EA029-A: pH Measurements																
pH KCl (23A)		pH Unit	0.1	8.5	8.5	8.7	9	9.1	8.8	9.2	9.2	9.3	9.4	9.3	8.6	9.4
pH OX (23B)		pH Unit	0.1	8	8.6	8.8	8.4	7.8	8.2	9.5	9.2	9.9	9.3	9.6	7.9	9.8
Δ pH				0.5	-0.1	-0.1	0.6	1.3	0.6	-0.3	0	-0.6	0.1	-0.3	0.7	-0.4
EA029-B: Acidity Trail																
Titratable Actual Acidity (23F)		mole H+ / t	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Titratable Peroxide Acidity (23G)		mole H+ / t	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Titratable Sulfidic Acidity (23H)		mole H+ / t	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)		% pyrite S	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
sulfidic - Titratable Peroxide Acidity (s-23G)		% pyrite S	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
sulfidic - Titratable Sulfidic Acidity (s-23H)		% pyrite S	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
EA029-C: Sulfur Trail																
KCl Extractable Sulfur (23Ce)		% S	0.020	0.097	0.071	0.051	0.054	0.023	0.1	0.021	0.028	0.037	0.03	0.031	0.105	0.036
Peroxide Sulfur (23De)		% S	0.020	0.477	0.145	0.071	0.142	0.031	0.229	0.034	0.039	0.061	0.055	0.062	0.692	0.067
Peroxide Oxidisable Sulfur (23E)		% S	0.020	0.38	0.074	<0.020	0.088	<0.020	0.129	<0.020	<0.020	0.024	0.024	0.031	0.587	0.031
acidity - Peroxide Oxidisable Sulfur (a-23E)		mole H+ / t	10	237	46	12	55	<10	80	<10	<10	15	15	19	366	19
EA029-D: Calcium Values																
KCl Extractable Calcium (23Vh)		% Ca	0.020	0.224	0.242	0.216	0.162	0.111	0.213	0.149	0.133	0.181	0.136	0.151	0.239	0.153
Peroxide Calcium (23Wh)		% Ca	0.020	1.75	1.16	0.58	1.02	0.255	1.05	1.83	0.602	6.86	3.86	6.53	1.04	3.92
Acid Reacted Calcium (23X)		% Ca	0.020	1.53	0.917	0.365	0.857	0.144	0.834	1.68	0.469	6.67	3.73	6.38	0.798	3.77
acidity - Acid Reacted Calcium (a-23X)		mole H+ / t	10	763	458	182	427	72	416	837	234	3330	1860	3180	398	1880
sulfidic - Acid Reacted Calcium (s-23X)		% S	0.020	1.22	0.734	0.292	0.685	0.116	0.668	1.34	0.375	5.34	2.98	5.11	0.638	3.02
EA029-E: Magnesium Values																
KCl Extractable Magnesium (23Sm)		% Mg	0.020	0.152	0.116	0.128	0.079	0.04	0.152	0.048	0.059	0.054	0.04	0.053	0.138	0.042
Peroxide Magnesium (23Tm)		% Mg	0.020	0.296	0.254	0.221	0.132	0.069	0.241	0.114	0.095	0.155	0.116	0.17	0.277	0.126
Acid Reacted Magnesium (23U)		% Mg	0.020	0.144	0.138	0.092	0.053	0.03	0.089	0.066	0.036	0.101	0.076	0.118	0.139	0.084
Acidity - Acid Reacted Magnesium (a-23U)		mole H+ / t	10	118	114	76	44	24	73	54	30	83	63	97	114	69
sulfidic - Acid Reacted Magnesium (s-23U)		% S	0.020	0.19	0.182	0.122	0.07	0.039	0.117	0.086	0.047	0.133	0.1	0.155	0.183	0.11
EA029-F: Excess Acid Neutralising Capacity																
Excess Acid Neutralising Capacity (23Q)		% CaCO3	0.020	3.52	3.45	1.5	2.93	0.996	2.81	5.11	1.78	18.1	11.2	18.1	1.48	9.83
acidity - Excess Acid Neutralising Capacity (a-23Q)		mole H+ / t	10	704	690	300	586	199	562	1020	355	3610	2250	3620	296	1960
sulfidic - Excess Acid Neutralising Capacity (s-23Q)		% S	0.020	1.13	1.1	0.48	0.939	0.319	0.9	1.64	0.568	5.78	3.6	5.8	0.474	3.15
EA029-H: Acid Base Accounting																
ANC Fineness Factor			0.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)		% S	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)		mole H+ / t	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Liming Rate		kg CaCO3/t	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)		% S	0.02	0.38	0.07	<0.02	0.09	<0.02	0.13	<0.02	<0.02	0.02	0.02	0.03	0.59	0.03
Net Acidity excluding ANC (acidity units)		mole H+ / t	10	237	46	12	55	<10	80	<10	<10	15	15	19	366	19
Liming Rate excluding ANC		kg CaCO3/t	1	18	3	<1	4	<1	6	<1	<1	1	1	1	27	1
EA037: Ass Field Screening Analysis																
pH (F)		pH Unit	0.1	-	-	-		-	-	-	-	-	-	-	-	-
pH (Fox)		pH Unit	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Reaction Rate			1	-	-	-	-	-	-	-	-	-	-	-	-	-
Δ pH				-	-	-		-	-	-	-	-	-	-	-	-

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804131025	EB1804131013	EB1804288039	EB1804288036	EB1804407012
Project name/number:	237374	Sample Date:		13/02/2018	13/02/2018	14/02/2018	14/02/2018	15/02/2018
		Client sample ID (1st):		ASS_DUP3	ASS_DUP4	ASS_DUP5	ASS_DUP6	ASS_DUP7
		Primary sample (where relevant)		BH16_0.0_0.5	BH12_0.0_0.5	BH18_0.0_0.5	BH06_0.0_0.5	BH08_0.0_0.5
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting					
EA029-A: pH Measurements								
pH KCl (23A)		pH Unit	0.1	9	8.2	9.4	8.7	9
pH OX (23B)		pH Unit	0.1	8.4	7.5	9.2	7.7	8.2
Δ pH				0.6	0.7	0.2	1	0.8
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)		mole H+ / t	2	<2	<2	<2	<2	<2
Titratable Peroxide Acidity (23G)		mole H+ / t	2	<2	<2	<2	<2	<2
Titratable Sulfidic Acidity (23H)		mole H+ / t	2	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)		% pyrite S	0.020	<0.020	<0.020	<0.020	<0.020	<0.020
sulfidic - Titratable Peroxide Acidity (s-23G)		% pyrite S	0.020	<0.020	<0.020	<0.020	<0.020	<0.020
sulfidic - Titratable Sulfidic Acidity (s-23H)		% pyrite S	0.020	<0.020	<0.020	<0.020	<0.020	<0.020
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)		% S	0.020	0.056	0.129	0.025	0.104	0.076
Peroxide Sulfur (23De)		% S	0.020	0.123	0.452	0.052	0.786	0.225
Peroxide Oxidisable Sulfur (23E)		% S	0.020	0.067	0.323	0.027	0.683	0.148
acidity - Peroxide Oxidisable Sulfur (a-23E)		mole H+ / t	10	42	201	17	426	92
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)		% Ca	0.020	0.176	0.258	0.154	0.26	0.233
Peroxide Calcium (23Wh)		% Ca	0.020	1.47	0.871	3.18	3.87	3.82
Acid Reacted Calcium (23X)		% Ca	0.020	1.3	0.613	3.02	3.61	3.59
acidity - Acid Reacted Calcium (a-23X)		mole H+ / t	10	646	306	1510	1800	1790
sulfidic - Acid Reacted Calcium (s-23X)		% S	0.020	1.04	0.49	2.42	2.88	2.87
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)		% Mg	0.020	0.089	0.227	0.048	0.113	0.094
Peroxide Magnesium (23Tm)		% Mg	0.020	0.18	0.354	0.149	0.315	0.169
Acid Reacted Magnesium (23U)		% Mg	0.020	0.091	0.126	0.1	0.201	0.075
Acidity - Acid Reacted Magnesium (a-23U)		mole H+ / t	10	75	104	83	166	62
sulfidic - Acid Reacted Magnesium (s-23U)		% S	0.020	0.12	0.166	0.133	0.266	0.099
EA029-F: Excess Acid Neutralising Capacity								
Excess Acid Neutralising Capacity (23Q)		% CaCO3	0.020	4.07	1.92	6.88	4.69	9.37
acidity - Excess Acid Neutralising Capacity (a-23Q)		mole H+ / t	10	814	383	1380	938	1870
sulfidic - Excess Acid Neutralising Capacity (s-23Q)		% S	0.020	1.3	0.614	2.2	1.5	3
EA029-H: Acid Base Accounting								
ANC Fineness Factor			0.5	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)		% S	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)		mole H+ / t	10	<10	<10	<10	<10	<10
Liming Rate		kg CaCO3/t	1	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)		% S	0.02	0.07	0.32	0.03	0.68	0.15
Net Acidity excluding ANC (acidity units)		mole H+ / t	10	42	201	17	426	92
Liming Rate excluding ANC		kg CaCO3/t	1	3	15	1	32	7
EA037: Ass Field Screening Analysis								
pH (F)		pH Unit	0.1	-	-	-	-	-
pH (Fox)		pH Unit	0.1	-	-	-	-	-
Reaction Rate			1	-	-	-	-	-
Δ pH				-	-	-	-	-



H

Summary
of results from
previous investigations

						Miscellaneous							Metals																	BTEX				
						Ammonia	Moisture	Nitrogen (Total Oxidised)	Nitrogen (Total)	TKN (as N)	Phosphorus	TOC	Aluminium	Antimony	Arsenic	Cadmium	Chromium (III+VI)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc	Tributyltin	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	
						mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						0.1	0.1	0.1	20	20	0.1	50	50	0.5	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.01	0.1	0.1	0.1	0.16	0.1	0.0005	0.05	0.05	0.05	0.2	
National Assessment Guidelines for Dredging- Maximum														25	70	10	370		270		220		1	52		3.7		410	70					
National Assessment Guidelines for Dredging- Screening														2	20	1.5	80		65		50		0.15	21		1		200	9					
Location ID	x coord	y coord	Depth (m)	Date Sampled	Purpose																													
03-023	151.167444	-23.769806	0 - 0.5	16/12/2008	Stage 3	5.81	50.4	<0.1	1000	1000	331	0.72	11000	<0.5	13.4	<0.1	21.5	15.8	18.5	27600	8.2	240	0.02	11.7	0.6	<0.1	50.6	47	<0.5					
03-023	151.167444	-23.769806	0.5-0.8	16/12/2008	Stage 3	6.34	43	<0.1	660	660	223	0.56	11600	<0.5	11.1	<0.1	19.2	12.8	24.7	22000	8.4	198	0.02	11	0.5	<0.1	46.3	37.7	<0.5					
03-023	151.167444	-23.769806	1.5-1.9	16/12/2008	Stage 3	3.74	23.1	<0.1	240	240	98	0.06	6950	<0.5	1.82	<0.1	10.6	1.5	17	17300	3.2	24	0.01	2.9	<0.1	<0.1	51.3	10.9	<0.5					
03-023	151.167444	-23.769806	1-1.5	16/12/2008	Stage 3	4.87	25.9	<0.1	260	260	321	0.08	7350	<0.5	5.92	<0.1	15.6	2.2	24.1	39500	5.1	56	<0.01	4.4	0.3	<0.1	109	11	<0.5					
03-015	151.16775	-23.77051667	0 - 0.5	7/03/2009	Stage 3	2	44.4	<0.1	540	540	294	0.6	14400	<0.5	10.2	<0.1	24	13.6	24.5	25200	9.4	307	0.02	12.3	0.4	<0.1	51.6	39.7	<0.5	<0.2	<0.2	<0.2	<0.2	
03-015	151.16775	-23.77051667	0.5-0.9	7/03/2009	Stage 3	2	43.7	<0.1	460	460	215	0.67	12600	<0.5	9.93	<0.1	21.5	12.5	24.7	21400	8.8	236	0.02	11.5	0.4	<0.1	47.3	35.9	<0.5	<0.2	<0.2	<0.2	<0.2	
03-015	151.16775	-23.77051667	0.9-1.4	7/03/2009	Stage 3	<1	20.7	<0.1	140	140	68	0.05	6670	<0.5	<1	<0.1	5.6	1	171	2190	4.2	21	0.06	1.8	0.3	<0.1	10.4	7.1	<0.5					
03-009	151.1697833	-23.7735	0 - 0.5	23/02/2009	Stage 3	3	46.1	<0.1	500	500	313	0.89	14000	<0.5	13	<0.1	24.2	17.9	22.6	28800	8.9	300	0.02	13.1	0.6	<0.1	59.1	47	<0.5	<0.2	<0.2	<0.2	<0.2	
03-009	151.1697833	-23.7735	0.5-1	23/02/2009	Stage 3	6	44.9	<0.1	330	330	281	0.92	15200	<0.5	12	<0.1	25.1	13.1	26.2	27100	9.8	323	0.02	12.6	0.4	<0.1	55.3	37.9	<0.5	<0.2	<0.2	<0.2	<0.2	
03-009	151.1697833	-23.7735	1.5-2	23/02/2009	Stage 3	6	40.9	<0.1	330	330	310	0.78	14700	<0.5	9.44	<0.1	24	13	26	22100	10.1	390	0.02	13.1	0.5	<0.1	51.8	37.4	<0.5					
03-009	151.1697833	-23.7735	1-1.5	23/02/2009	Stage 3	4	43.9	<0.1	330	330	269	0.72	15500	<0.5	9.25	<0.1	26	12.6	25	23800	10.2	481	0.01	12.2	0.6	<0.1	52.7	38.8	<0.5					
03-009	151.1697833	-23.7735	2-2.3	23/02/2009	Stage 3	4	22.2	<0.1	110	110	201	0.12	10600	<0.5	4.76	<0.1	15.4	37	40.5	27700	4.3	398	<0.01	22.5	1.9	<0.1	44.9	50.3	<0.5					
03-003	151.1709833	-23.77501667	0 - 0.5	23/02/2009	Stage 3	4	44.9	0.209	280	280	261	0.71	16400	<0.5	9.04	<0.1	27.6	12.2	21	24900	9.5	346	0.01	12.5	0.5	<0.1	50.8	38.9	<0.5	<0.2	<0.2	<0.2	<0.2	
03-003	151.1709833	-23.77501667	0.5-1	23/02/2009	Stage 3	7	43.6	<0.1	360	360	745	0.77	16700	<0.5	8.18	<0.1	24.6	12.1	23	25200	9.5	275	0.02	11.9	0.4	<0.1	49	38.1	<0.5	<0.2	<0.2	<0.2	<0.2	
03-003	151.1709833	-23.77501667	1.5-2	23/02/2009	Stage 3	15	44	0.143	360	360	266	0.78	15300	<0.5	9.62	<0.1	25.5	12.7	26.8	23500	9.1	460	0.02	12.1	0.5	<0.1	53.5	41.8	<0.5					
03-003	151.1709833	-23.77501667	1-1.5	23/02/2009	Stage 3	12	42	0.198	310	310	224	0.72	14200	<0.5	10.1	<0.1	24.2	12.4	24.9	25600	8.8	349	0.02	11.6	0.5	<0.1	54.1	38.5	<0.5					
03-003	151.1709833	-23.77501667	2-3	23/02/2009	Stage 3	15	44.8	<0.1	350	350	216	0.77	15800	<0.5	9.02	<0.1	26	12.5	23.1	24800	9.6	386	0.02	12.4	0.4	<0.1	52	39.3	<0.5					
03-003	151.1709833	-23.77501667	3-4	23/02/2009	Stage 3	17	41.2	<0.1	170	170	194	0.72	14500	<0.5	8.38	<0.1	24.2	12.4	24.9	22900	8.8	327	0.01	11.7	0.6	<0.1	53	37.2	<0.5					
03-003	151.1709833	-23.77501667	4-5.5	23/02/2009	Stage 3	18	41.1	<0.1	360	360	254	0.78	14800	<0.5	8.7	<0.1	24.7	13.8	25.4	25100	10	348	0.02	12.3	0.5	<0.1	52.6	36.6	<0.5					
03-001	151.1724333	-23.77671667	0 - 0.5	12/03/2009	Stage 3	1	32.7	<0.1	320	320	225	0.56	9510	<0.5	14.9	<0.1	19.3	12.9	10.9	20200	7.4	194	<0.01	9.1	0.5	<0.1	48	25.8	<0.5	<0.2	<0.2	<0.2	<0.2	
03-001	151.1724333	-23.77671667	0.5-1	12/03/2009	Stage 3	6	43.4	<0.1	360	360	465	0.68	18300	<0.5	9.04	<0.1	27.2	14.4	32.6	27000	9.5	262	0.02	14.4	0.6	<0.1	64.7	45.4	<0.5	<0.2	<0.2	<0.2	<0.2	
03-001	151.1724333	-23.77671667	1.5-2	12/03/2009	Stage 3	11	40.9	<0.1	400	400	251	0.56	14700	<0.5	8.54	<0.1	26	11.3	19.9	23500	9	673	0.02	11.6	0.6	<0.1	48.9	34.9	<0.5					
03-001	151.1724333	-23.77671667	1-1.5	12/03/2009	Stage 3	9	42.2	0.364	500	500	175	0.64	14900	<0.5	9.25	<0.1	26.2	12.6	22.5	24600	9.8	233	0.02	12.8	0.5	<0.1	49	38.8	<0.5					
03-001	151.1724333	-23.77671667	2-3	12/03/2009	Stage 3	18	42.3	0.17	350	350	220	0.57	14500	<0.5	8.06	<0.1																		

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																						PCB											
						Benz(a)anthracene	Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Phenol	Pyrene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)					
EQL						4	4	4	4	4	4	4	4	4	4	5	4	4	0.1	4	5	5	5	5	5	5	5	5					
National Assessment Guidelines for Dredging- Maximum																	45000																
National Assessment Guidelines for Dredging- Screening																	10000											23					
Location ID	x coord	y coord	Depth (m)	Date Sampled	Purpose																												
03-023	151.167444	-23.769806	0 - 0.5	16/12/2008	Stage 3	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<4	<5	<0.5	<5	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<5					
03-023	151.167444	-23.769806	0.5-0.8	16/12/2008	Stage 3	<4	4	<4	<4	<4	<4	<4	<4	<4	<4	<5	10	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-023	151.167444	-23.769806	1.5-1.9	16/12/2008	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-023	151.167444	-23.769806	1-1.5	16/12/2008	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-015	151.16775	-23.77051667	0 - 0.5	7/03/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	8	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-015	151.16775	-23.77051667	0.5-0.9	7/03/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	5	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-015	151.16775	-23.77051667	0.9-1.4	7/03/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-009	151.1697833	-23.7735	0 - 0.5	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-009	151.1697833	-23.7735	0.5-1	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	44	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-009	151.1697833	-23.7735	1.5-2	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	47	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-009	151.1697833	-23.7735	1-1.5	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	45	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-009	151.1697833	-23.7735	2-2.3	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	8	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-003	151.1709833	-23.77501667	0 - 0.5	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	28	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-003	151.1709833	-23.77501667	0.5-1	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	27	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-003	151.1709833	-23.77501667	1.5-2	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	84	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-003	151.1709833	-23.77501667	1-1.5	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	69	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-003	151.1709833	-23.77501667	2-3	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	91	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-003	151.1709833	-23.77501667	3-4	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-003	151.1709833	-23.77501667	4-5.5	23/02/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-001	151.1724333	-23.77671667	0 - 0.5	12/03/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	5	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-001	151.1724333	-23.77671667	0.5-1	12/03/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	50	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-001	151.1724333	-23.77671667	1.5-2	12/03/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	13	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-001	151.1724333	-23.77671667	1-1.5	12/03/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	17	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-001	151.1724333	-23.77671667	2-3	12/03/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	10	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-001	151.1724333	-23.77671667	3-4	12/03/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	18	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
03-001	151.1724333	-23.77671667	4-5.4	12/03/2009	Stage 3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	32	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-007	151.1730667	-23.77816667	0 - 0.5	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-007	151.1730667	-23.77816667	0.5-1	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-007	151.1730667	-23.77816667	1.5-2	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	72	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-007	151.1730667	-23.77816667	1-1.5	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	61	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-007	151.1730667	-23.77816667	2-3	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	53	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-007	151.1730667	-23.77816667	3-4	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-007	151.1730667	-23.77816667	4-5.5	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	100	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-004	151.1734167	-23.77958333	0 - 0.5	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-004	151.1734167	-23.77958333	0.5-1	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-004	151.1734167	-23.77958333	1.5-2	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-004	151.1734167	-23.77958333	1-1.5	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-004	151.1734167	-23.77958333	2-3	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	47	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-004	151.1734167	-23.77958333	3-4	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	91	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
02-004	151.1734167	-23.77958333	4-5.5	1/03/2009	Stage 2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	96	<4		<4	<5	<5	<5	<5	<5	<5	<5	<5					
1B-002	151.1764333	-23.78341667	0 - 0.5	23/03/2009	Stage 1b	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
1B-002	151.1764333	-23.78341667	0.5-1	23/03/2009	Stage 1b	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
1B-002	151.1764333	-23.78341667	1.5-2.1	23/03/2009	Stage 1b	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					
1B-002	151.1764333	-23.78341667	1-1.5	23/03/2009	Stage 1b	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<5	<4	<4	<0.5	<4	<5	<5	<5	<5	<5	<5	<5	<5					

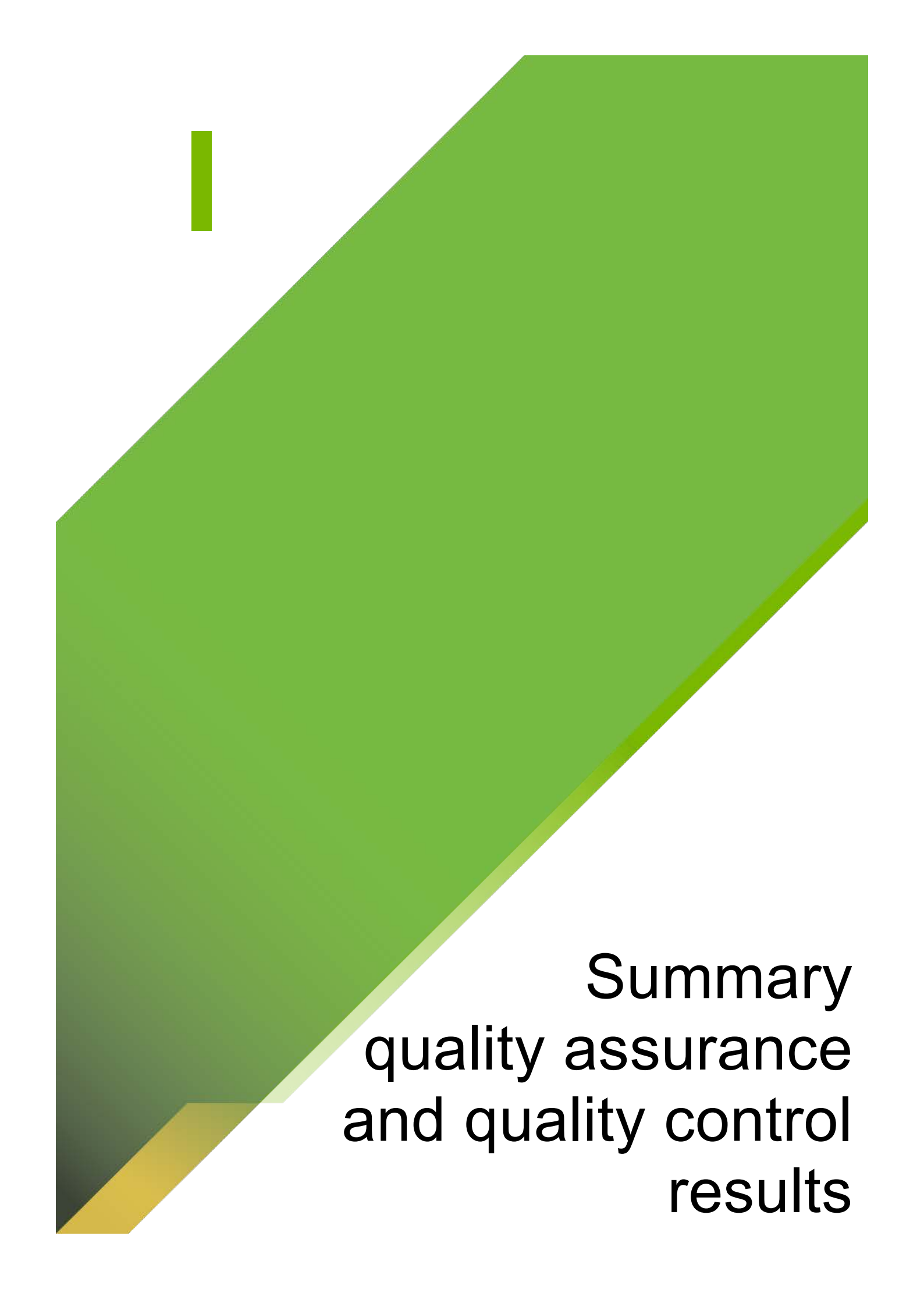
						ASS Field Test				ASS											
						pH (F)	pH Change	pH OX	Reaction Rate	Acid Neutralising Capacity	acidity - Acid Neutralising Capacity (19A2)	acidity - Chromium Reducible Sulfur (a-22B)	ANC Fineness Factor	Chromium Reducible Sulfur	Liming Rate	Net Acidity (acidity units)	Net Acidity (sulfur units)	pH KCl	sulfidic - Titratable Actual Acidity	sulfidic-Acid Neutral	Titratable Actual Acidity
						pH Unit	pH Units	pH Unit	Units	% CaCO3	mol h+/t	m H+/t	-	% S	kg CaCO3/t	mole H+/t	%S	pH Unit	%S	%S	mole H+/t
EQL						0.1		0.1	1	0.01	10	10	0.5	0.02	1	10	0.02	0.1	0.02	0.01	2
QASSIT 1998 (Field Screen)						5-14	1	5-14	2												
QASSIT 1998 (Minimum)															18	0.03					
Location ID	x coord	y coord	Depth (m)	Date Sampled	Purpose																
03-023	151.167444	-23.769806	0 - 0.1	16/12/2008	Stage 3	-	-	-	-	8.12	1620	128	1.5	0.2	<1	<10	<0.02	8.8	<0.02	2.6	<2
03-023	151.167444	-23.769806	0.3-0.5	16/12/2008	Stage 3	-	-	-	-	2.58	516	415	1.5	0.66	5	71	0.11	7.2	<0.02	0.83	<2
03-023	151.167444	-23.769806	0.8-1	16/12/2008	Stage 3	-	-	-	-	1.3	260	52	1.5	0.08	<1	<10	<0.02	8.3	<0.02	0.42	<2
03-023	151.167444	-23.769806	1.3-1.5	16/12/2008	Stage 3	-	-	-	-	1.09	218	<10	1.5	<0.02	<1	<10	<0.02	7.1	<0.02	0.35	<2
03-023	151.167444	-23.769806	1.8-2	16/12/2008	Stage 3	-	-	-	-	1.14	228	<10	1.5	<0.02	<1	<10	<0.02	7.3	<0.02	0.36	<2
03-023	151.167444	-23.769806	2-2.1	17/12/2008	Stage 3	7.3	-	4.8	1	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	3-3.1	17/12/2008	Stage 3	7.3	-	4.9	1	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	3.5-3.6	17/12/2008	Stage 3	6.9	-	4.6	1	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	4-4.6	17/12/2008	Stage 3	6.8	-	4.6	1	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	5-5.1	17/12/2008	Stage 3	6.8	-	4.5	1	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	0.1-0.1	16/12/2008	Stage 3	8.32	2.3	6.02	2	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	0.25-0.25	16/12/2008	Stage 3	8.31	5.33	2.98	2	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	0.5-0.5	16/12/2008	Stage 3	8.32	4.87	3.45	-	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	0.75-0.75	16/12/2008	Stage 3	8.51	5.29	3.22	-	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	39814	16/12/2008	Stage 3	8.54	0.38	8.16	2	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	1.25-1.25	16/12/2008	Stage 3	8.86	1.64	7.22	1	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	1.5-1.5	16/12/2008	Stage 3	8.73	1.71	7.02	-	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	1.75-1.75	16/12/2008	Stage 3	8.1	1.01	7.09	-	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	1.9-1.9	16/12/2008	Stage 3	7.1	1.09	6.01	-	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	1.5-1.6	17/12/2008	Stage 3	7.4	-	5.2	1	-	-	-	-	-	-	-	-	-	-	-	-
03-023	151.167444	-23.769806	4.5-4.6	17/12/2008	Stage 3	7.3	-	4.4	1	-	-	-	-	-	-	-	-	-	-	-	-
03-015	151.16775	-23.77051667	0 - 0.1	7/03/2009	Stage 3	-	-	-	-	0.72	143	532	1.5	0.85	33	436	0.7	8.1	<0.02	0.23	<2
03-015	151.16775	-23.77051667	0.3-0.5	7/03/2009	Stage 3	-	-	-	-	0.1	20	<10	1.5	<0.02	<1	<10	<0.02	8.8	<0.02	0.03	<2
03-015	151.16775	-23.77051667	0.9-1.1	7/03/2009	Stage 3	-	-	-	-	12.9	2570	14	1.5	0.02	<1	<10	<0.02	7.7	<0.02	4.12	<2
03-015	151.16775	-23.77051667	1.2-1.4	7/03/2009	Stage 3	-	-	-	-	4.85	970	70	1.5	0.11	<1	<10	<0.02	9	<0.02	1.55	<2
03-015	151.16775	-23.77051667	0.1	7/03/2009	Stage 3	8.65	2.71	5.94	3	-	-	-	-	-	-	-	-	-	-	-	-
03-015	151.16775	-23.77051667	0.25	7/03/2009	Stage 3	8.75	2.44	6.31	1	-	-	-	-	-	-	-	-	-	-	-	-
03-015	151.16775	-23.77051667	0.5	7/03/2009	Stage 3	8.96	3.23	5.73	1	-	-	-	-	-	-	-	-	-	-	-	-
03-015	151.16775	-23.77051667	0.75	7/03/2009	Stage 3	8.69	5.59	3.1	1	-	-	-	-	-	-	-	-	-	-	-	-
03-015	151.16775	-23.77051667	1	7/03/2009	Stage 3	9.17	2.32	6.85	2	-	-	-	-	-	-	-	-	-	-	-	-
03-015	151.16775	-23.77051667	1.25	7/03/2009	Stage 3	8.05	2.07	5.98	1	-	-	-	-	-	-	-	-	-	-	-	-

						ASS Field Test				ASS											
						pH (F)	pH Change	pH OX	Reaction Rate	Acid Neutralising Capacity	acidity - Acid Neutralising Capacity (19A2)	acidity - Chromium Reducible Sulfur (a-22B)	ANC Fineness Factor	Chromium Reducible Sulfur	Liming Rate	Net Acidity (acidity units)	Net Acidity (sulfur units)	pH KCl	sulfidic - Titratable Actual Acidity	sulfidic-Acid Neutral	Titratable Actual Acidity
						pH Unit	pH Units	pH Unit	Units	% CaCO3	mol h+/t	m H+/t	-	% S	kg CaCO3/t	mole H+/t	%S	pH Unit	%S	%S	mole H+/t
EQL						0.1		0.1	1	0.01	10	10	0.5	0.02	1	10	0.02	0.1	0.02	0.01	2
QASSIT 1998 (Field Screen)						5-14	1	5-14	2												
QASSIT 1998 (Minimum)															18	0.03					
Location ID	x coord	y coord	Depth (m)	Date Sampled	Purpose																
03-009	151.1697833	-23.7735	0 - 0.1	23/02/2009	Stage 3	-	-	-	-	2.95	589	<10	1.5	<0.02	<1	<10	<0.02	8.7	<0.02	0.94	<2
03-009	151.1697833	-23.7735	0.3-0.5	23/02/2009	Stage 3	-	-	-	-	<0.01	<10	<10	1.5	<0.02	<1	<10	<0.02	8.6	<0.02	<0.01	<2
03-009	151.1697833	-23.7735	0.8-1	23/02/2009	Stage 3	-	-	-	-	0.36	72	<10	1.5	<0.02	<1	<10	<0.02	8.6	<0.02	0.12	<2
03-009	151.1697833	-23.7735	1.3-1.5	23/02/2009	Stage 3	-	-	-	-	0.21	41	<10	1.5	<0.02	<1	<10	<0.02	8.5	<0.02	0.07	<2
03-009	151.1697833	-23.7735	1.8-2	23/02/2009	Stage 3	-	-	-	-	0.49	98	<10	1.5	<0.02	<1	<10	<0.02	8.4	<0.02	0.16	<2
03-009	151.1697833	-23.7735	2.1-2.3	23/02/2009	Stage 3	-	-	-	-	1.19	238	<10	1.5	<0.02	<1	<10	<0.02	8.4	<0.02	0.38	<2
03-009	151.1697833	-23.7735	0.1	23/02/2009	Stage 3	8.72	5.06	3.66	3	-	-	-	-	-	-	-	-	-	-	-	
03-009	151.1697833	-23.7735	0.25	23/02/2009	Stage 3	8.66	2.64	6.02	3	-	-	-	-	-	-	-	-	-	-	-	
03-009	151.1697833	-23.7735	0.5	23/02/2009	Stage 3	8.6	2.93	5.67	3	-	-	-	-	-	-	-	-	-	-	-	
03-009	151.1697833	-23.7735	0.75	23/02/2009	Stage 3	8.73	4.48	4.25	2	-	-	-	-	-	-	-	-	-	-	-	
03-009	151.1697833	-23.7735	1	23/02/2009	Stage 3	8.39	5.38	3.01	3	-	-	-	-	-	-	-	-	-	-	-	
03-009	151.1697833	-23.7735	1.25	23/02/2009	Stage 3	8.47	6.31	2.16	3	-	-	-	-	-	-	-	-	-	-	-	
03-009	151.1697833	-23.7735	1.5	23/02/2009	Stage 3	8.63	5.69	2.94	2	-	-	-	-	-	-	-	-	-	-	-	
03-009	151.1697833	-23.7735	1.75	23/02/2009	Stage 3	8.38	6.26	2.12	3	-	-	-	-	-	-	-	-	-	-	-	
03-009	151.1697833	-23.7735	2	23/02/2009	Stage 3	9.26	2.85	6.41	1	-	-	-	-	-	-	-	-	-	-	-	
03-009	151.1697833	-23.7735	2.25	23/02/2009	Stage 3	9.17	1.76	7.41	2	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	0 - 0.1	23/02/2009	Stage 3	-	-	-	-	8.35	1670	<10	1.5	<0.02	<1	<10	<0.02	8.8	<0.02	2.67	<2
03-003	151.1709833	-23.77501667	0.3-0.5	23/02/2009	Stage 3	-	-	-	-	0.88	175	<10	1.5	<0.02	<1	<10	<0.02	8.6	<0.02	0.28	<2
03-003	151.1709833	-23.77501667	0.8-1	23/02/2009	Stage 3	-	-	-	-	1.52	305	<10	1.5	<0.02	<1	<10	<0.02	8.5	<0.02	0.49	<2
03-003	151.1709833	-23.77501667	1.3-1.5	23/02/2009	Stage 3	-	-	-	-	1.28	255	<10	1.5	<0.02	<1	<10	<0.02	8.6	<0.02	0.41	<2
03-003	151.1709833	-23.77501667	1.8-2	23/02/2009	Stage 3	-	-	-	-	1.35	270	<10	1.5	<0.02	<1	<10	<0.02	8.5	<0.02	0.43	<2
03-003	151.1709833	-23.77501667	2.8-3	23/02/2009	Stage 3	-	-	-	-	0.75	150	<10	1.5	<0.02	<1	<10	<0.02	8.6	<0.02	0.24	<2
03-003	151.1709833	-23.77501667	3.8-4	23/02/2009	Stage 3	-	-	-	-	1.62	325	<10	1.5	<0.02	<1	<10	<0.02	8.5	<0.02	0.52	<2
03-003	151.1709833	-23.77501667	4.8-5	23/02/2009	Stage 3	-	-	-	-	1.3	260	<10	1.5	<0.02	<1	<10	<0.02	8.5	<0.02	0.42	<2
03-003	151.1709833	-23.77501667	5.3-5.5	23/02/2009	Stage 3	-	-	-	-	0.32	65	<10	1.5	<0.02	<1	<10	<0.02	8.4	<0.02	0.1	<2
03-003	151.1709833	-23.77501667	0.1	23/02/2009	Stage 3	8.76	2.76	6	-	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	0.25	23/02/2009	Stage 3	8.43	2.39	6.04	-	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	0.5	23/02/2009	Stage 3	8.59	2.7	5.89	2	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	0.75	23/02/2009	Stage 3	8.76	6.01	2.75	3	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	1	23/02/2009	Stage 3	8.09	3.85	4.24	1	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	1.25	23/02/2009	Stage 3	8.53	5.83	2.7	3	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	1.5	23/02/2009	Stage 3	8.44	5.03	3.41	1	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	1.75	23/02/2009	Stage 3	8.73	5.5	3.23	1	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	2	23/02/2009	Stage 3	8.75	1	7.75	4	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	2.25	23/02/2009	Stage 3	8.4	4.09	4.31	2	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	2.5	23/02/2009	Stage 3	8.09	3.27	4.82	1	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	2.75	23/02/2009	Stage 3	8.26	2.35	5.91	1	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	3	23/02/2009	Stage 3	8.74	5.93	2.81	1	-	-	-	-	-	-	-	-	-	-	-	

						ASS Field Test				ASS											
						pH (F)	pH Change	pH OX	Reaction Rate	Acid Neutralising Capacity	acidity - Acid Neutralising Capacity (19A2)	acidity - Chromium Reducible Sulfur (a-22B)	ANC Fineness Factor	Chromium Reducible Sulfur	Liming Rate	Net Acidity (acidity units)	Net Acidity (sulfur units)	pH KCl	sulfidic - Titratable Actual Acidity	sulfidic-Acid Neutral	Titratable Actual Acidity
						pH Unit	pH Units	pH Unit	Units	% CaCO3	mol h+/t	m H+/t	-	% S	kg CaCO3/t	mole H+/t	%S	pH Unit	%S	%S	mole H+/t
EQL						0.1		0.1	1	0.01	10	10	0.5	0.02	1	10	0.02	0.1	0.02	0.01	2
QASSIT 1998 (Field Screen)						5-14	1	5-14	2												
QASSIT 1998 (Minimum)															18	0.03					
Location ID	x coord	y coord	Depth (m)	Date Sampled	Purpose																
03-003	151.1709833	-23.77501667	3.25	23/02/2009	Stage 3	8.34	6.21	2.13	1	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	3.5	23/02/2009	Stage 3	8.43	5.9	2.53	2	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	3.75	23/02/2009	Stage 3	8.35	5.16	3.19	3	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	4	23/02/2009	Stage 3	8.2	2.5	5.7	2	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	4.25	23/02/2009	Stage 3	8.46	6.28	2.18	2	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	4.5	23/02/2009	Stage 3	8.49	5.59	2.9	2	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	4.75	23/02/2009	Stage 3	8.5	5.91	2.59	3	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	5	23/02/2009	Stage 3	8.36	2.06	6.3	3	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	5.25	23/02/2009	Stage 3	8.76	6.22	2.54	2	-	-	-	-	-	-	-	-	-	-	-	
03-003	151.1709833	-23.77501667	5.5	23/02/2009	Stage 3	8.73	6.55	2.18	2	-	-	-	-	-	-	-	-	-	-	-	
03-001	151.1724333	-23.77671667	0 - 0.1	12/03/2009	Stage 3	-	-	-	-	6.97	1390	148	1.5	0.24	<1	<10	<0.02	9	<0.02	2.23	<2
03-001	151.1724333	-23.77671667	0.3-0.5	12/03/2009	Stage 3	-	-	-	-	3.62	723	586	1.5	0.94	8	103	0.16	8.7	<0.02	1.16	<2
03-001	151.1724333	-23.77671667	0.8-1	12/03/2009	Stage 3	-	-	-	-	1.84	368	668	1.5	1.07	32	422	0.68	8.7	<0.02	0.59	<2
03-001	151.1724333	-23.77671667	1.3-1.5	12/03/2009	Stage 3	-	-	-	-	2.2	440	365	1.5	0.58	5	72	0.12	8.5	<0.02	0.7	<2
03-001	151.1724333	-23.77671667	1.8-2	12/03/2009	Stage 3	-	-	-	-	2.2	440	368	1.5	0.59	6	75	0.12	8.5	<0.02	0.7	<2
03-001	151.1724333	-23.77671667	2.3-2.5	12/03/2009	Stage 3	-	-	-	-	2	399	305	1.5	0.49	3	39	0.06	8.5	<0.02	0.64	<2
03-001	151.1724333	-23.77671667	3.3-3.5	12/03/2009	Stage 3	-	-	-	-	1.24	247	360	1.5	0.58	15	196	0.31	8.6	<0.02	0.4	<2
03-001	151.1724333	-23.77671667	4.3-4.5	12/03/2009	Stage 3	-	-	-	-	2.2	440	319	1.5	0.51	2	26	0.04	8.5	<0.02	0.7	<2
03-001	151.1724333	-23.77671667	5.3-5.4	12/03/2009	Stage 3	-	-	-	-	2.25	450	302	1.5	0.48	<1	<10	<0.02	8.5	<0.02	0.72	<2
02-007	151.1730667	-23.77816667	0 - 0.1	1/03/2009	Stage 2	-	-	-	-	12.1	2410	54	1.5	0.09	<1	<10	<0.02	9	<0.02	3.86	<2
02-007	151.1730667	-23.77816667	0.3-0.5	1/03/2009	Stage 2	-	-	-	-	11.8	2370	256	1.5	0.41	<1	<10	<0.02	8.9	<0.02	3.8	<2
02-007	151.1730667	-23.77816667	0.8-1	1/03/2009	Stage 2	-	-	-	-	10.8	2160	425	1.5	0.68	<1	<10	<0.02	8.6	<0.02	3.46	<2
02-007	151.1730667	-23.77816667	1.3-1.5	1/03/2009	Stage 2	-	-	-	-	10.5	2100	411	1.5	0.66	<1	<10	<0.02	8.6	<0.02	3.37	<2
02-007	151.1730667	-23.77816667	1.8-2	1/03/2009	Stage 2	-	-	-	-	10.6	2120	553	1.5	0.89	<1	<10	<0.02	8.5	<0.02	3.4	<2
02-007	151.1730667	-23.77816667	2.8-3	1/03/2009	Stage 2	-	-	-	-	10.4	2080	369	1.5	0.59	<1	<10	<0.02	8.4	<0.02	3.34	<2
02-007	151.1730667	-23.77816667	3.8-4	1/03/2009	Stage 2	-	-	-	-	10.6	2120	285	1.5	0.46	<1	<10	<0.02	8.5	<0.02	3.4	<2
02-007	151.1730667	-23.77816667	4.8-5	1/03/2009	Stage 2	-	-	-	-	10.6	2110	290	1.5	0.46	<1	<10	<0.02	8.4	<0.02	3.39	<2
02-007	151.1730667	-23.77816667	5.3-5.5	1/03/2009	Stage 2	-	-	-	-	10.6	2110	288	1.5	0.46	<1	<10	<0.02	8.4	<0.02	3.38	<2
02-007	151.1730667	-23.77816667	0.1	1/03/2009	Stage 2	8.88	3.66	5.22	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	0.25	1/03/2009	Stage 2	8.89	3.07	5.82	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	0.5	1/03/2009	Stage 2	8.91	3.51	5.4	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	0.75	1/03/2009	Stage 2	8.8	6.04	2.76	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	1	1/03/2009	Stage 2	8.34	2.36	5.98	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	1.25	1/03/2009	Stage 2	8.82	2.99	5.83	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	1.5	1/03/2009	Stage 2	8.82	2.94	5.88	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	1.75	1/03/2009	Stage 2	8.7	0.14	8.56	4	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	2	1/03/2009	Stage 2	8.71	7.11	1.6	4	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	2.25	1/03/2009	Stage 2	8.36	7.11	1.25	4	-	-	-	-	-	-	-	-	-	-	-	

						ASS Field Test				ASS											
						pH (F)	pH Change	pH OX	Reaction Rate	Acid Neutralising Capacity	acidity - Acid Neutralising Capacity (19A2)	acidity - Chromium Reducible Sulfur (a-22B)	ANC Fineness Factor	Chromium Reducible Sulfur	Liming Rate	Net Acidity (acidity units)	Net Acidity (sulfur units)	pH KCl	sulfidic - Titratable Actual Acidity	sulfidic-Acid Neutral	Titratable Actual Acidity
						pH Unit	pH Units	pH Unit	Units	% CaCO3	mol h+/t	m H+/t	-	% S	kg CaCO3/t	mole H+/t	%S	pH Unit	%S	%S	mole H+/t
EQL						0.1		0.1	1	0.01	10	10	0.5	0.02	1	10	0.02	0.1	0.02	0.01	2
QASSIT 1998 (Field Screen)						5-14	1	5-14	2												
QASSIT 1998 (Minimum)															18	0.03					
Location ID	x coord	y coord	Depth (m)	Date Sampled	Purpose																
02-007	151.1730667	-23.77816667	2.5	1/03/2009	Stage 2	7.96	6.72	1.24	4	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	2.75	1/03/2009	Stage 2	8.61	6.04	2.57	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	3	1/03/2009	Stage 2	8.17	-0.09	8.26	3	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	3.25	1/03/2009	Stage 2	8.58	0.54	8.04	3	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	3.5	1/03/2009	Stage 2	8.41	3.56	4.85	1	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	3.75	1/03/2009	Stage 2	8.3	3.25	5.05	2	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	4	1/03/2009	Stage 2	8.65	0.5	8.15	3	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	4.25	1/03/2009	Stage 2	8.2	-0.09	8.29	2	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	4.5	1/03/2009	Stage 2	8.55	4.76	3.79	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	4.75	1/03/2009	Stage 2	8.58	5.64	2.94	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	5	1/03/2009	Stage 2	9.01	4.36	4.65	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	5.25	1/03/2009	Stage 2	8.93	7.61	1.32	-	-	-	-	-	-	-	-	-	-	-	-	
02-007	151.1730667	-23.77816667	5.5	1/03/2009	Stage 2	8.7	3.17	5.53	-	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	0 - 0.1	1/03/2009	Stage 2	-	-	-	-	12	2410	79	1.5	0.13	<1	<10	<0.02	9	<0.02	3.86	<2
02-004	151.1734167	-23.77958333	0.3-0.5	1/03/2009	Stage 2	-	-	-	-	16.1	3220	64	1.5	0.1	<1	<10	<0.02	9.1	<0.02	5.16	<2
02-004	151.1734167	-23.77958333	0.8-1	1/03/2009	Stage 2	-	-	-	-	11	2190	138	1.5	0.22	<1	<10	<0.02	8.9	<0.02	3.51	<2
02-004	151.1734167	-23.77958333	1.3-1.5	1/03/2009	Stage 2	-	-	-	-	11.7	2340	125	1.5	0.2	<1	<10	<0.02	8.8	<0.02	3.76	<2
02-004	151.1734167	-23.77958333	1.8-2	1/03/2009	Stage 2	-	-	-	-	11.2	2240	598	1.5	0.96	<1	<10	<0.02	8.6	<0.02	3.6	<2
02-004	151.1734167	-23.77958333	2.3-2.5	1/03/2009	Stage 2	-	-	-	-	10.7	2140	371	1.5	0.6	<1	<10	<0.02	8.6	<0.02	3.43	<2
02-004	151.1734167	-23.77958333	3.3-3.5	1/03/2009	Stage 2	-	-	-	-	10.7	2130	379	1.5	0.61	<1	<10	<0.02	8.4	<0.02	3.42	<2
02-004	151.1734167	-23.77958333	4.3-4.5	1/03/2009	Stage 2	-	-	-	-	10.6	2130	325	1.5	0.52	<1	<10	<0.02	8.5	<0.02	3.41	<2
02-004	151.1734167	-23.77958333	5.3-5.5	1/03/2009	Stage 2	-	-	-	-	10.7	2140	278	1.5	0.44	<1	<10	<0.02	8.5	<0.02	3.44	<2
02-004	151.1734167	-23.77958333	0.1	1/03/2009	Stage 2	8.61	2.31	6.3	3	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	0.25	1/03/2009	Stage 2	8.96	3.24	5.72	1	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	0.5	1/03/2009	Stage 2	8.77	3.01	5.76	1	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	0.75	1/03/2009	Stage 2	8.9	2.82	6.08	1	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	1	1/03/2009	Stage 2	8.31	3.76	4.55	2	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	1.25	1/03/2009	Stage 2	8.13	5	3.13	4	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	1.5	1/03/2009	Stage 2	8.23	2.1	6.13	2	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	1.75	1/03/2009	Stage 2	8.55	2.36	6.19	2	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	2	1/03/2009	Stage 2	8.76	2.71	6.05	2	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	2.25	1/03/2009	Stage 2	8.39	2.28	6.11	1	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	2.5	1/03/2009	Stage 2	8.57	2.5	6.07	1	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	2.75	1/03/2009	Stage 2	8.67	0.48	8.19	4	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	3	1/03/2009	Stage 2	8.55	6.13	2.42	2	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	3.25	1/03/2009	Stage 2	8.59	2.56	6.03	2	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	3.5	1/03/2009	Stage 2	8.71	2.61	6.1	1	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	3.75	1/03/2009	Stage 2	8.68	4.99	3.69	3	-	-	-	-	-	-	-	-	-	-	-	

						ASS Field Test				ASS											
						pH (F)	pH Change	pH OX	Reaction Rate	Acid Neutralising Capacity	acidity - Acid Neutralising Capacity (19A2)	acidity - Chromium Reducible Sulfur (a-22B)	ANC Fineness Factor	Chromium Reducible Sulfur	Liming Rate	Net Acidity (acidity units)	Net Acidity (sulfur units)	pH KCl	sulfidic - Titratable Actual Acidity	sulfidic-Acid Neutral	Titratable Actual Acidity
						pH Unit	pH Units	pH Unit	Units	% CaCO3	mol h+/t	m H+/t	-	% S	kg CaCO3/t	mole H+/t	%S	pH Unit	%S	%S	mole H+/t
EQL						0.1		0.1	1	0.01	10	10	0.5	0.02	1	10	0.02	0.1	0.02	0.01	2
QASSIT 1998 (Field Screen)						5-14	1	5-14	2												
QASSIT 1998 (Minimum)															18	0.03					
Location ID	x coord	y coord	Depth (m)	Date Sampled	Purpose																
02-004	151.1734167	-23.77958333	4	1/03/2009	Stage 2	8.54	2.8	5.74	3	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	4.25	1/03/2009	Stage 2	8.11	2.03	6.08	1	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	4.5	1/03/2009	Stage 2	8.43	2.52	5.91	3	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	4.75	1/03/2009	Stage 2	8.6	2.46	6.14	1	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	5	1/03/2009	Stage 2	8.72	2.56	6.16	3	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	5.25	1/03/2009	Stage 2	8.41	2.1	6.31	1	-	-	-	-	-	-	-	-	-	-	-	
02-004	151.1734167	-23.77958333	5.5	1/03/2009	Stage 2	8.52	3.49	5.03	3	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	0 - 0.1	23/03/2009	Stage 1b	-	-	-	-	8.68	1730	12	1.5	<0.02	<1	<10	<0.02	9.4	<0.02	2.78	<2
1B-002	151.1764333	-23.78341667	0.3-0.5	23/03/2009	Stage 1b	-	-	-	-	18.8	3770	113	1.5	0.18	<1	<10	<0.02	9.3	<0.02	6.04	<2
1B-002	151.1764333	-23.78341667	0.8-1	23/03/2009	Stage 1b	-	-	-	-	6.57	1310	173	1.5	0.28	<1	<10	<0.02	9.2	<0.02	2.1	<2
1B-002	151.1764333	-23.78341667	1.3-1.5	23/03/2009	Stage 1b	-	-	-	-	4.29	857	314	1.5	0.5	<1	<10	<0.02	8.9	<0.02	1.37	<2
1B-002	151.1764333	-23.78341667	1.8-2	23/03/2009	Stage 1b	-	-	-	-	7.38	1470	300	1.5	0.48	<1	<10	<0.02	9	<0.02	2.36	<2
1B-002	151.1764333	-23.78341667	2.3-2.5	23/03/2009	Stage 1b	-	-	-	-	0.79	158	<10	1.5	<0.02	<1	<10	<0.02	7.9	<0.02	0.25	<2
1B-002	151.1764333	-23.78341667	2.8-3	23/03/2009	Stage 1b	-	-	-	-	0.72	144	24	1.5	0.04	<1	<10	<0.02	7.1	<0.02	0.23	<2
1B-002	151.1764333	-23.78341667	0.1	23/03/2009	Stage 1b	9.03	3.01	6.02	1	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	0.25	23/03/2009	Stage 1b	9.07	2.91	6.16	-	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	0.5	23/03/2009	Stage 1b	9.01	2.95	6.06	1	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	0.75	23/03/2009	Stage 1b	8.86	2.73	6.13	-	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	1	23/03/2009	Stage 1b	8.64	2.63	6.01	1	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	1.25	23/03/2009	Stage 1b	8.78	2.85	5.93	1	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	1.5	23/03/2009	Stage 1b	8.82	2.84	5.98	1	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	1.75	23/03/2009	Stage 1b	8.74	6.91	1.83	1	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	2	23/03/2009	Stage 1b	8.79	2.64	6.15	1	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	2.25	23/03/2009	Stage 1b	7.42	1.93	5.49	-	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	2.5	23/03/2009	Stage 1b	7.87	1.39	6.48	1	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	2.75	23/03/2009	Stage 1b	7.24	1.55	5.69	-	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	3	23/03/2009	Stage 1b	7.44	1.44	6	-	-	-	-	-	-	-	-	-	-	-	-	
1B-002	151.1764333	-23.78341667	3.25	23/03/2009	Stage 1b	7.67	1.52	6.15	-	-	-	-	-	-	-	-	-	-	-	-	

An abstract geometric design featuring a large green parallelogram shape that dominates the left and center of the page. A small yellow rectangle is positioned in the upper left corner. In the bottom left corner, there is a small yellow trapezoidal shape. The text 'Summary quality assurance and quality control results' is located in the bottom right corner, overlaid on the green shape.

Summary
quality assurance
and quality control
results

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:		EB1804288037	EB1804028002	EB1804028003	EB1804288022	EB1804288023
Project name/number:	237374	Sample Date:		14/02/2018	12/02/2018	12/02/2018	14/02/2018	14/02/2018
		Client sample ID (1st):		Duplicate_1A	TRIP_1A	TRIP_1B	Triplicate_2A	Triplicate_2B
		Primary sample (where relevant)		BH10 0.0 0.5	BH14 0.0 00.5	BH14 0.0 00.5	BH05 0.0 0.5	BH05 0.0 0.5
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting					
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content		%	1.0	38.3	26.4	48.9	40.8	45.6
EG005-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	mg/kg	50	11900	5950	13000	16900	18900
Iron	7439-89-6	mg/kg	50	35600	10200	24000	27500	28300
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	mg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	mg/kg	1.00	49.7	4.44	11.2	11	8.4
Cadmium	7440-43-9	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	mg/kg	1.0	19.8	8.1	17.6	24.7	27.3
Copper	7440-50-8	mg/kg	1.0	19	11.4	25.9	21.6	23.5
Cobalt	7440-48-4	mg/kg	0.5	51.3	5.2	11.2	12.2	12.1
Lead	7439-92-1	mg/kg	1.0	5.6	3	6.7	8.4	8.9
Manganese	7439-96-5	mg/kg	10	602	98	222	254	226
Nickel	7440-02-0	mg/kg	1.0	20.3	5.2	11.1	11.7	12.6
Selenium	7782-49-2	mg/kg	0.1	0.5	0.2	0.5	0.3	0.2
Silver	7440-22-4	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	mg/kg	2.0	70.6	25.1	52.8	49.9	52.4
Zinc	7440-66-6	mg/kg	1.0	46.6	20.9	45.1	40.9	44
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	mg/kg	0.01	0.02	<0.01	0.02	0.02	0.02
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N (Sol.)	14797-65-0	mg/kg	0.1	<0.1	-	-	<0.1	<0.1
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N (Sol.)	14797-55-8	mg/kg	0.1	<0.1	-	-	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)		mg/kg	0.1	<0.1	-	-	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N		mg/kg	20	990	-	-	470	480
EK062: Total Nitrogen as N (TKN + NOx)								
Total Nitrogen as N		mg/kg	20	990	-	-	470	480
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P		mg/kg	2	319	-	-	277	225
EK255A SD: Ammonia in Sediment								
p	7664-41-7	mg/kg	0.2	38.5	-	-	7.5	7.9
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon				0.93	0.26	0.68	0.83	0.75
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		mg/kg	3	<3	<3	<3	<3	<3
C10 - C14 Fraction		mg/kg	3	5	<3	<3	<3	5
C15 - C28 Fraction		mg/kg	3	76	<6	<3	16	25
C29 - C36 Fraction		mg/kg	5	24	<9	<5	8	14
C10 - C36 Fraction (sum)		mg/kg	3	105	<3	<3	24	44
EP080-SD: BTEXN								
Benzene	71-43-2	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Xylenes		mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of BTEX		mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	µgSn/kg	1	-	<1	<1	-	-
Dibutyltin	1002-53-5	µgSn/kg	1	-	<1	<1	-	-
Tributyltin	56573-85-4	µgSn/kg	0.5	-	<0.5	<0.5	-	-

Matrix:	SOIL	Sample Type:		REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:	EB1804288037	EB1804028002	EB1804028003	EB1804288022	EB1804288023	
Project name/number:	237374	Sample Date:	14/02/2018	12/02/2018	12/02/2018	14/02/2018	14/02/2018	
		Client sample ID (1st):	Duplicate_1A	TRIP_1A	TRIP_1B	Triplicate_2A	Triplicate_2B	
		Primary sample (where relevant)	BH10 0.0 0.5	BH14 0.0 00.5	BH14 0.0 00.5	BH05 0.0 0.5	BH05 0.0 0.5	
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting					
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	mg/kg	10	<3	<3	<3	<3	<3
>C10 - C16 Fraction		mg/kg	3	6	<3	<3	<3	6
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	mg/kg	10	<3	<3	<3	<3	<3
>C16 - C34 Fraction		mg/kg	3	88	<9	<4	19	31
>C34 - C40 Fraction		mg/kg	5	14	<5	<5	5	9
>C10 - C40 Fraction (sum)		mg/kg	3	108	<3	<3	24	46
>C10 - C16 Fraction minus Naphthalene (F2)		mg/kg	3	6	<3	<3	<3	6
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Bromophos-ethyl	4824-78-6	µg/kg	10	<10	<10	<10	<10	<10
Carbophenothion	786-19-6	µg/kg	10	<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	µg/kg	10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	µg/kg	10	<10	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	µg/kg	10	<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	µg/kg	10	<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	µg/kg	10	<10	<10	<10	<10	<10
Diazinon	333-41-5	µg/kg	10	<10	<10	<10	<10	<10
Dichlorvos	62-73-7	µg/kg	10	<10	<10	<10	<10	<10
Dimethoate	60-51-5	µg/kg	10	<10	<10	<10	<10	<10
Ethion	563-12-2	µg/kg	10	<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	µg/kg	10	<10	<10	<10	<10	<10
Fenthion	55-38-9	µg/kg	10	<10	<10	<10	<10	<10
Malathion	121-75-5	µg/kg	10	<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	µg/kg	10	<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	µg/kg	10	<10	<10	<10	<10	<10
Parathion	56-38-2	µg/kg	10	<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	µg/kg	10	<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	µg/kg	10	<10	<10	<10	<10	<10
Prothiofos	34643-46-4	µg/kg	10	<10	<10	<10	<10	<10
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD	72-54-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDE	72-55-9	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDT	50-29-3	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan (sum)	115-29-7	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin	72-20-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
trans-Chlordane	5103-74-2	µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Total Chlordane (sum)		µg/kg	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	µg/kg	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
EP131B: Polychlorinated Biphenyls (as Aroclors)								
Total Polychlorinated biphenyls		µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1016	12674-11-2	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1221	11104-28-2	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1232	11141-16-5	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1242	53469-21-9	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1248	12672-29-6	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1254	11097-69-1	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Aroclor 1260	11096-82-5	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Matrix:	SOIL	Sample Type:	REG	REG	REG	REG	REG
Workgroup:	EB1804131	ALS Sample Number:	EB1804288037	EB1804028002	EB1804028003	EB1804288022	EB1804288023
Project name/number:	237374	Sample Date:	14/02/2018	12/02/2018	12/02/2018	14/02/2018	14/02/2018
		Client sample ID (1st):	Duplicate_1A	TRIP_1A	TRIP_1B	TriPLICATE_2A	TriPLICATE_2B
		Primary sample (where relevant)	BH10 0.0 0.5	BH14 0.0 00.5	BH14 0.0 00.5	BH05 0.0 0.5	BH05 0.0 0.5
Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting				
EP132B: Polynuclear Aromatic Hydrocarbons							
Naphthalene	91-20-3	µg/kg	5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	µg/kg	5	<5	<5	<5	<5
Acenaphthylene	208-96-8	µg/kg	4	<4	<4	<4	<4
Acenaphthene	83-32-9	µg/kg	4	<4	<4	<4	<4
Fluorene	86-73-7	µg/kg	4	<4	<4	<4	<4
Phenanthrene	85-01-8	µg/kg	4	<4	<4	<4	<4
Anthracene	120-12-7	µg/kg	4	<4	<4	<4	<4
Fluoranthene	206-44-0	µg/kg	4	<4	<4	<4	<4
Pyrene	129-00-0	µg/kg	4	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	µg/kg	4	<4	<4	<4	<4
Chrysene	218-01-9	µg/kg	4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	µg/kg	4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	µg/kg	4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	µg/kg	4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	µg/kg	4	<4	<4	<4	<4
Perylene	198-55-0	µg/kg	4	20	<4	<4	4
Benzo(g,h,i)perylene	191-24-2	µg/kg	4	<4	<4	<4	<4
Dibenz(a,h)anthracene	53-70-3	µg/kg	4	<4	<4	<4	<4
Indeno(1,2,3-cd)pyrene	193-39-5	µg/kg	4	<4	<4	<4	<4
Coronene	191-07-1	µg/kg	5	<5	<5	<5	<5
Sum of PAHs		µg/kg	4	20	<4	<4	4

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