walker

TOONDAH HARBOUR

APPENDIX 2 - A

SEDIMENT SAMPLING AND ANALYSIS TECHNICAL REPORT

saunders havill group

Toondah Harbour

Sediment Sampling and Analysis 2019 (NADG)

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freshwater estuarine marine

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Summary

The Toondah Harbour Development Project proposes maintenance and capital dredging for navigation and development within the Toondah Harbour Basin and Fison Channel. The proposed capital dredging will widen and deepen the existing basin and channel to provide safe navigation and meet the minimum requirement of the PIANC approach channels design guidelines.

It is proposed that all the dredge material will be beneficially reused to reclaim land for development areas. Dredged material would be disposed of within two bunded reclamation areas: the northern and southern reclamation areas. Perimeter bunds will be established around the reclamation areas to contain the dredged material and limit indirect impacts outside of the development footprint. No material will be removed from the bunded area.

Sediment from the proposed dredge and reclamation areas was sampled and analysed in accordance with a sediment sampling and analysis plan (SSAP) to:

- determine the nature of the dredge material with respect to ease of dredging
- support consideration of the dredge material disposal options
- provide information for the environmental management of the dredging and disposal works, and to
- characterise physical and chemical properties of the sediment layers likely to be encountered by excavations in the bunded reclamation area.

This report presents the results of the sampling and analysis of sediment at 18 sites in the existing and proposed navigational channel and at four sites in the reclamation area.

Cores were collected with a vibracore to a depth of 0.5 m below the maximum dredge depth, with the exception of cores at sites CBH1, CBH2, CBH3, CBH4 and REC1–3 which were collected to refusal. The cores were subsampled in accordance with the SSAP, with all subsamples analysed for a targeted suite of parameters (including potential acid sulfate soils; PASS), and some subsamples analysed for an additional suite of parameters (the comprehensive suite).

Clay and silt dominated the sediments in the proposed dredge area, with varying amounts of sand and gravel. In the reclamation area, particle size distribution was more varied in surface and middle subsamples at sites furthest from the shoreline, with clay dominating the bottom layers.

The 95% UCL of all parameters in the proposed dredge area were below (and complied with) the NAGD Screening Levels (where available) and in many instances were below the laboratory's detection limits. Of the parameters that do not have a NAGD Screening Level, and that were above the specified practical quantitation limit, the metals and nutrients were a similar concentration or below those recorded in 2018, are unlikely to be of concern. Furthermore, extensive testing in earlier studies indicates that high nutrient concentrations are unlikely to pose a risk.

In the reclamation area, the 95% UCL for arsenic , chromium, lead, and nickel exceeded the NAGD Screening Levels. This was primarily due to high concentrations in one of the samples. However, these concentrations were similar, or within the range of previously recorded concentrations in the channel, and are most likely a result of the local geology, with high concentrations of metals in the laterite typical of the area. There were no bioaccumulating substances that exceeded the NAGD Screening Levels or SQG-High and therefore further bioaccumulation testing was not required.

The sediment in the proposed dredge and reclamation areas is not considered to be contaminated, as assessed according to the NADG. Further, as the reclamation area will be bunded during works, there is minimal risk that the sediment will mix with the surrounding water.

Sediment throughout the proposed dredge and reclamation areas, is potential acid sulphate sediment (PASS). It should consequently be treated with lime or similar to address this risk.

Management and monitoring of the dredging and reclamation will be documented in the Environmental Management Plan, and will include treatment of PASS, monitoring of tail water and water quality in the surrounding area during dredging.

1 Introduction

Toondah Harbour is an existing marine facility located in the suburb of Cleveland in Redland City, approximately 30 kilometres south of Brisbane. Maintenance and capital dredging of approximately 500,000 m^3 of marine sediment to widen and lengthen Fison Channel to meet the minimum requirements for safe navigation set out in the PIANC (2014) Harbour Approach Channels Design Guidelines and Australian Standard 3962 – 2001 Guidelines for the Design of Marinas is proposed.

A barge mounted backhoe dredge or similar will be used to dredge the material. It is proposed that all the dredge material will be beneficially reused to reclaim land for development areas. Dredged material would be disposed of within two bunded reclamation areas: the northern and southern reclamation areas. Perimeter bunds will be established around the reclamation areas to contain the dredged material and limit indirect impacts outside of the development footprint. The bunds will comprise an inter-locking sheet piling cut-off wall, vibrated into place, within a rock revetment bund capped by a trafficable gravel vehicle and machinery access at a level above HAT. The dredge will be transported to the reclamation areas via hopper or flat top barges and unloaded at a temporary dock constructed specifically to unload dredged material.

The depth of excavation in the bunded area will extend to approximately -3.5 m LAT in areas that will ultimately become channels and berths for recreational boats. No material will be removed from the bunded area.

Sediment from Toondah Harbour Basin and Fison Channel was sampled and analysed in accordance with a Sediment Sampling and Analysis Plan (SSAP) to:

- determine the nature of the dredge material with respect to ease of dredging
- support consideration of the dredge material disposal options
- provide information for the environmental management of the dredging and disposal works, and to
- characterise physical and chemical properties of the sediment layers likely to be encountered by excavations in the bunded reclamation area.

Sampling and analysis were in accordance with the:

- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018)
- National Assessment Guidelines for Dredging 2009 (DEWHA 2009)
- National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM; NEPC 2014)
- National acid sulfate soils sampling and identification methods manual (Sullivan et al. 2018b)
- National acid sulfate soils identification and laboratory methods manual (Sullivan et al. 2018a)
- Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland (Ahern et al. 1998)
- Queensland Acid Sulfate Soil Technical Manual Soil Management Guidelines v. 4.0 (Dear et al. 2014)
- State Planning Policy 2/02 – Guideline: Acid Sulfate soil (DNRM 2002), and the
- Sediment Sampling and Analysis Plan for Toondah Harbour (the SSAP).

As excavated dredge spoil is proposed to be used for land reclamation purposes, dredged material was assessed for contamination in accordance with the ASC NEPM soil guidelines. Where excavated and unexcavated sediment exceeds the ASC NEPM's soil guideline values and is considered contaminated, dredge spoil is not be used for land reclamation without appropriate management, which may include treatment. This is assessed in EIS Chapter: Contaminated Land Sampling and Analysis 2019 (Sediment).

The SSAP follows the sediment analysis process set out in Phase 1 and 2 of the NAGD. However, the NAGD is designed to assess whether dredged material is suitable for unconfined ocean disposal. As disposal of the material will be confined within a containment bund and used for land reclamation purposes, the approach taken is highly conservative, and focussed on identifying contaminants that may cause impact to the marine environment via re-suspension in the water column. Risk of impact to the marine environment from dredging will require management during construction.

2 Summary of the Sediment Sampling and Analysis Plan

The SSAP, as approved by DAWE, is provided in Appendix A. In summary the SSAP requires that:

- the material to be dredged will be assessed according to the NAGD, with potential contaminants assessed against the sediment quality guidelines in the NAGD
- the selection of sampling locations is based on the potential occurrence of contaminants and the volume of material that may be disturbed.
- samples will be collected from 14 sites in the basin, inner channel and outer channel, and from 4 sites in the reclamation area.
- sediment cores will be subsampled where possible as follows:
    - the upper 0.5 m of the core (subsample A)
    - the middle section of the core (subsample B), extending from 0.5 m to the maximum dredge depth
        - where this section is over 1 m long or there are distinct changes in sediment composition, this sample will be divided accordingly
    - the bottom 0.5 m of the core (subsample C), extending from the maximum dredge depth to 0.5 m below the maximum dredge depth.
- triplicate cores will be collected at two sites, with each of the three cores sub-sampled and analysed for all parameters
- two sub-samples will be split into three, with each of the three sub-samples analysed for all parameters, and one sample analysed at a second laboratory
- a blank sample will be collected for quality assurance / quality control (QA/QC)
- all subsamples will be analysed for particle size distribution (PSD), carbon, metals, hydrocarbons, organotins, BTEXN, phenolics, acid sulfate soils and chromium test, and that
- half of all samples collected within the reclamation area will be analysed for the ‘targeted suite’, with the remaining samples sent to the lab and stored appropriately so that they can be used for further analysis if required.

3 Methods

Sediment was sampled by frc environmental under Moreton Bay Marine Park permit QS2018/CVL125.

3.1 Timing

Sediment was sampled in the proposed dredging and reclamation areas from 6 – 14 November 2019.

3.2 Sites Surveyed

Cores were sampled as close as practical to locations proposed in the SSAP (Table 3.1, Map 1). Field triplicate cores for QAQC were collected from sites CBH 1 and CBH 10, and the split subsamples from sites CBH 6 and CBH 13 (Figure 3.2).

Table 3.1 Sediment sampling sites

Site	Easting (GDA)	Northing (GDA)
CBH 1	528193	6954988
CBH 2	528116	6954837
CBH 3	528231	6954670
CBH 4	528366	6954553
CBH 5	528858	6954434
CBH 6	529051	6954401
CBH 7	529066	6954263
CBH 8	529247	6954190
CBH 9	529186	6954092
CBH 10	529408	6953964
CBH 11	529444	6953809
CBH 12	529613	6953827
CBH 13	529727	6953716
CBH 14	530086	6953611
REC 1	528376	6955544
REC 2	528605	6955343
REC 3	528451	6955185
REC 4	528552	6954836

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Toondah Harbour: Contaminated Land Sampling and Analysis 2019

Map 1: Sediment sampling sites.

SOURCES

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LEGEND

Sample Sites
- Capital
- Reclamation
- Proposed navigation channel
- Reclamation Area
- Existing navigation channel
- Watercourse

Road Network
- Main Road
- Local Road
- Track

N

SCALE

0 50 100 200 300 400 500
Meters

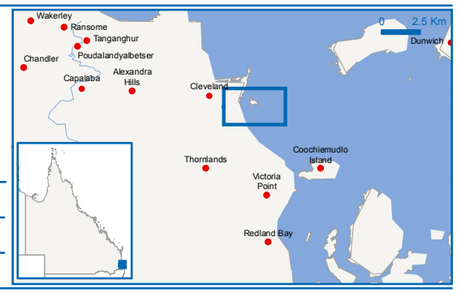
Scale: 1:10,000 @ A3

PROJECTION
Coordinate System: GCS GDA 1994
Datum: GDA 1994
Units: Degree

DATE
2022-02-09

DRAWN BY
AJ, DA

VERSION
01



3.3 Sample Collection

Sediment cores where collected at each site using a vessel-mounted Vibracore. The corer was rinsed with ambient sea water between sampling. Disposable, powder-free gloves where used during sample processing, and were changed after handling each sample to avoid cross-contamination. Samples were then preserved under appropriate conditions and forwarded to a NATA[1] accredited lab within holding times.

Where appropriate, each sediment core was divided into the following sections:

- *the upper 0.5 m of the core (subsample A)*
- *the middle section of the core (subsample B), extending from 0.5 m to the maximum dredge depth*
- *the bottom 0.5 m of the core (subsample C), extending from the maximum dredge depth to 0.5 m below maximum dredge depth.*

No distinct strata over 50 cm was observed in any of the cores, and hence separate sub-sampling of distinct strata was not required.

Cores were collected to a depth of 0.5 m below the maximum dredge depth, with the exception of cores at sites CBH1, CBH2, CBH3, CBH4 and REC1–3 which were collected to refusal, which ranged from -1.25 m to - 2 m depth (LAT). Where the vibracore was unable to penetrate the sediment, three attempts were made at the site. If unsuccessful, samples were collected nearby, within a 30 m radius. The seabed at sites REC1 and REC2 had a high content of gravel and clay, with some pebbles and cobble, and the vibracore was unable to penetrate the sediment in some attempts. At all other sites, refusal was due to a hard clay plug at the bottom of the core.

Each section of the core was thoroughly mixed until a homogenous colour was observed, and a single composite sub-sample taken from each section. Where homogenisation was not achievable in the field due to hard clay, the laboratory was advised to mix the sediment until homogenous before testing.

[1]The National Association of Testing Authorities, Australia (NATA) is the recognised national accreditation authority for analytical laboratories and testing service providers in Australia.

In accordance with QA/QC procedures outlined in the SSAP and NAGD guidelines:

- *triplicate cores were collected at sites CBH 1 and CBH 10 (i.e. three separate cores were collected from these sites)*
- *split sub-samples were collected from sites 6 and 13 (i.e. the surface subsample from these cores was homogenised and split into three subsamples, with two subsamples analysed by the primary laboratory, and one by a secondary laboratory)*
- *a blank sample was collected at site 14, and*
- *samples analysed in previous batches were re-analysed to measure analytical variation between batches*[2].

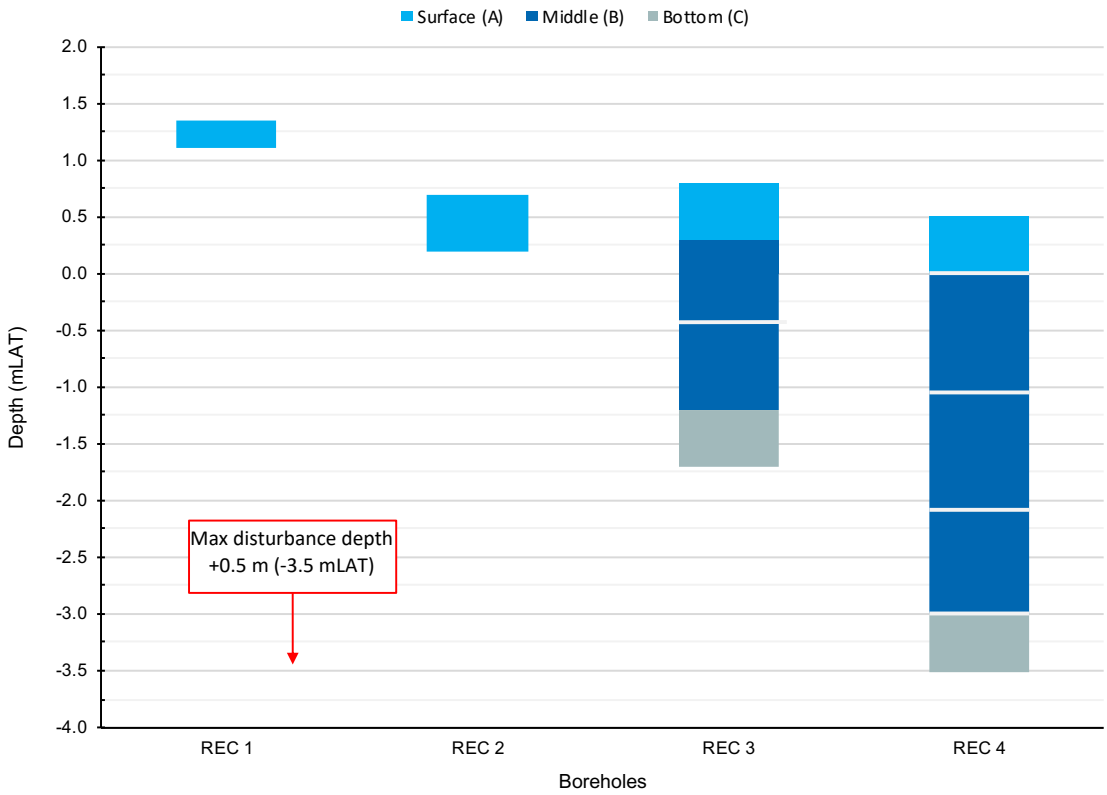


Figure 3.1 Subsampling regime for samples collected in the proposed reclamation area.

[2] To comply with holding times for analyses, the samples were sent to the laboratory in separate batches as required. Samples CBH5_A and CBH2_B1 were re-analysed to comply with QA/QC NAGD guidelines.

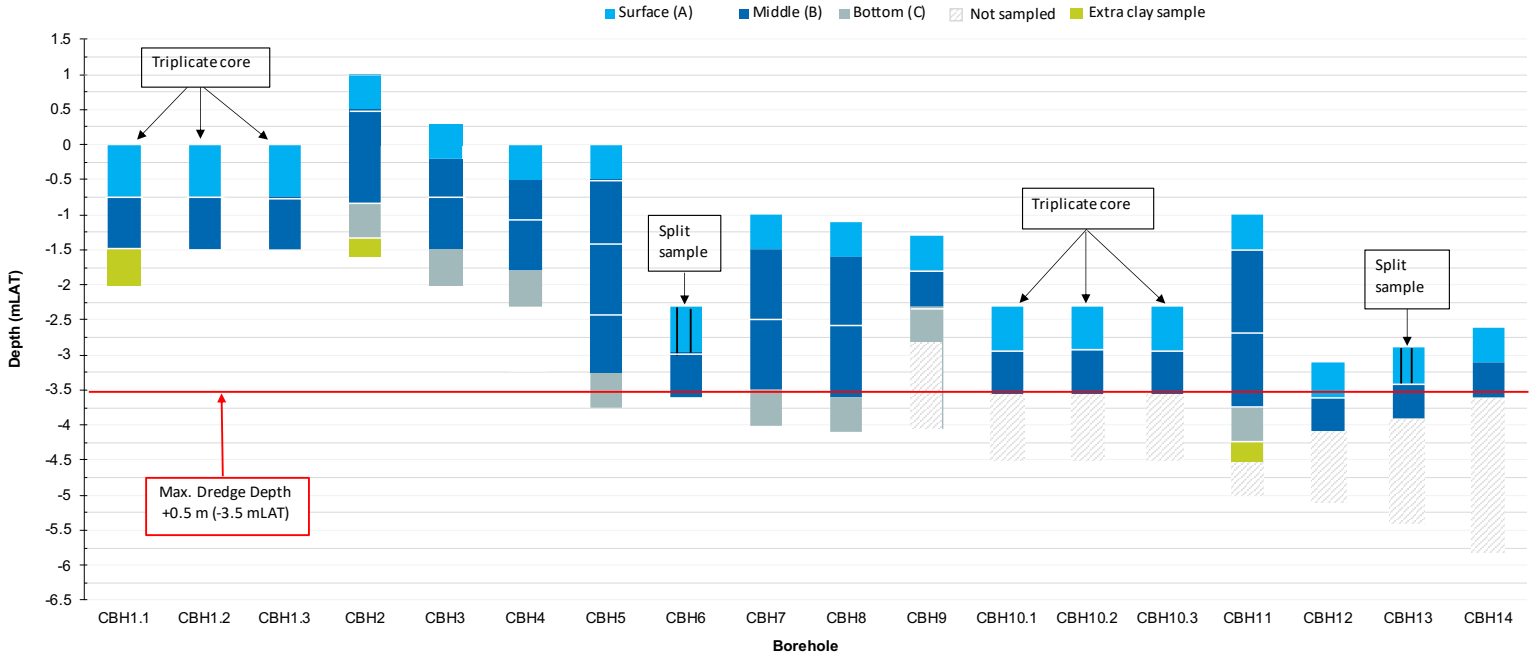


Figure 3.2 Subsampling regime for samples collected in the proposed dredge area.[3]

Where the middle section of the cores was over 1 m long, it was divided into subsamples a maximum of 1 m long.

[3] At site CBH9 subsamples were collected according to the specifications in the SAP, but not to the maximum dredge depth due to an error in field calculations.

3.4 Field logs

Field logs were completed at each site for each core in accordance with the NAGD and included:

- the position of the site (latitude and longitude)
- time and date of sampling
- name of the sample collector
- weather conditions at the time of sampling
- sea state at the time of sampling
- general comments (e.g. on wind speed and amount of shipping traffic)
- observations on the type and quantity of litter present (if any)
- water depth at core site
- tide and derived LAT height of core at defined reference point
- height of the top and bottom of each core, relative to LAT
- core length, and
- type of corer used.

At 0.25 m intervals, or before and after any discontinuities, the following observations of the sediment were recorded:

- the distance from the top of the core
- colour
- approximate particle size
- field texture
- mottles
- plasticity
- odour, and the
- presence of shell or carbonate material, along with a measure or estimate of their abundance and size distribution.

Field logs and descriptions of the sediments are presented in Appendix B.

3.5 Laboratory Analysis

All samples were analysed by a NATA accredited laboratory in accordance with Appendix A of the NAGD.

Laboratory quality control procedures were in accordance with the requirements outlined in Appendix F of the NAGD and are documented in the laboratory analysis certificates. The laboratory certificates, laboratories, and analytical methods used are presented in Appendix C.

Table 3.2 Sediment quality parameters for analysis and practical quantitation limits (excluding PASS)

Parameter	Units	PQL (NAGD)	Suite [1]
Particle Size Distribution	%	NS	C, B
Moisture Content	%	0.1	C, B
pH (f) and pH (fox)	pH units	NS	C, B
Chromium Reducible Sulfur (S_{CR})	NS	NS	C, B
Total Carbon	NS	NS	C, B
Total Inorganic Carbon	NS	NS	C, B
Total Organic Carbon	%	0.1	C, B
Total Petroleum Hydrocarbons			
C6-C9 fraction, C10-C14 fraction, C15-C28 fraction, C10-C36 fraction (sum)	mg/kg	100	C, B
Organochlorine Pesticides			
Aldrin, BHC (alpha, beta, delta), chlordane, endrin, dieldrin, DDD, DDE, DDT, oxychlordane, heptachlor, endulsofan, hexachlorobenzene, methoxychlor	µg/kg	1	C
Polychlorinated biphenyl	µg/kg	5	C
Other Organic Compounds			
Phenolics	mg/kg	1	C, B
Polycyclic Aromatic Hydrocarbons	µg/kg	5	C, B
Sum of PAHs	µg/kg	100	C, B
Chlorobenzenes	mg/kg	0.05	C

Parameter	Units	PQL (NAGD)	Suite [1]
BTEXN	µg/kg	200	C, B
Organotin Compounds			
Tributyltin as Sn	µgSn/kg	1	C, T
Organophosphorus Pesticides			
Bromophs-ethyl, carbophenothion, chlorfenvinphos (Z & E), chlorpyrifos, chlorpyrifos-methyl, demeton-s-methyl, diazinon, dichlorvos, dimethoate, ethion, fenamiphos, fenthion, malathion, azinphos methyl, monocrotophos, parathion, parathion-methyl, primphos-ethyl, prothiofos	µg/kg	10-100	C, T
Non-organochlorine Pesticides			
Pyrethroids	mg/kg	0.01-0.1	C
Carbamates	mg/kg	0.01-0.1	C
Phenoxy-acid Herbicides	mg/kg	0.01-0.1	C
Metals and Metalloids			
Copper	mg/kg	1	C, T
Lead	mg/kg	1	C, T
Zinc	mg/kg	1	C, T
Chromium	mg/kg	1	C, T
Nickel	mg/kg	1	C, T
Cadmium	mg/kg	0.1	C, T
Mercury	mg/kg	0.01	C, T
Arsenic	mg/kg	1	C, T
Silver	mg/kg	0.1	C, T
Manganese	mg/kg	10	C, T
Aluminium	mg/kg	200	C, T
Cobalt	mg/kg	0.5	C, T
Iron	mg/kg	100	C, T
Vanadium	mg/kg	2	C, T
Selenium	mg/kg	0.1	C, T
Antinomy	mg/kg	0.5	C, T

Parameter	Units	PQL (NAGD)	Suite [1]
Nutrients			
Total phosphorus	mg/kg	0.1	C
Total nitrogen	mg/kg	0.1	C
Nitrate and nitrite	mg/kg	0.1	C
Total Kjeldahl nitrogen	mg/kg	0.1	C
Other Inorganics			
Cyanide	mg/kg	0.25	C
Ammonia	mg/kg	0.1	C

[1] C = Comprehensive suite; T = Targeted suite

3.6 Potential Acid Sulfate Soils

All samples were analysed for potential acid sulfate soils (PASS) using field pH tests and the Chromium Reducible Sulfur (S_{CR}) method as detailed in the National acid sulfate soils identification and laboratory methods manual (Sullivan et al. 2018a).

3.7 Data Analysis

Comparison with Sediment Guidelines

NAGD

The National Assessment Guidelines for Dredging 2009 (NAGD) provides a decision tree approach for the assessment of sediment for disposal at sea.

In Phase II of this process, the concentrations of potential contaminants are compared to Screening Levels, which are listed in Appendix A, table 2 of the NAGD. The Screening Level is the concentration of a substance in the sediment, below which toxic effects on organisms are not expected. The upper 95 percent confidence limit of the mean (95% UCL) is used to determine compliance with the Screening Levels.

Where the 95% UCL of all potential contaminants are below the Screening Levels, it is considered that the spoil is not contaminated, and is suitable for disposal at sea. Where the 95% UCL are above Screening Levels, further investigation is required.

The NAGD also provide sediment quality high values (SQG-High), however these are now recognised to be of uncertain ecological relevance except for Tributyltin (TBT). For TBT, the SQG-High value is used as even the sub-acute toxicity tests currently available may be insensitive to TBT. Where one or more bioaccumulating substances, such as mercury, dioxins or organochlorine pesticides, exceed the SQG-High, bioaccumulation may be of concern and bioaccumulation testing may also be required.

Australian Water Quality Guidelines

The Australian Water Quality Guidelines 2018 also provide guidelines for the assessment of sediment toxicity. Where concentrations are below Default Guideline Values (DGV), there is a low risk of unacceptable effects. The Upper Guideline Values (GV-High) provide an indication of concentrations at which there may be toxicity related adverse effects.

The 95% UCL of each parameter was compared to the Screening Levels (SL) in the NAGD, and the Default Guideline Values (DGV) from the Australian Water Quality Guidelines.

Where parameters exceeded these values, they were also compared to the SQG-High, GV-High, and previous data collected from Toondah Harbour and the Fison Channel.

Any results lower than the practical quantitation limit (PQL) were entered as half the PQL (where the limit of reporting (LOR) was lower than the PQL, results were entered as half the LOR), for statistical and analytical purposes (DEWHA 2009). However, only parameters with results with more than 30% detection were analysed, due to the probability of bias caused by the replacement of result values below LOR.

The USEPA's ProUCL software was used for the statistical analysis (Singh & Maichle 2015). The Shapiro-Wilks Test was used to determine if the distribution of the data was normal, log-normal or neither. For normal datasets the arithmetic mean was calculated, and the upper 95% confidence limit of the arithmetic mean was determined. For log-normal datasets, the geometric mean was calculated, and non-parametric jack-knife analysis was used to determine the upper 95% confidence limit as recommended in the NAGD. Similarly, for data that was neither normal nor log-normally distributed the geometrical mean was calculated and jack-knife analysis was used to determine the upper 95% confidence limit. In instances where the jack-knife analyses could not be done due to lack of variation in the data, the recommended method from ProUCL was used.

Data for organic parameters were normalised to 1% total organic carbon (TOC), where TOC was within the range of 0.2-10%. For values outside this range, the respective end value (either 0.2% or 10%) was adopted. Where the organic parameter was below LOR, the data was not normalised to 1% TOC, and was included as half the LOR.

Field triplicate samples where averaged for each site to comply with independence assumptions for statistical analysis (Singh & Maichle 2015).

Potential Acid Sulfate Soils

Field pH testing is used as an exploratory tool to indicate whether sediment may be PASS. The results of a combination of the following three factors are used to arrive at a “positive field sulphide identification”:

- the reaction with hydrogen peroxide, with a stronger reaction indicating PASS more likely
- the actual value of pHFOX, if pHFOX is < 3, and there is a strong reaction with hydrogen peroxide, then PASS are likely, and
- a much lower pHFOX (peroxide pH test) than the pHF (field pH)

The actual acidity (TAA), and the existing acidity plus potential acidity for chromium reducible sulfur (S_{CR}) were compared to the action criteria outlined in the *State Planning Policy 2/02,* and according to the latest ASS management Guidelines (Sullivan et al. 2018a).

4 Results of QA/QC Assessments

4.1 Relative Percent Difference & Relative Standard Deviation

The NAGD provide guidance on acceptable relative percent differences (RPD) and relative standard deviations (RSD) between QA/QC samples (DEWHA 2009). RPD/RSD were calculated for differences between:

- cores collected from the same site
- subsamples collected from the same site
- subsamples analysed by different laboratories
- samples analysed in different batches by the same laboratory, and
- laboratory duplicates, blanks and spikes.

RPD and RSD were not calculated where concentrations were below the LOR, as this does not provide a true indication of variation.

Between Cores at the Same Site (RSD)

The concentration of a parameter in three or more samples taken at the same location should agree with a relative standard deviation (RSD) of ± 50%, except where sediments are very heterogeneous or there are substantial differences in grain size (DEWHA 2009).

There were substantial differences in grain size for sediments collected in triplicate cores from both sites CBH1 and CBH10.

In the surface samples from CBH1, the RSD for particle size classes from +75 µm to +600 µm, and percentage of sand and gravel, was more than ± 50%. Further, the RSD of chromium, ammonia, perylene and the sum of polynuclear aromatic hydrocarbons (PAHs) was also more than ± 50%. Similarly, in the middle layer, the RSD of sand percentage Benzo (b+j) fluoranthene, perylene and the sum of PAHs was more than ± 50%. All other parameters had an RSD of less than ± 50% in all subsample.

At CBH10, the RSD for all parameters was below ± 50% in the surface subsamples. In the middle layers, the RSD for particle size classes from +1180 µm to +2.36 mm, and for gravel was more than ± 50%. The RSD for chromium was also more than ± 50% RSD in this layer.

The variation in the concentration of chromium, ammonia, and some polynuclear aromatic hydrocarbons is likely a result of the differences in particle size. This indicates that there is variation within the same site and hence results for these parameters should be regarded as estimates rather than precise values. However, with the exception of the concentration of chromium in the reclamation area (Section 5.2), the concentration of these parameters were below the NAGD guidelines, so these QA/QC results are not considered to be a concern.

Table 4.1 RSD of parameters that were more than 50% different between cores

Site	Layer	Parameter	RSD
CBH1	Surface	Chromium	75%
		Ammonia	63%
		Perylene	132%
		Sum of PAHs	99%
CBH1	Middle	Benzo(b+j)fluoranthene	73%
		Perylene	87%
		Sum of PAHs	81%
CBH10	Middle	Chromium	57%

Between Subsamples from the Same Site (RPD)

The concentration of subsamples from the same site should have an RPD ± 35% (DEWHA 2009). The RPD for all parameters was less than ± 35% except for:

- total petroleum hydrocarbons (TPH) C29-C36 fraction and total recoverable hydrocarbons (TRH) C16–C34 fraction in sample CBH6_A, and
- particle sizes +75µm and +150µm, aluminium and iron in sample CBH13_A.

These QA/QC results are not of concern as none of the results exceeded the NAGD guidelines.

Table 4.2 RPD of parameters that were more than 35% different between subsamples from the same site measured in the same laboratory

Site	Layer	Parameter	RPD
CBH6	Surface	TPH (C29–C36)	67%
		TRH (C16–C34)	44%
CBH13	Surface	Aluminium	61%
		Iron	61%

Between Laboratories (RPD)

Ideally, the relative percent difference (RPD) between samples analysed by different laboratories ± 35% is acceptable.

The RPD for all parameters met the NAGD criteria of ± 35% except for:

- the percentage of clay, aluminium, iron, chromium, manganese, nickel, zinc, Kjeldahl nitrogen, total nitrogen, ammonia and total carbon in sample CBH6_A, and
- the percentage of sand, aluminium, iron, nickel, kjeldahl nitrogen, total nitrogen, ammonia, total organic carbon (TOC) and total carbon in sample CBH13.

Results for these parameters are hence considered estimates rather than precise values. However, with the exception of chromium and nickel in the reclamation area (Section 5.2), the concentration of these parameters did not exceed the NAGD Screening Levels, and many were below or similar to the LOR.

Table 4.3 RPD of parameters that were more than 35% different between subsamples from the same site measured at different laboratories

Site	Layer	Parameter	RPD
CBH6	Surface	Chromium	42%
		Manganese	67%
		Nickel	62%
		Zinc	81%
		Kjeldahl nitrogen	47-54%
		Total nitrogen	47-54%
		Ammonia	75-95%
		Total carbon	67%
CBH13	Surface	Nickel	36%
		Kjeldahl nitrogen	36%
		Total nitrogen	36%
		Ammonia	99-102%
		TOC	38-62%
		Total carbon	85%

Between Batches (RPD)

There were some differences in particle size distribution (clay, sand and gravel) in samples from CBH5_A analysed by the same laboratory in different batches. However, the concentration of all parameters had an RPD of less than ± 35% criteria for RPDs except for ammonia (RPD =102%). The concentration of these parameters may have been influenced by holding times and handling before re-analysis.

While the particle sizes were similar in samples from CBH2_B1 analysed in different batches, the RPD for several PAHs was more than ±35%. Similarly, this may have been influenced by holding times and handling before re-analysis. All concentrations of PAH were below the NAGD guidelines, and consequently this QA/QC result is not considered to be of concern.

Within Laboratory

Laboratory quality control reports include:

- Laboratory duplicate (DUP) report[4]: An RPD is calculated for an intralaboratory split sample to test method precision and sample heterogeneity.
- Method blank (MB): a blank sample is tested to monitor potential laboratory contamination. Acceptable results are below LOR.
- Laboratory control spike (LCS): a reference material with a known concentration is tested to monitor method precision and accuracy independent of sample matrix (i.e. with no matrix interference). Results are the percent recovered concentration, and compared to an acceptable recovery percentage range.
- Matrix spike (MS): An intralaboratory split sample is spiked with a known parameter concentration and tested to monitor potential matrix effects on the concentration recovery. Results are the percent recovered concentration, and compared to an acceptable recovery percentage range.

In batch EB1929953, all duplicate samples were within RPD limits, and all parameters in the blank sample were below LOR. LCS recovery of dichlorofluoromethane and MS recovery of total phosphorus were below recovery limits.

[4] The laboratory duplicate RPD limit depends on the magnitude of the results in relation to the LOR: results <10 times the LOR have no limit; results between 10–20 times the LOR have a limit of 0–50%; results >20 times the LOR have a limit of 0–20% RPD.

In batch EB1929954, all results for the blank sample were below LOR, and all spike recovery method results were within the recovery range. The RPD for total petroleum hydrocarbons C16–C24 range (105%) exceeded the laboratory RPD limit of 0-50%.

In batch EB1929789 all blank sample results were below LOR. The RPD for aluminium, iron, chromium, cobalt, vanadium and total phosphorus exceeded the laboratory limit of 0-20%. LCS recovery of dichlorodifluoromethane, dibromochloromethane and piperonyl butoxide were below recovery range. MS recovery of arsenic, total phosphorus, ammonia, benzene, toluene, trichloroethene, chlorobenzene, picloram and clopyralid were below recovery range, due to a matrix interference in the analyses.

While the results for these parameters should be considered as estimates rather than precise values for their corresponding batches, with the exception of chromium and arsenic in the reclamation area (Section 5.2), concentrations of these parameters were below the NAGD guidelines, and are consequently the results of these QA/QC tests are not considered to be of concern.

4.2 Practical Quantitation Limits

The limit of reporting (LOR) achieved by the laboratory was below the recommended practical quantitation limit in the NAGD for all parameters except total xylenes[5], cyanide, kjeldahl nitrogen, total nitrogen and ammonia (Table 4.4).

Table 4.4 PQL in NAGD and the LOR achieved by the laboratory.

Parameter	Units	PQL as per NAGD	Laboratory LOR
Moisture Content	%	0.1	0.1
Total Organic Carbon	%	0.1	0.02
Total Petroleum Hydrocarbons (TPH)	mg/kg	100	3
Phenol	mg/kg	1	0.5-2
Total Organochlorines	µg/kg	1	0.25-0.5
Total Polynuclear Aromatic Hydrocarbons (PAHs)	µg/kg	5	4-5
Sum of PAHs	µg/kg	100	4
Chlorobenzenes	mg/kg	0.05	0.05
BTEXN	µg/kg	200	200-500
Benzene	µg/kg	200	200
Toluene	µg/kg	200	200
Ethylbenzene	µg/kg	200	200
Meta- & para- Xylene	µg/kg	200	200
Ortho-Xylene	µg/kg	200	200
Total Xylenes	µg/kg	200	500
Sum of BTEX	µg/kg	200	200
Naphthalene	µg/kg	200	200
Organophosphorus pesticides	µg/kg	10-100	10
Pyrethroids	mg/kg	0.01-0.1	0.05
Carbamates	mg/kg	10-100	0.02
Organotin compounds (tributyltin)	µgSn/kg	1	0.5
Copper	mg/kg	1	1
Lead	mg/kg	1	1

[5] The concentration of individual xylenes complied with the PQL.

Parameter	Units	PQL as per NAGD	Laboratory LOR
Zinc	mg/kg	1	1
Chromium	mg/kg	1	1
Nickel	mg/kg	1	1
Cadmium	mg/kg	0.1	0.1
Mercury	mg/kg	0.01	0.01
Arsenic	mg/kg	1	1
Silver	mg/kg	0.1	0.1
Manganese	mg/kg	10	10
Aluminium	mg/kg	200	50
Cobalt	mg/kg	0.5	0.5
Iron	mg/kg	100	50
Vanadium	mg/kg	2	2
Selenium	mg/kg	0.1	0.1
Antinomy	mg/kg	0.5	0.5
Cyanide	mg/kg	0.25	0.25-2
Nutrients	mg/kg	0.1	0.1-20
Nitrite	mg/kg	0.1	0.1
Nitrate	mg/kg	0.1	0.1
Nitrite + Nitrate	mg/kg	0.1	0.1
Kjeldahl Nitrogen	mg/kg	0.1	20
Total Nitrogen	mg/kg	0.1	20
Total phosphorus	mg/kg	0.1	2
Ammonia	mg/kg	0.1	0.2

5 Results and Discussion

5.1 Particle Size Distribution

Sediments were generally dominated by silt and clay, with a mean of 80% of fines in all of the samples within the proposed dredge area and 61% of fines in samples within the reclamation area.

Surface sediments in the proposed dredge area and reclamation area were dominated by clay and silt at all sites, except REC3 which was dominated by sand (54%, Figure 5.1, Figure 5.4). The highest proportions of gravel were at sites within the inner proposed dredge and reclamation area, with the highest proportions at sites REC1 (21%) and CBH3 (18%).

Sediment in the middle layers was similarly dominated by fines in the outer section of the proposed dredge area, and at site CBH1, east of the ferry jetty. Sediment was dominated by sand and gravel at sites REC4 (63% sand), CBH2 and CBH3, with the proportion of sand and gravel increasing with depth in the two latter sites (Figure 5.2, Figure 5.5).

Bottom sediments were dominated by fines at all sites except CBH3, which was dominated by sand (45%) and gravel (41%) with no silt (Figure 5.3, Figure 5.5).

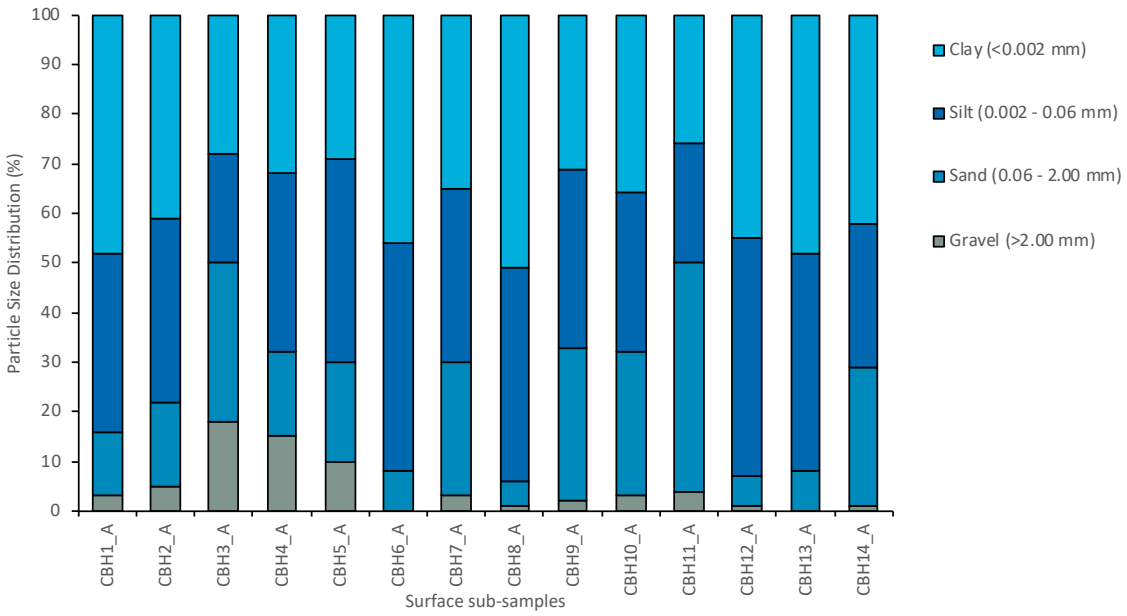


Figure 5.1 Particle size distribution for surface subsamples in the proposed dredge area.

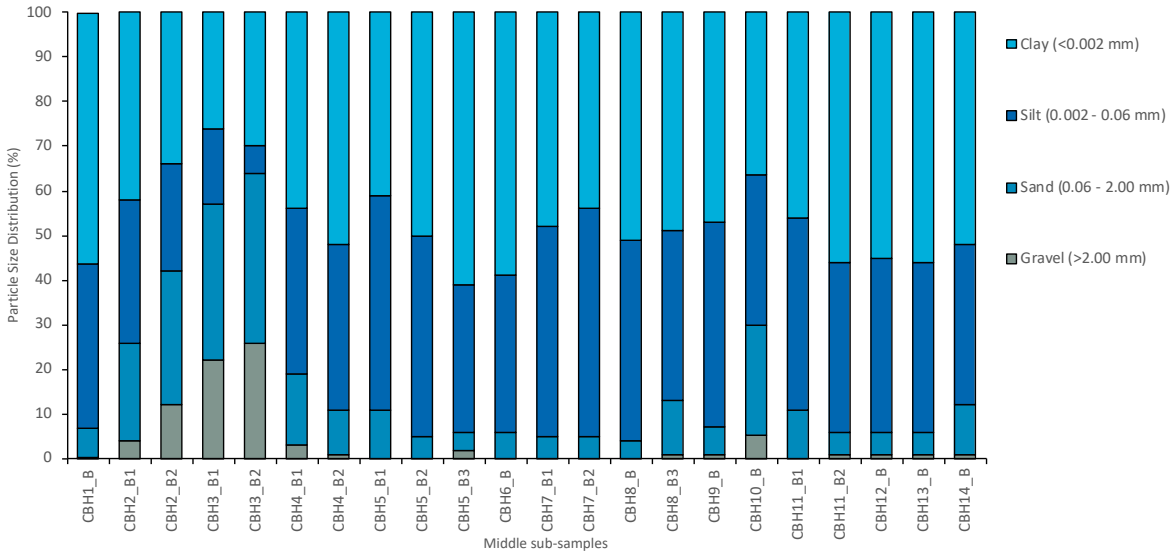


Figure 5.2 Particle size distribution for middle subsamples in in the proposed dredge area.

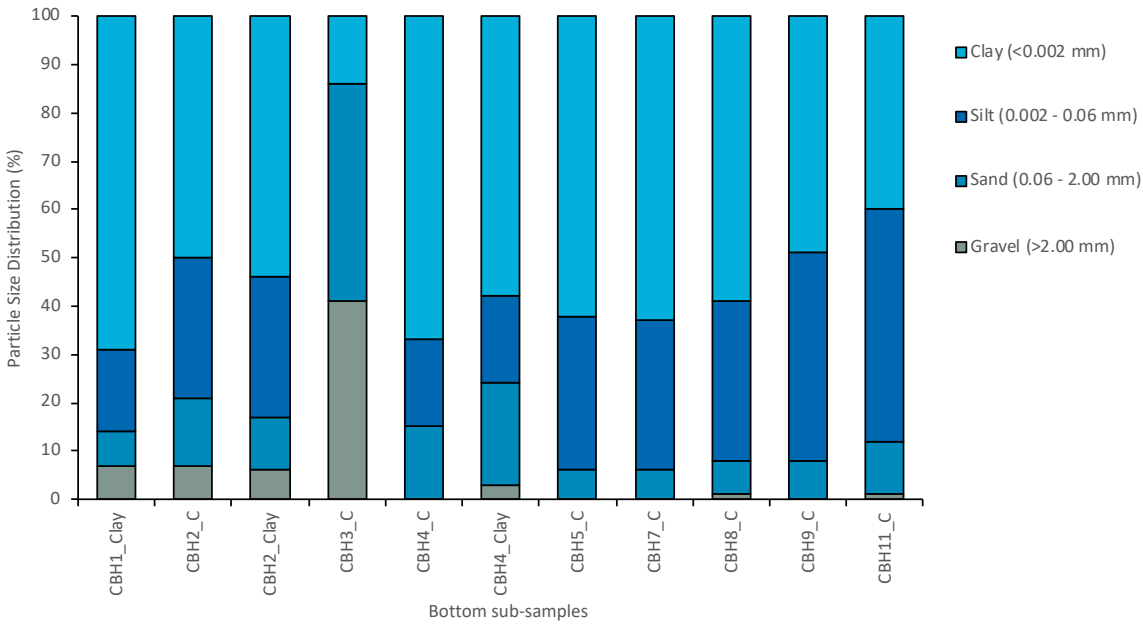


Figure 5.3 Particle size distribution for bottom subsamples in in the proposed dredge area.

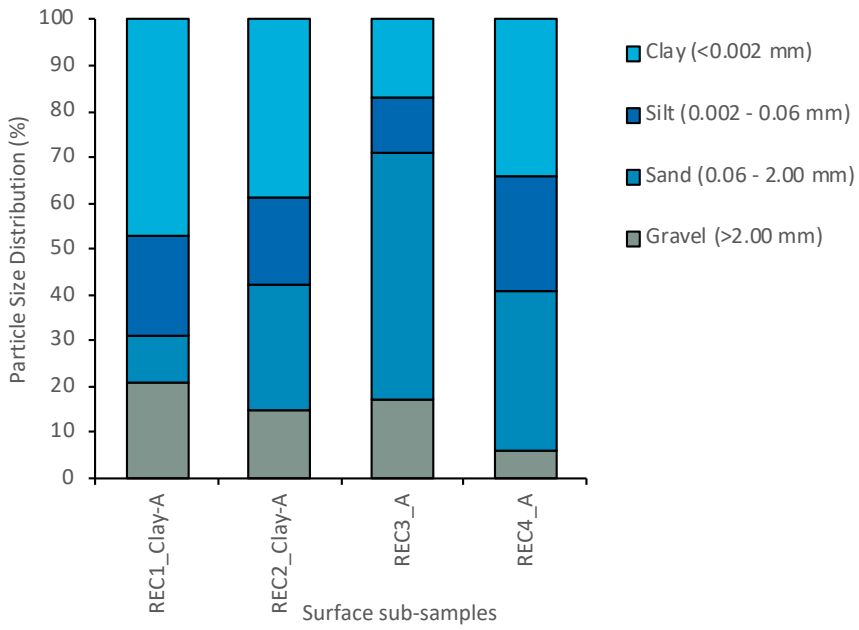


Figure 5.4 Particle size distribution for surface subsamples in the proposed reclamation area.

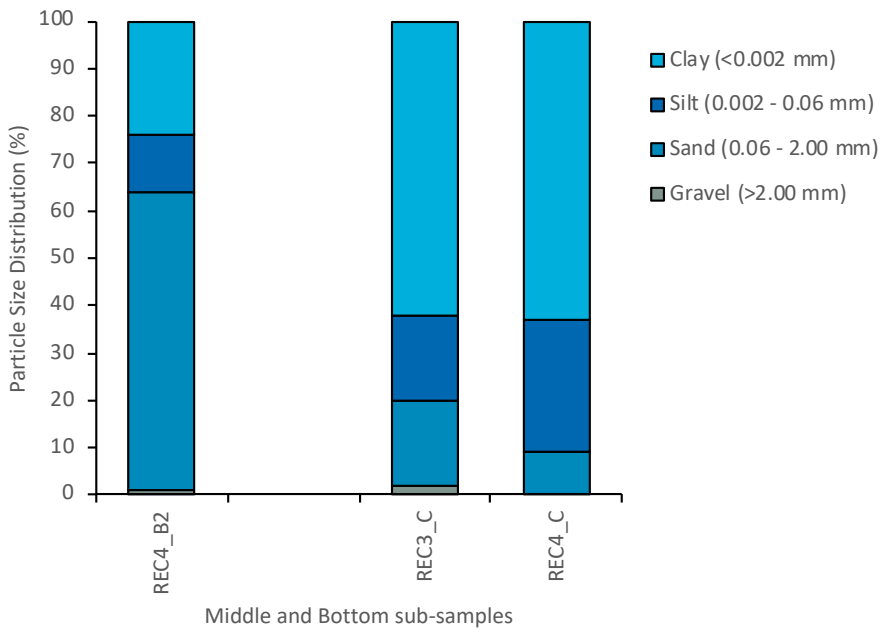


Figure 5.5 Particle size distribution for middle and bottom subsamples in the proposed reclamation area.

5.2 Nutrients

Organic Carbon

There are no NAGD Guidelines for the concentration of organic carbon in sediment.

In the proposed dredge area the mean total organic carbon (TOC) concentration was 0.56% and 95% UCL was 0.71%. In the proposed reclamation area the mean TOC was 0.47% and 95% UCL was 0.64%. These concentrations are lower than previously recorded in sediment sampling programs carried out for maintenance dredging in Toondah Harbour. (Table 5.1, Table 5.4 and Table 5.5).

5.3 Nitrogen, Nitrates and Ammonia

There are no NAGD Guidelines for the concentration of nitrogen, nitrates and ammonia in sediment. These parameters were only analysed in samples from the proposed dredge area.

The mean concentration of total nitrogen was 875 mg/kg and the 95% UCL was 1332 mg/kg (Table 5.4). This is lower than previously recorded at Toondah Harbour (Table 5.1). The highest concentration of total nitrogen was in the middle layer of site CBH1 (2060 mg/kg), which was characterised by silty clay sediments.

The mean concentration and 95% UCL of nitrates and nitrites were both below the LOR and hence not of concern (Table 5.4).

The mean concentration of ammonia was 12.5 mg/kg and 95%UCL was 128 mg/kg (Table 5.4). This is lower than recorded at Toondah Harbour in previous surveys (2018). The highest concentration of ammonia was at site CBH1 with a concentration of 218.3 mg/kg in the middle layer.

In previous assessments of the quality of sediment in Toondah Harbour, there was a concern that the concentration of ammonia in the pore water of the sediment may cause toxicity and make the sediment unsuitable for disposal at Mud Island (WBM 2006). As a result of this concern, there were extensive investigations consistent with the tiered approach in the NAGD. These investigations included:

- determining the concentration of ammonia in the pore water of the sediments from Toondah Harbour, and Mud Island the potential placement site
- numerical modelling to determine likely impacts to water quality
- monitoring the concentration of ammonia in the water column after placement at Mud Island, and

- measuring the concentration of ammonia in the pore water five days after disposal.

These studies determined that (WBM 2005; 2006; BMT WBM 2013):

- the concentration of ammonia in the water column was close to background within 10 minutes, and at background levels within one hour of placement of the dredged material, and that
- sediment porewater ammonia concentrations were similar to baseline conditions within five days of placement.

In these previous surveys it was concluded that the risk of porewater contamination from the disturbance of sediment in Toondah Harbour was low.

The concentration of nitrogen, nitrates and ammonia in the sediment is not considered to be of concern.

Phosphorus

There are no NAGD Guidelines for the concentration of phosphorous in sediment.

Mean and 95%UCL of total phosphorus were 394 mg/kg and 455 mg/kg respectively (Table 5.4). These concentrations are lower than those previously recorded at Toondah Harbour (Table 5.1; frc environmental 2018).

The concentration of phosphorous in the sediment is not considered to be of concern.

Table 5.1 Mean concentration of nutrients in sediment sampled from Toondah Harbour in 2018, 2013 and 2004.

Parameter	2018[1]	2013[2]	2004[3]
Total Organic Carbon (%)	0.90	0.90	0.94
Total Phosphorous (mg/kg)	500.7	354.1	588.6
Total Nitrogen (mg/kg)	1386.67	820.0	1579.73
Total Kjeldahl Nitrogen (mg/kg)	1386.67	820.0	1579.73
Ammonia (mg/kg)	84.67	6.1	4-87*

* Value derived from sediment pore water anaylsis (WBM, 2006)

1 *Toondah Harbour Sediment Quality Report,* frc environmental, *2018*

2 *Toondah Harbour Sediment Quality Report, BMT WBM, 2013*

3 *Toondah Harbour Sediment Sampling and Analysis Novmber 2004, WBM, 2005*

5.4 Potential Contaminants

Metals & Metalloids

The 95% UCL of all metals and metalloids were below the NAGD Screening Level at every site in the proposed dredge area (Table 5.4). That is, the concentration of metals and metalloids in the sediment in the proposed dredge area is not of concern.

In the proposed reclamation area, the 95% UCL for arsenic (27 mg/kg), chromium (119 mg/kg), lead (59 mg/kg), and nickel (43 mg/kg) exceeded the NAGD Screening Levels (Table 5.5). This was primarily due to high concentrations of all these metals in one sample (the upper 0.5 m from site REC4).

However, the concentrations of these metals were significantly lower than the SQG-High, GV-High (Table 5.2), and similar to or within the range of concentrations in previous surveys of the channel (Table 5.3).

The concentration of bioaccumulating substances (i.e. mercury) was less than the SQG-High for both the proposed dredge and reclamation areas and therefore bioaccumulation testing was not required.

The mean concentration of a number of parameters that do not have Screening Levels were above the LOR (cobalt, iron, manganese, selenium and vanadium in the proposed dredge and reclamation areas, and also aluminium in the proposed reclamation area) (Table 5.4 and Table 5.5). These parameters were also above the LOR in previous surveys of Toondah Harbour (frc environmental 2018), and are likely to be associated with the local geology.

The red earth soils typical of the surrounding area are noted for the inclusion of ironstone nodules (Bryan 1939, Beckman et al. 1987). Many of the rock platforms and hard intertidal and shallow subtidal area in the Cleveland area are laterite, high in iron and aluminium oxides (Haldar 2013; Cooley 2017). This high concentration of metals in surrounding soils and geological formations is likely to have contributed to a higher than average concentration of metals in the sediment. Further, as the concentration of metals is higher in the nodules than in the surrounding sediment matrix, these sediments often have high within sample variability.

Table 5.2 95% UCL of arsenic, chromium, lead and nickel in sediment in the proposed reclamation area compared to screening levels.

Parameter	95% UCL	NAGD SL & DGV	NAGD SQG-High & GV-High
Arsenic (mg/kg)	27	20	70
Chromium (mg/kg)	119	80	370
Lead (mg/kg)	59	50	220
Nickel (mg/kg)	43	21	52

Table 5.3 95% UCL of metals in sediment sampled from Toondah Harbour in the current survey and in 2018, 2013 and 2004.

Parameter	2019	2018[1*]	2018[1]	2013[2]	2004[3]
Arsenic (mg/kg)	27	17	19	13	38
Chromium (mg/kg)	119	67	72	70	142
Lead (mg/kg)	59	14	17	13	54
Nickel (mg/kg)	43	18	17	14	42

* Data from 'the additional dredge area'
1 *Toondah Harbour Sediment Quality Report,* frc environmental, *2018. Maintenance dredging area*
2 *Toondah Harbour Sediment Quality Report, BMT WBM, 2013*
3 *Toondah Harbour Sediment Sampling and Analysis November 2004, WBM, 2005*

The concentration of metals and metalloids in the sediment in the proposed reclamation area are not considered to be of concern.

Hydrocarbons

The 95% UCL of total petroleum, recoverable hydrocarbons, and total polycyclic aromatic hydrocarbons (PAH) in both the proposed dredge and reclamation areas were below Screening Levels /DGV (Table 5.4, Table 5.5). The concentrations of BTEXN were below LOR in every sample (Table 5.4).

That is the concentrations of hydrocarbons are not of concern.

Herbicides and Pesticides

Concentrations of herbicides and pesticides were below LOR in every sample (Table 5.4). That is, the concentrations of herbicides and pesticides were low, and not of concern.

Organotin

The 95% UCL of tributyltin was below the LOR and the Screening Level (Table 5.4), and was not of concern.

Polychlorinated Biphenyls

Concentrations for polychlorinated biphenyls were below LOR in every sample (Table 5.4), and hence not of concern.

Table 5.4 Summary of analyses of samples from the proposed dredge area.

Parameter	Units	LOR	SL/DGV	Mean[1]	SD[2]	95% UCL[3]	Distribution
Carbon							
Total Organic Carbon	%	0.02	–	0.56	1.62	0.71	L
Metals & Metalloids							
Aluminium	mg/kg	50	–	10664	2616	11304	N
Antimony	mg/kg	0.5	2	<0.5	1.0	–	–
Arsenic	mg/kg	1	20	12	5	13	N
Cadmium	mg/kg	0.1	1.5	<0.1	1.0	0.1	X
Chromium	mg/kg	1	80	47	2	70	X
Copper	mg/kg	1	65	8	2	11	X
Cobalt	mg/kg	0.5	–	7.5	1.4	8.7	X
Iron	mg/kg	50	–	37364	1.39	42928	L
Lead	mg/kg	1	50	7	2	8	N
Manganese	mg/kg	10	–	143	2	199	X
Mercury	mg/kg	0.01	0.15	<0.01	1.86	0.01	X
Nickel	mg/kg	1	21	10	2	12	X
Selenium	mg/kg	0.1	–	0.5	1.3	0.5	X
Silver	mg/kg	0.1	1	<0.1	1	0.1	X
Vanadium	mg/kg	2	–	60	26	66	N
Zinc	mg/kg	1	200	14	3	24	X
Total Petroleum and Recoverable Hydrocarbons							
C6-C9 Fraction	mg/kg	3	–	<3	1	–	–
C10-C14 Fraction	mg/kg	3	–	<3	1	–	–
C15-C28 Fraction	mg/kg	3	–	<3	2	4	X
C29-C36 Fraction	mg/kg	5	–	<5	2	6	X
C10-36 Fraction (Sum)[#]	mg/kg	3	280	3	3	12	X
C16-C34 Fraction	mg/kg	3	–	<3	3	6	X
C10-C40 Fraction (Sum)[#]	mg/kg	3	280	3	3	12	X
BTEXN							
Benzene	mg/kg	0.2	–	<0.2	0	–	–
Toluene	mg/kg	0.5	–	<0.5	0	–	–

Parameter	Units	LOR	SL/DGV	Mean[1]	SD[2]	95% UCL[3]	Distribution
Ethylbenzene	mg/kg	0.5	–	<0.5	0	–	–
Xylene	mg/kg	0.5	–	<0.5	0	–	–
Naphthalene	mg/kg	5	–	<5	1	3	X
Organotin Compounds*							
Tributyltin	µgSn/kg	0.5	9	<0.5	2	1	X
Polycyclic Aromatic Hydrocarbons							
Naphthalene	µg/kg	5	–	<5	1	3	X
2-Methylnaphthalene	µg/kg	5	–	<5	1	–	–
Acenaphthylene	µg/kg	4	–	<4	1	2	X
Acenaphthene	µg/kg	4	–	<4	1	2	X
Fluorene	µg/kg	4	–	<4	1	2	X
Phenanthrene	µg/kg	4	–	<4	1	2	X
Anthracene	µg/kg	4	–	<4	1	2	X
Fluoranthene	µg/kg	4	–	<4	2	3	X
Pyrene	µg/kg	4	–	<4	2	3	X
Benz(a)anthracene	µg/kg	4	–	<4	1	2	X
Chrysene	µg/kg	4	–	<4	1	2	X
Benzo(b+j)fluoranthene	µg/kg	4	–	<4	1	3	X
Benzo(k)fluoranthene	µg/kg	4	–	<4	1	2	X
Benzo(e)pyrene	µg/kg	4	–	<4	1	–	–
Benzo(a)pyrene	µg/kg	4	–	<4	1	3	X
Perylene	µg/kg	4	–	<4	3	20	X
Benzo(g.h.i)perylene	µg/kg	4	–	<4	1	3	X
Dibenz(a.h)anthracene	µg/kg	4	–	<4	1	–	–
Indeno(1.2.3.cd)pyrene	µg/kg	4	–	<4	1	2	X
Coronene	µg/kg	5	–	<5	1	–	–
Sum of PAHS							
Total PAH	µg/kg	4	10000	<4	<4	3	X
Phenols*							
Organochlorine Pesticides*							
Polychlorinated Biphenyls*							

Parameter	Units	LOR	SL/DGV	Mean[1]	SD[2]	95% UCL[3]	Distribution
Nutrients							
Total Phosphorus	mg/kg	2	–	394	99	455	N
Nitrate (as N)	mg/kg	0.1	–	<0.1	0	0.05	L
Nitrite (as N)	mg/kg	0.1	–	<0.1	0	0.05	L
Nitrite + Nitrate as N	mg/kg	0.1	–	<0.1	0	0.05	L
Total Kjeldahl Nitrogen (as N)	mg/kg	20	–	875	0	1332	L
Total Nitrogen (as N)	mg/kg	20	–	875	0	1332	L
Other Inorganic Compounds							
Cyanide	mg/kg	1	–	<0.01	1.86	0.01	X
Ammonia (as N)	mg/kg	0.2	–	12.5	0	128	L

Light grey shading indicates there is no NAGD Screening Level, and the mean concentration of the parameter was above the limit of reporting (LOR).

* Parameters were below LOR in all samples or undetected in more than 75% of samples

N data normally distributed

L data log-normally distributed

G data gamma distributed

X data neither normal nor log-normally or gamma distributed

1 geometric mean presented for data log-normal (L) or neither normal, log-normally distributed nor gamma distributed (X)

2 geometric standard deviation presented for data log-normal (L) or neither normal, log-normally distributed nor gamma distributed (X)

3 95% UCL – 95% upper confidence limit of the mean

Table 5.5 Summary of analyses of samples from the proposed reclamation area.

Parameter	Units	LOR	SL/DGV	Mean[1]	SD[2]	95% UCL[3]	Distribution
Carbon							
Total Organic Carbon	%	0.02	–	0.47	0.23	0.64	N
Metals & Metalloids							
Aluminium	mg/kg	50	–	9186	3743	11935	N
Antimony	mg/kg	0.5	2	<0.5	0.0	–	–
Arsenic	mg/kg	1	20	14	17	27	N
Cadmium	mg/kg	0.1	1.5	0.1	10.0	–	X

Parameter	Units	LOR	SL/DGV	Mean[1]	SD[2]	95% UCL[3]	Distribution
Chromium	mg/kg	1	80	80	54	119	N
Copper	mg/kg	1	65	10	3	44	X
Cobalt	mg/kg	0.5	–	5.2	4.5	42.4	L
Iron	mg/kg	50	–	41800	11827	50486	N
Lead	mg/kg	1	50	9	4	59	L
Manganese	mg/kg	10	–	102	73	156	N
Mercury	mg/kg	0.01	0.15	<0.01	1.30	0.01	X
Nickel	mg/kg	1	21	9	4	43	L
Selenium	mg/kg	0.1	–	0.5	0.2	0.6	N
Silver	mg/kg	0.1	1	<0.1	1	–	–
Vanadium	mg/kg	2	–	76	1	105	L
Zinc	mg/kg	1	200	9	5	43	L
Total Petroleum and Recoverable Hydrocarbons							
C10-C14 Fraction*	mg/kg	3	–	<3	1	–	–
C15-C28 Fraction*	mg/kg	3	–	<3	2	8	X
C29-C36 Fraction*	mg/kg	5	–	<5	1	–	–
C10-36 Fraction (Sum)#*	mg/kg	3	280	<3	2	8	X
C16-C34 Fraction	mg/kg	3	–	<3	2	7	X
C10-C40 Fraction (Sum)#	mg/kg	3	280	<3	2	7	X
Naphthalene*							
Sum of PAHS*							
Phenols*							

Light grey shading indicates there is no NAGD Screening Level, and the mean concentration of the parameter was above the limit of reporting (LOR).

Grey shading indicates the 95% UCL was above the Screening level

* Parameters were below LOR in all samples or undetected in more than 75% of samples

N data normally distributed

L data log-normally distributed

G data gamma distributed

X data neither normal nor log-normally or gamma distributed

[1] geometric mean presented for data log-normal (L) or neither normal, log-normally distributed nor gamma distributed (X)

[2] geometric standard deviation presented for data log-normal (L) or neither normal, log-normally distributed nor gamma distributed (X)

[3] 95% UCL – 95% upper confidence limit of the mean

5.5 Field pH

Field pH tests give a preliminary indication of whether there may be PASS. The stronger the reaction with peroxide, the greater the difference between pH_F and pH_{FOX} and a low pH after peroxide oxidation (i.e. PH_{FOX} <3) the more likely the sediment is PASS.

The reaction with hydrogen peroxide in every sample from the proposed dredge and reclamation areas was extreme, except the clay sample at CBH4 which had a strong reaction. pH_{FOX} was less than 3, and there was a large (>4.5) difference in pH at 4 sites in the proposed dredge area, and one site in the proposed reclamation area. That is, sediments are likely to be PASS, particularly at these sites (Table 5.6).

Table 5.6 Results for field peroxide acid sulfate testing at sites in the proposed dredge area.

Site	Depth (m)	Texture	Initial pH_F (Water)	pH_{FOX} (Peroxide) †	pH Change#	Reaction *
CBH1_A	0.25	fine	8.7	7.2	1.5	4
CBH1_B	1.25	fine	8.6	7.3	1.3	4
CBH1.1_CLAY	1.5	fine	8.5	7	1.5	4
CBH2_A	0.25	fine	8.3	4.5	3.8	4
CBH2_B1	0.9	fine	8.7	6.6	2.1	4
CBH2_B2	1.5	fine	8.5	7.4	1.1	4
CBH2_C	2.1	fine	7.5	6	1.5	4
CBH2_Clay	2.4	fine	7.1	6.1	1	4
CBH3_A	0.25	fine	9.1	6.5	2.6	4
CBH3_B1	0.75	fine/medium	9.1	6.8	2.3	4
CBH3_B2	1.3	medium	7.8	4.1	3.7	4
CBH3_C	2.0	coarse	7.2	5.8	1.4	4
CBH4_A	0.25	fine	9.1	7.1	2	4
CBH4_B1	0.75	fine	8.7	7.3	1.4	4
CBH4_B2	1.3	fine	9.1	7	2.1	4

Site	Depth (m)	Texture	Initial pH_F (Water)	pH_{FOX} (Peroxide) †	pH Change#	Reaction *
CBH4_C	2.0	fine	7.4	2.5	4.9	4
CBH4_CLAY	2.3	fine	7.2	3	4.2	3
CBH5_A	0.25	fine	8.8	7.1	1.7	4
CBH5_B1	0.75	fine	8.7	7.4	1.3	4
CBH5_B2	1.5	fine	8.4	7.5	0.9	4
CBH5_B3	2.25	fine	8	2.2	5.8	4
CBH5_C	3.5	fine	7.6	2.7	4.9	4
CBH6_A	0.25	fine	8.3	6.3	2	4
CBH6_B	1.0	fine	7.6	3.2	4.4	4
CBH7_A	0.25	fine	9	7.3	1.7	4
CBH7_B1	1.0	fine	8.4	7.5	0.9	4
CBH7_B2	2.0	fine	8.3	6.5	1.8	4
CBH7_C	2.75	fine	7.5	2	5.5	4
CBH8_A	0.25	fine	8.8	7.5	1.3	4
CBH8_B	1.0	fine	8.8	7.5	1.3	4
CBH8_B3	2.0	fine	8.4	7.5	0.9	4
CBH8_C	2.75	fine	7.8	3.3	4.5	4
CBH9_A	0.25	fine/medium	9.1	7.2	1.9	4
CBH9_B	0.75	fine	9	7.4	1.6	4
CBH9_C	1.25	fine	8.8	7.5	1.3	4
CBH10_A	0.25	fine/medium	9.0	7.2	1.8	4
CBH10_B	1.0	fine	9	7.3	1.7	4
CBH11_A	0.25	fine	9	7.3	1.7	4
CBH11_B1	1.0	fine	8.8	7.4	1.4	4
CBH11_B2	2.0	fine	8.5	7.2	1.3	4
CBH11_C	2.75	fine	8.3	7.3	1	4
CBH12_A	0.25	fine/medium	8.8	7.8	1	4
CBH12_B	0.75	fine	8.8	7.8	1	4
CBH13_A	0.25	fine/medium	8.9	7.5	1.4	4
CBH13_B	0.75	fine	8.8	7.8	1	4

Site	Depth (m)	Texture	Initial pH_F (Water)	pH_{FOX} (Peroxide) †	pH Change#	Reaction *
CBH14_A	0.25	fine/medium	9.1	7.5	1.6	4
CBH14_B	0.75	fine	9.1	7.6	1.5	4

* Strength of reaction with peroxide: 1 – slight, 2 – moderate, 3 – strong, 4 – extreme.

Table 5.7 Results for field peroxide acid sulfate testing sites in the proposed reclamation area.

Site	Depth (m)	Texture	Initial pH_F (Water)	pH_{FOX} (Peroxide)†	pH Change#	Reaction*
REC1_CLAY	0.25	Fine	7.9	5.9	2	4
REC2_CLAY	0.25	Fine	8.9	7.7	1.2	4
REC3_A	0.25	Fine	8.9	6.8	2.1	4
REC3_C	2.25	Fine	7.4	3.3	4.1	4
REC4_A	0.25	Fine	9	7.1	1.9	4
REC4_B2	2	Fine	8.8	6.9	1.9	4
REC4_C	3.75	Fine	8	2.9	5.1	4

* Strength of reaction with peroxide: 1 – slight, 2 – moderate, 3 – strong, 4 – extreme.

5.6 Chromium Tests

Testing for retained acidity was not required as no jarosite was observed in the samples, and the pH of each sample was well above 4.5 (Table 5.8, Table 5.9)

The actual acidity (TAA) of each sub-sample (<2 moles H^+/tonne) was low.

Potential sulfidic acidity was high at all sites except REC1. The existing acidity plus potential acidity at this site was below the action criteria, and hence this is not acid sulfate sediment (Table 5.8).

However, the remaining sub-samples at all sites have higher potential sulfidic acidity, and the existing acidity plus potential acidity were above action criteria. Furthermore, net acidity of the samples increased with depth at most sites, with the highest net acidity approximately at or above 2 m depth, after which, net acidity dropped again.

The acid neutralising capacity (ANC) of the sediment ranged from 38 to 7090 moles H+/t in the proposed dredge area and 121 to 6480 moles H+/t in the proposed reclamation area. However, the latest National guidelines (Sullivan et al. 2018a) indicate that the acid neutralising capacity should not be considered when assessing management of acid sulfate soils as:

- shell particles that contribute to acid neutralising capacity may be ground in the analysis resulting in an over estimation of neutralising capacity
- coatings can form over shell fragments, reducing their neutralising capacity, and consequently
- acid neutralising capacity is easily over estimated.

Liming rates, based on no acid neutralising capacity, are presented in Table 5.8 and Table 5.9.

Table 5.8 Acid base accounting for the net acidity for each sample from the proposed dredge area.

Site	Depth (m)	Texture	Action Criteria for Acidity	pH_{KCl}	Titratable Actual Acidity (TAA)[1]	Chromium Reducible Sulfur (S_{CR})		Existing plus Potential Acidity	ANC_{BT}[1]	Net Acidity*	Liming Rate[2]
			moles H+/t	pH units	moles H+/t	S_{CR} %	moles H+/t	moles H+/t	moles H+/t	moles H+/t	kg $CaCO_3$/t
CBH1_A	0.25	fine	18	8.4	<2	0.62	387	387	1338	387	29
CBH1_B	1.25	fine	18	8.4	<2	0.818	510	510	1263	510	38
CBH1.1_CLAY	1.5	fine	18	8.3	<2	0.71	443	443	658	443	33
CBH2_A	0.25	fine	18	8.6	<2	0.969	604	604	1350	604	45
CBH2_B1	0.9	fine	18	8.7	<2	1.47	916	916	2680	916	69
CBH2_B2	1.5	fine	18	8.7	<2	1.21	758	758	3260	758	57
CBH2_C	2.1	fine	18	8.4	<2	0.651	406	406	621	406	30
CBH2_Clay	2.4	fine	18	7.1	<2	0.081	51	51	196	51	4
CBH3_A	0.25	fine	18	8.7	<2	1.09	678	678	3610	678	51
CBH3_B1	0.75	fine/medium	18	8.9	<2	1.18	734	734	5400	734	55
CBH3_B2	1.3	medium	18	7.7	<2	1.3	811	811	262	811	61
CBH3_C	2.0	coarse	18	7.2	<2	0.031	19	19	38	19	1
CBH4_A	0.25	fine	18	8.9	<2	1.09	679	679	5490	679	51
CBH4_B1	0.75	fine	18	8.6	<2	0.949	592	592	2900	592	44
CBH4_B2	1.3	fine	18	8.8	<2	1.11	694	694	3450	694	52
CBH4_C	2.0	fine	18	6.6	<2	0.566	353	353	801	353	26

Site	Depth (m)	Texture	Action Criteria for Acidity	pH_{KCl}	Titratable Actual Acidity (TAA)[1]	Chromium Reducible Sulfur (S_{CR})		Existing plus Potential Acidity	ANC_{BT}[1]	Net Acidity*	Liming Rate[2]
			moles H+/t	pH units	moles H+/t	S_{CR} %	moles H+/t	moles H+/t	moles H+/t	moles H+/t	kg $CaCO_3$/t
CBH4_CLAY	2.3	fine	18	6.5	<2	0.033	21	21	932	21	2
CBH5_A	0.25	fine	18	8.8	<2	0.755	471	471	3200	471	35
CBH5_B1	0.75	fine	18	8.7	<2	0.694	433	433	6870	433	32
CBH5_B2	1.5	fine	18	8.6	<2	0.777	485	485	1920	485	36
CBH5_B3	2.25	fine	18	6.7	<2	3.21	2000	2000	389	2000	150
CBH5_C	3.5	fine	18	8.2	<2	0.159	99	99	621	99	7
CBH6_A	0.25	fine	18	8.3	<2	1.36	851	851	550	851	64
CBH6_B	1.0	fine	18	6.1	6	0.287	179	185	–	185	14
CBH7_A	0.25	fine	18	8.9	<2	0.559	349	349	6050	349	26
CBH7_B1	1.0	fine	18	8.7	<2	0.731	456	456	3400	456	34
CBH7_B2	2.0	fine	18	8.3	<2	2.56	1600	1600	795	1600	120
CBH7_C	2.75	fine	18	6.7	<2	0.486	303	303	228	303	23
CBH8_A	0.25	fine	18	8.8	<2	0.618	386	386	3890	386	29
CBH8_B	1.0	fine	18	8.7	<2	0.7	436	436	3130	436	33
CBH8_B3	2.0	fine	18	8.5	<2	0.832	519	519	1520	519	39
CBH8_C	2.75	fine	18	6.8	<2	0.404	252	252	234	252	19
CBH9_A	0.25	fine/medium	18	8.8	<2	0.768	479	479	5120	479	36
CBH9_B	0.75	fine	18	8.8	<2	0.663	414	414	3960	414	31

Site	Depth (m)	Texture	Action Criteria for Acidity	pH_{KCl}	Titratable Actual Acidity (TAA)[1]	Chromium Reducible Sulfur (S_{CR})		Existing plus Potential Acidity	ANC_{BT}[1]	Net Acidity*	Liming Rate[2]
			moles H+/t	pH units	moles H+/t	S_{CR} %	moles H+/t	moles H+/t	moles H+/t	moles H+/t	kg $CaCO_3$/t
CBH9_C	1.25	fine	18	8.7	<2	0.798	498	498	2730	498	37
CBH10_A	0.25	fine/medium	18	8.9	<2	0.490	305	305	6620	305	23
CBH10_B	1.0	fine	18	8.8	<2	0.744	464	464	5017	464	35
CBH11_A	0.25	fine	18	9	<2	0.486	303	303	7090	303	23
CBH11_B1	1.0	fine	18	8.7	<2	0.729	455	455	4070	455	34
CBH11_B2	2.0	fine	18	8.6	<2	0.735	459	459	2480	459	34
CBH11_C	2.75	fine	18	8.6	<2	1.01	632	632	1150	632	47
CBH12_A	0.25	fine/medium	18	8.8	<2	0.462	288	288	3570	288	22
CBH12_B	0.75	fine	18	8.7	<2	0.603	376	376	2060	376	28
CBH13_A	0.25	fine/medium	18	8.7	<2	0.656	409	409	3450	409	31
CBH13_B	0.75	fine	18	8.7	<2	0.689	430	430	1860	430	32
CBH14_A	0.25	fine/medium	18	8.8	<2	0.636	397	397	3250	397	30
CBH14_B	0.75	fine	18	8.9	<2	0.537	335	335	6720	335	25

Shaded cells indicate parameter is above the action criteria for acidity (moles H^+/tonne)(State Planning Policy 2/02)

* As per the national acid sulfate soils identification and laboratory methods manual, Net acidity = TAA (actual acidity) + S_{CR} (potential sulfidic acidity) + S_{NAS} (retained acidity) (Equation 3.2). However, pH_{KCl} in all samples was >4.5, and S_{NAS} was not required to be determined. Equation 3.2 was used since no corroboration has been done for the measured Acid Neutralising Capacity (please refer to guidelines, page 8).

[1] ANC is not required where pH_{KCl} is <6.5

[2] Liming rate presented here do not include Acid Neutralising Capacity. Liming rate including ANC can be found in Appendix C.

Table 5.9 Acid base accounting for the net acidity for each sample from the proposed reclamation area.

Site	Depth (m)	Texture	Action Criteria for Acidity	pH_{KCl}	Titratable Actual Acidity (TAA)[1]	Chromium Reducible Sulfur (S_{CR})		Existing plus Potential Acidity	ANC_{BT}[1]	Net Acidity*	Liming Rate[2]
			moles H+/t	pH units	moles H+/t	S_{CR} %	moles H+/t	moles H+/t	moles H+/t	moles H+/t	kg $CaCO_3$/t
REC1_CLAY	0.25	Fine	18	8.4	<2	0.023	14	14	121	14	1
REC2_CLAY	0.25	Fine	18	8.8	<2	0.778	486	486	6480	486	36
REC3_A	0.25	Fine	18	8.7	<2	0.949	592	592	2190	592	44
REC3_C	2.25	Fine	18	7.5	<2	0.12	75	75	607	75	6
REC4_A	0.25	Fine	18	8.8	<2	1.18	733	733	5580	733	55
REC4_B2	2	Fine	18	8.6	<2	1.38	858	858	2810	858	64
REC4_C	3.75	Fine	18	8.4	<2	0.388	242	242	517	242	18

Shaded cells indicate parameter is above the action criteria for acidity (moles H^+/tonne)(State Planning Policy 2/02)

* As per the national acid sulfate soils identification and laboratory methods manual, Net acidity = TAA (actual acidity) + S_{CR} (potential sulfidic acidity) + S_{NAS} (retained acidity) (Equation 3.2). However, pH_{KCl} in all samples was >4.5, and S_{NAS} was not required to be determined. Equation 3.2 was used since no corroboration has been done for the measured Acid Neutralising Capacity (please refer to guidelines, page 8).

[1] ANC is not required where pH_{KCl} is <6.5

[2] Liming rate presented here does not include Acid Neutralising Capacity. Liming rate including ANC can be found in Appendix C.

6 Conclusions

Clay and silt dominated the sediments in the proposed dredge area, with varying amounts of sand and gravel. In the proposed reclamation area, particle size distribution was more varied in surface and middle subsamples at sites furthest from the shoreline, with clay dominating the bottom layers.

The 95% UCL of all parameters in the proposed dredge area were below (and complied with) the NAGD Screening Levels (where available) and in many instances were below the laboratory's detection limits. Of the parameters that do not have a NAGD Screening Level, and that were above the PQL, the metals and nutrients were a similar concentration or below those recorded in 2018, are unlikely to be of concern. Furthermore, extensive testing in earlier studies indicates that high nutrient concentrations are unlikely to pose a risk.

In the proposed reclamation area, the 95% UCL for arsenic (27 mg/kg), chromium (119 mg/kg), lead (59 mg/kg), and nickel (43 mg/kg) exceeded the NAGD Screening Levels. However, these concentrations were similar, or within the range of previously recorded concentrations in the channel, and are most likely a result of the local geology, with high concentrations of metals in the laterite dominated intertidal rock platforms in the area. There were no bioaccumulating substances that exceeded the NAGD Screening Levels or SQG-High and therefore further bioaccumulation testing was not required.

The sediment in the proposed dredge and reclamation areas is not considered to be contaminated, further, as the proposed reclamation area will be bunded during works, there is minimal risk that the sediment will mix with the surrounding water.

PASS is present throughout the proposed dredge and reclamation areas and consequently sediment should be treated with lime, or similar, at an appropriate rate to minimise the impact of PASS.

Management and monitoring of the dredging and reclamation will be documented in the Environmental Management Plan, and will include treatment of PASS, and monitoring of tail water and water quality in the surrounding area during dredging.

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Appendix A Sediment Sampling and Analysis Program (SSAP)

Draft Sediment Analysis Plan

Toondah Harbour
Prepared for Walker Corporation
9 October 2019

Job 8444 E

saunders havill group

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Figures

Tables

Plans

1. Introduction

Saunders Havill Group was engaged by Walker Corporation to prepare a Sediment Analysis Plan (SAP) for the Toondah Harbour Development in Cleveland, Queensland. The material to be dredged is to be assessed under the *National Assessment Guidelines for Dredging 2009* (NAGD). The NAGD sets out the framework for the environmental impact assessment and permitting of the ocean disposal of dredged material.

The sediment analysis regime proposed for the Toondah Harbour development will be assessed against the sediment quality guidelines provided in Appendix A of the NAGD. The methodology for assessing the dredged material is provided in **Figure 1**. This SAP will focus on Phases I and II, which involves a review of existing information, the formation of a sampling and analysis plan, and analysis of dredge samples. These results will be compared to the Screening Levels identified in Appendix A of the NAGD.

This SAP has been designed on the basis of previous sediment investigations and background knowledge. The sampling locations have been determined in accordance with the NAGD grid method, the results of past sediment investigations and areas where the greatest amount of material will be dredged.

It is noted that the dredge material is proposed to be utilised for the reclamation associated with the harbour upgrade and will not require unconfined ocean disposal, therefore sampling and analysis will focus on identifying contaminants that have the potential to become re-suspended in the water column and may require management during construction.

1.1. Previous dredging works

Maintenance dredging of Toondah Harbour and the Fison Channel has previously occurred in 1997, 2005, 2008 and 2014. The most recent dredge campaign commenced in May 2019 and is expected to be completed by October 2019 resulting in the removal of approximately 41,000m^3 of material and disposal at the Mud Island unconfined disposal grounds. Sediment sampling and analysis for the project was completed in May 2018 and provides contemporary data on sediment quality within the harbour and entrance channel.

The dredging includes both maintenance and capital dredging at the entrance channel and navigational basin of Toondah Harbour. A small amount of capital dredging is to occur in front of the decommissioned CSIRO pontoon and at the side of the existing basin. Maintenance dredging will occur within the existing basin and the Fison Channel.

The previous maintenance dredging events have disposed of dredge material at either Mud Island or the constructed dredge pond located to the south of the ferry terminal.

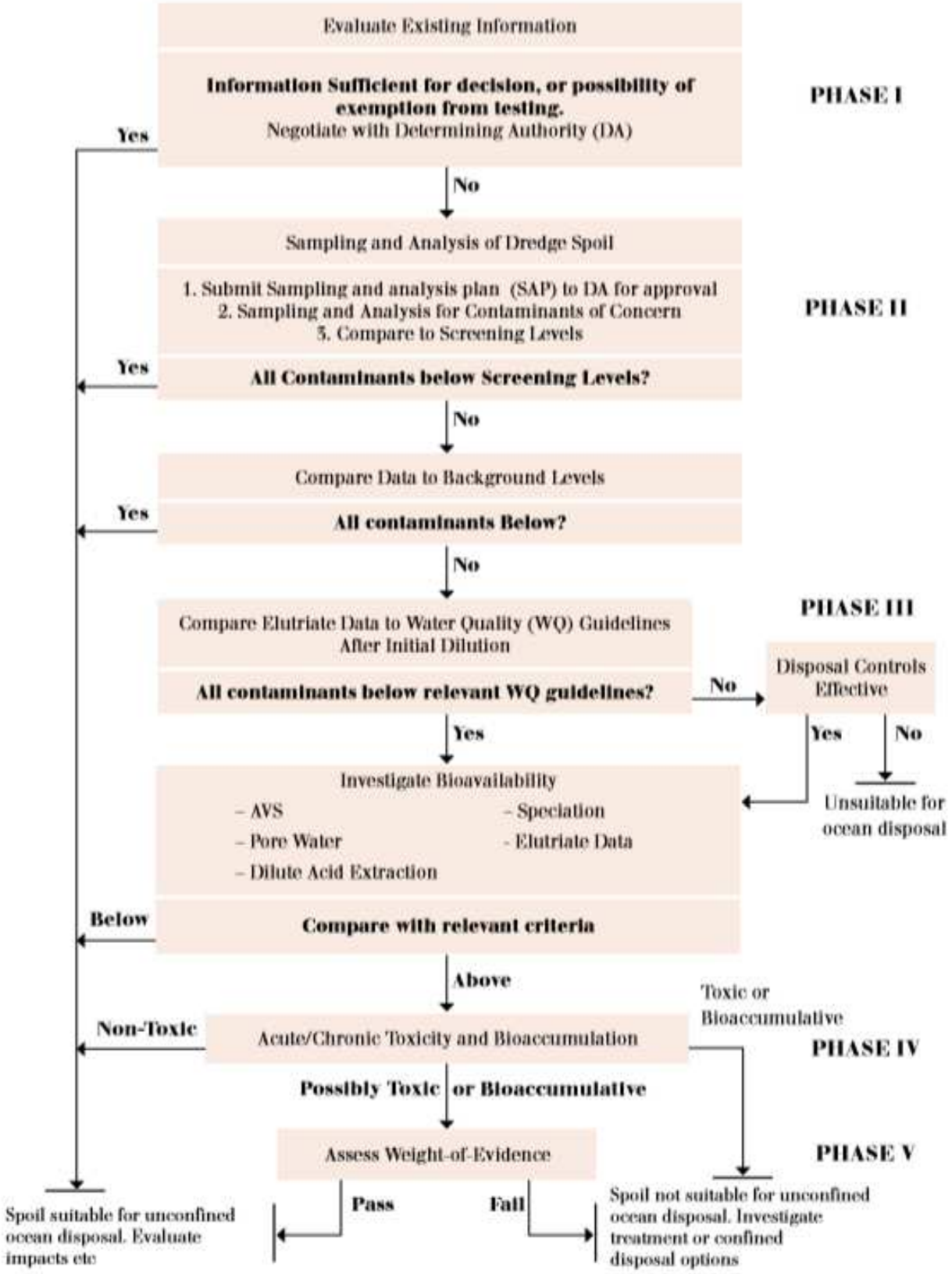

Figure 1: NAGD Dredged Material Assessment Process

1.2. Objectives

All sampling and analysis governed by this SAP will adhere to the procedures and processes set out in the NAGD. The NAGD applies the regulatory framework to ensure the impacts of dredged material loading and disposal are adequately assessed and, when ocean disposal is permitted, that impacts are managed responsibly and effectively. Field and laboratory quality control will be implemented in accordance with Appendix F of the NAGD.

The Toondah Harbour project does not propose unconfined ocean disposal of dredged material with all material to be utilised for the reclamation. This area will be bunded prior to the commencement of dredging and tailwater releases will be managed through separate cells within the bund, significantly reducing the potential for impacts from contaminant release. Therefore, sampling and analysis will focus on identifying contaminants that with potential to be present in high concentrations that may become re-suspended in the water column requiring management during construction.

1.3. Proposed dredging

This SAP has been formulated to support both maintenance and capital dredging for navigational and development purposes within the project area. Dredging of the navigation channel and basin is expected to be carried out over a single year with approximately 3,000 m^3 of material to be dredged per day and disposed of within a bunded areas surrounding the reclamation. Excavation will also occur within the bunded reclamation to allow material to gradually build the landform through drying, treating and compaction of marine sediments. No material will be removed from the bunded area.

The areas of proposed capital and maintenance dredging are shown in **Plan 1**.

1.3.1 Harbour and Entrance Channel Design

The existing public navigation channel is 2.55 km long and typically 45 m wide with a target depth of -2.5 m Lowest Astronomical Tide (LAT). It extends from the swing basin immediately in front of the existing barge berths, via three (3) significant bends to exit into deeper water approximately 1.5 km past Cassim Island. The swing basin's existing diameter is significantly below the accepted minimum of 1.5 times the maximum length of vessels currently utilising the harbour.

The proposed dredging program will deepen and widen the basin and entrance channel to meet the criteria outlined in *Australian Standard 3962-2001: Guidelines for design of marinas*. For the entrance channel AS 3962-2001 state the minimum width should be the greatest of:

a) 20 m

b) (L + 2) m, where L is the length of the longest boat in the marina, in metres; or

c) *5B m where B is the beam of the broadest monohull boat in the marina, in metres.*

The entrance channel will be routinely used by the Stradbroke Island vehicle ferries, the largest of which is the M.V. Minjerribah, which has a length on 68 m and breadth of 13 m. Based on these dimensions the minimum width required for the entrance channel is 70 m.

For entrance channel depths AS3962-2001 state that the designer should determine the maximum draft of the vessels to be accommodated at the marina. The maximum draft is not known at this point in the design process. Table 3.1 of AS3962-2001 identifies the typical vessel draft of power boats with a length of 50 m is 2.9 m. The Stradbroke vehicle ferries are larger than this and known to frequently 'bottom out' in the existing channel which has a target depth of -2.5 m LAT, therefore the target dredge depth will be increased to at least -3.0 m LAT to improve on the existing situation.

For the purposes of sediment sampling and analysis it has been assumed the dredging will deepen and widen the channel to a target depth of -3.5 m LAT with a base width of 75 m to meet minimum safe navigation requirements. However, this will be subject to detailed design and operational considerations. For example, greater target depths in areas of high sedimentation, such as channel bends, will be considered to reduce the frequency of maintenance dredging.

1.3.2 Dredge volumes

Preliminary engineering analysis indicates that up to 500,000 m^3 of material would need to be removed from the channel and basin and will be disposed of within the bunded reclamation area. Most of the material would be considered capital as it will be sourced from areas never previously dredged, however parts of the existing turning basin and inner channel will also be dredged. Based on available data, the proposed dredging is to be undertaken at locations where the dredge spoil is considered to be 'suspect' and 'probably clean'.

1.3.3 Dredging methods

The dredge method proposed for the project area is dependent on a range of factors including the likely characteristics of the material to be dredged, dredge depth and accuracy required, site conditions (including environmental factors and spatial extent of dredge area, etc.), logistics (vessel traffic, dredge manoeuvrability, etc.), and environmental considerations such as noise and water quality impacts.

Sediment investigations conducted by WBM in 2004 suggest sediments within the harbour area are predominantly comprised of unconsolidated silts overlying cohesive marine clays and rock/gravel. The sediment type within Fison Channel is unknown, however it is likely unconsolidated silts overlying marine sands.

Environmental factors can have a great influence on the dredge vessels ability to operate. Wind, waves and tides are the primary environmental factors that could hinder the operational ability of the dredge vessel within the proposed dredge area. Additionally, the extent of the dredge area has some bearing on vessel selection. Another important consideration when it comes to dredge vessel selection is the potential impact on other users of the channel harbour, in particular barge and ferry vessels operating between North Stradbroke Island and Toondah Harbour. The dredge would need to be easily manoeuvred so that the larger vessels can both fit within Fison Channel at times of low tide when the outer flanks of the channel are exposed. Previous dredge campaigns have been undertaken using a trailing arm suction hopper dredge, however other dredge methods such as a barge mounted grab dredge or a cutter suction dredge could be employed.

1. Study Area

NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

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Legend

- Reclamation area
- Proposed navigation channel

Issue	Date	Description	Drawn	Checked
A	15/05/2019	Preliminary	MP	SM

0 50 100 200 300 400 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:11,300 @ A3

saunders havill group

walker

TOONDAH HARBOUR

ADDRESS/RPD: Toondah Harbour, Cleveland *15/05/2019* *8444 E 02 Dredge area A*

2. Existing information

2.1. Toondah Harbour and Fison Channel

Toondah Harbour comprises of public and commercial facilities and is the main hub for vessels operating between the mainland and North Stradbroke Island. The harbour and access channel are utilised by a variety of different vessels including commercial, recreational and government craft.

Ferries carrying vehicles to and from North Stradbroke Island operate and dock at Toondah Harbour up to eight times daily. These ferries are some of the larger vessels that utilise the harbour facilities. Smaller passenger ferries also utilise the harbour and operate at a higher frequency than the larger vehicle ferries.

2.1.1 Location and environmental setting

Toondah Harbour is located in Brisbane's bayside, which is a low-lying area adjacent to Moreton Bay. Ross Creek, a tidally influenced watercourse, is located approximately 1km west of the harbour, and receives urban runoff from the downstream catchment.

The project area is located within the Habitat Protection Zone of the Moreton Bay Marine Park. This zone does not allow for trawling activities and aims to protect sensitive habitats by keeping them generally free from potentially damaging activities.

2.1.2 Land use

Land use within the general surrounds is dominated by low density residential and public open space. The commercial centre of Cleveland is located approximately 1.5 km west of the project area. Major land-based facilities within the harbour compound include car and boat trailer parking area and a full dredge spoil disposal area located to the south of the car park. A ferry ticketing office, vehicle transition area, café, toilet block, bus shelter and fuel storage tanks are located in the eastern section of the harbour towards the main berths. A government owned boat ramp along with a small storage facility are also located to the north of the carpark.

Facilities within the harbour area and the land use types within the catchment area are important aspects when considering the potential for contaminated sediment within the harbour as a result of stormwater runoff. Surface runoff from these areas is expected to generate water quality typical of a semi-urban area. Contaminants associated with these types of land use can include nitrogen, hydrocarbons, trace metals such as zinc, gross pollutants and suspended sediment.

The facilities within the harbour compound could be the source of a number of contaminants. Equipment spills and leaks could result in Hydrocarbons, Benzene, Toluene, Ethylbenzene, Xylene and Napthalene (BTEXN), PAHs and PCBs being transported into the harbour via the existing drainage network. Runoff from exposed areas can bring about the introduction of sediments in stormwater which can result in metals being transported into the harbour.

2.2. Previous sediment analysis

Several sediment investigations have been conducted within Toondah Harbour prior to maintenance dredging campaigns in 1994, 2004, 2006, 2013 and 2018. A discussion on the findings of these investigations in terms of their chemical characteristics is provided below.

2.2.1 Chemical characteristics

1997 investigation

The 1997 investigation found detectable concentrations of total Poly-Chlorinated Biphenyl (PCB) and total Polycyclic Aromatic Hydrocarbons (PAH) in isolated areas identified as requiring maintenance dredging. Elevated concentrations of trace metals (arsenic, cadmium, chromium and lead) above the screening level were also identified in the sediments identified for maintenance dredging. The concentrations of some metals (arsenic, cadmium and chromium) were elevated in the parent material identified to be removed as part of capital dredging works (WMB, 2004). This finding suggested that elevated concentrations of some metals could be naturally occurring or have been deposited in Moreton Bay from Historical sources.

A number of studies reviewing sediment characteristics in Western Moreton Bay have noted elevated levels of trace metals including Nickel, Zinc, Mercury and Lead with cadmium , chromium and arsenic also found in some areas (Cox and Prada, 2005; Morelli *et al*, 2012).

WBM 2004 investigation

The primary objectives of the sampling were to collect and analyse sediment samples from the harbour area for physical characteristics, contaminants and acid sulfate potential. Nine sediment cores were analysed from the sampling area in the northern section of the harbour, while sampling was undertaken at four sites in the area south of the main berth.

Using the recommended approach of assessing mean concentrations based on the 95% upper confidence limit (UCL), zinc was identified above the maximum level identified in the National Ocean Disposal Guidelines for Dredged Material (NODGDM), which preceded the NAGD. The maximum level is a level above the screening level where toxic effects on organisms are probable if the substance is in a biologically available form. For this reason, land disposal was considered the favoured option over ocean disposal. Arsenic, chromium, copper, lead, mercury, nickel, TBT, and PAHs 2-Methylnaphthalene, Acenaphthene, Fluoranthene and Naphtalene were found above the screening level but below the maximum level.

There was no indication of acid sulfate potential in any of the sediments collected from the 13 sampling sites. The results of the Suspension Peroxide Oxidation Combined Acidity and Sulphur (sPOCAS) analysis confirmed the presence of excess acid neutralising capacity in all of the samples collected from the marine dominated system.

The two sediment sampling locations in proximity to the main berths returned generally the widest range and the highest concentrations of contaminants.

WBM 2006 investigation

The 2006 sediment investigation comprised the analysis of six cores from the harbour area. The results of this analysis are presented in WBM (2006). Three of these sites were located in proximity to the main berths. The other three sites were located in the same location as three sites used in the 2004 sampling investigation. One of the aims of this investigation was to confirm whether sediment in close proximity to the main berths contained a higher level of contamination when compared with sediment in other surrounding areas of the harbour.

Using the mean 95% UCL method of determining the contaminant risk across a number of sites, the samples in the area previously identified as having a risk of contamination (the main berths) returned metal concentrations greater than the NODGDM screening levels. The metals which exceeded the screening levels included arsenic, copper, lead, nickel and zinc.

WBM 2013 investigation

The 95% UCL for all trace metal/metalloid concentrations were well below the respective NAGD screening levels. Some individual exceedances of the NAGD screening level were noted for chromium, arsenic and copper but the 95% UCL for these contaminants was below the respective NAGD screening levels, therefore the sediment was considered clean and suitable for ocean disposal with respect to metals and metalloids with no further testing required as per NAGD.

However, due to the relatively high concentrations of chromium in some of the samples, four samples with the highest concentrations were submitted in a conservative approach for further chromium elutriate and bioavailability analysis. Results of these tests indicated a very low bioavailability of the chromium. Based on the Phase II and Phase III testing as per NAGD, the material was considered clean with respect to trace metals including chromium and suitable for ocean disposal.

Acid Sulfate Soil testing indicated that no management would be required for the sediments at most locations should the material be placed on land and exposed to air. Net acidity was detected in only one surface sediment sample and five subsurface samples, mostly below the dredge design depth of –2.5 m LAT.

FRC 2018 investigations

Sediment sampling and analysis was undertaken in May 2018 as part of maintenance and capital dredging campaign within Toondah Harbour and the Fison Channel. In total, 40,938 m^3 is proposed to be dredged.

Cores were collected from 11 sites, including 4 within an additional dredge area adjacent to the decommissioned CSIRO pontoon. All cores were collected to the maximum dredge depth of -2.5m LAT, and all bar three cores were collected to at least 0.5m below the maximum dredge depth.

The results of the sediment sampling and analysis are as follows:

- All sediment samples were dominated by clay and silt;
- All parameters that had a NADG screening level complied with the NADG screening level;

- Concentrations of chromium and arsenic exceeded the screening level in one surface sample and a sub-surface sample however the mean and 95% Upper Confidence Limit (UCL) for chromium and arsenic were below NADG screening levels;
- Of the parameters that do not have a NADG screening level, and that were above the practical quantitation limits (PQL), the metals and hydrocarbons were a similar concentration as in the 2013 survey and are unlikely to be of concern;
- The concentration of nutrients (phosphorous, nitrogen, Kjeldahl nitrogen and ammonia) were higher than recorded in 2013, however were of similar concentrations to that recorded in 2004 and 2006 in the same area and are unlikely to be of concern;
- The remaining parameters that did not have a NAGD screening level were below the PQL and are unlikely to be of concern;
- While the actual acidity for all samples was less than the action criteria, the existing plus potential acidity for chromium reducible sulfur was very high and exceeded the action criteria in each sample.

Overall, the sediment in the dredge area was not considered to be contaminated.

Previous sediment analysis indicated some concerns that the concentration of ammonia in the pore water of the sediment may cause toxicity and make the sediment unsuitable for disposal at Mud Island. As a result, extensive investigations were conducted in 2004, 2006 and 2013 and determined that the concentration of ammonia in the water column was close to background levels within 10 minutes and at background levels within one hour of placement of the dredged materials. The studies also determined that sediment porewater ammonia concentrations were similar to baseline conditions within five days of placement.

As the mean concentrations of total nitrogen and total Kjedahl nitrogen in the additional dredge area in the 2018 survey were similar to previous investigations, it is likely that porewater ammonia concentrations were also similar. Therefore, the risk of porewater ammonia from sediments from capital dredging to the aquatic ecosystem is likely to be low.

2.3. Contaminants of concern

Previous investigations have identified a number of metals being present in the material including: arsenic, cadmium, chromium, zinc, copper, lead, mercury and nickel. Of these only zinc has ever been identified above the screening level as identified in the NODGDM. The maximum level is a level above the screening level where toxic effects on organisms are probable if the substance is in a biologically available form. While the most recent sediment quality assessments (2014 and 2018) found some individual exceedances of the NAGD screening level for chromium, arsenic and copper, the 95% UCL for these contaminants was below the respective NAGD screening levels, the sediment was considered clean and suitable for ocean disposal.

3. Sampling and analysis of sediments

3.1. Sampling locations and division of cores

The proposed sampling approach has been developed in accordance with the NAGD, in particular Appendix D: Sampling and design of sampling programs. It should be noted that the sediment analysis process set out in the NAGD is intended to identify whether dredged material is suitable for unconfined ocean disposal. As the material is proposed to be reused as part of the reclamation, which will be separated from Moreton Bay by a containment bund, the requirements of the NADG are considered to be stringent for the Toondah Harbour Project. However, given the sensitivity of the surrounding environment it is proposed to carry out sampling following the principles Phase 1 and 2 of the guidelines to ensure any potential issues are identified and managed.

The NADG specifies that the number of sampling locations should be based on the volume of known or potentially contaminated material likely to be dredged. As addressed in section 2.2, previous sampling and analysis at Toondah Harbour has generally shown sediments are not contaminated. The 2013 and 2018 analysis programs found the 95% Upper Confidence Limit (UCL) was below screening levels for all contaminants at all sample locations. TPHs, PAHs, pesticides, organotins, PCBs, Hydrocarbons were all under screening limits and generally under the Limit of Reporting (LOR) in all samples over both events.

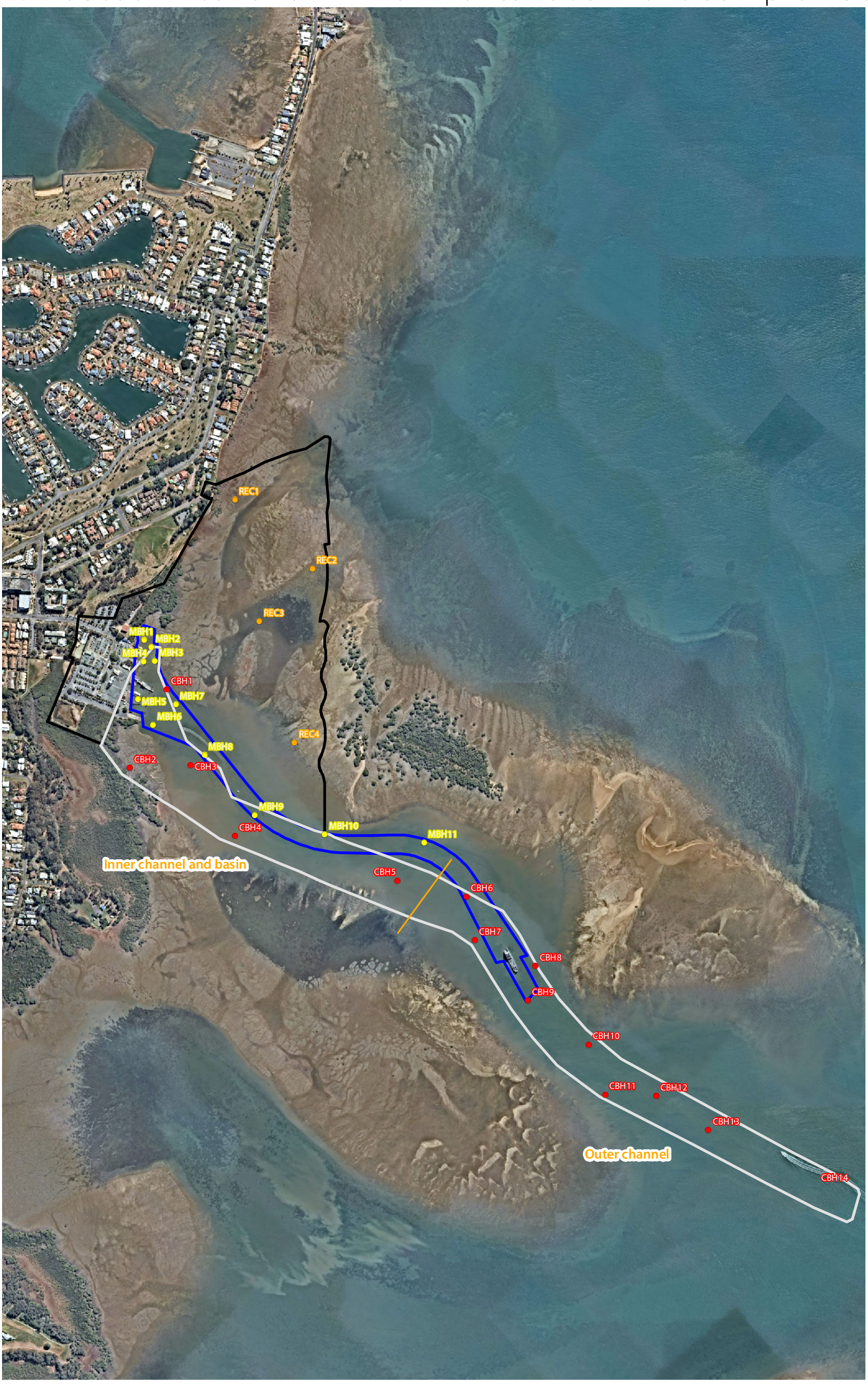
Some individual samples exceeded screening levels for chromium and arsenic, which were generally in surface and sub surface samples within the basin area adjacent to the existing ferry berths. Two sub surface samples in the entrance channel exceeded screening levels for chromium and arsenic. These were below the target dredge depth (-2.5m LAT) and considered likely to be part of the geology of Moreton Bay. The exceedances were minor and did not exceed the screening level by 10%.

Given the 95% UCL is used to determine compliance with the NAGD Screening levels and two separate sampling events found no contamination above screening levels it is reasonable to conclude that all material to be dredged is 'probably clean'. The NAGD state "*For 'probably contaminated' and 'probably clean' categories, where there is good quality current data (from the last five years) on sediment chemistry for the area or site, and the pollution status of the site has not changed, the number of sampling locations may be halved*".

Table 6 of the NAGD specifies 28 samples would be required for dredging of 500,000m^3. If that is halved 14 sample sites would be required. Rrefer **Plan 2** for sampling locations.

Even though material will not be relocated from the reclamation area a further 4 sample locations are proposed to inform construction management measures and future water quality monitoring programs. Sediment analysis carried out for the 2019 maintenance dredging campaign will be utilised for the current project as the sampling was completed recently and provides a contemporary description of contaminants in the sediment at Toondah Harbour.

2. Geotechnical and Environmental Sediment Sample Locations



NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
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Layer Sources
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Legend

- Reclamation area
- Proposed navigation channel
- Existing navigation channel
- Channel section breaks

Borehole Locations

- Capital Bore Hole
- Reclamation Bore Hole
- Maintenance Bore Hole

Issue	Date	Description	Drawn	Checked
A	2/10/2019	Preliminary	MP	SM

0 50 100 200 300 400 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:11,300 @ A3

saunders havill group

walker

TOONDAH HARBOUR

ADDRESS/RPD: Toondah Harbour, Cleveland 2/10/2019 8444 E 02 Geotechnical and Environmental Sediment Sample Locations no CPT A

3.1.1 Reclamation Area

The reclamation area will be completely enclosed early in the construction process prior to any excavations occurring. Material will not be removed from this area, however excavations will result in disturbance of sediment layers including reallocation of material above the tidal levels. Depth of excavations will extend to approximately -3.5 m LAT in locations that will ultimately become channels and berths for recreational boats once the reclamation has been completed.

Analysis from the four boreholes within the reclamation area (identified as REC 1-4 on Plan 2) will be aimed at characterising physical and chemical properties of the sediment layers likely to be encountered by excavations using the 'targeted' suite of analytes (refer to section 3.2 for a description of the analysis suites). The five borehole locations will provide spatial variation to ensure all layers are sampled. Half of all samples collected will be analysed including at least two samples of each sediment layer encountered. Other samples will be sent to the lab and stored appropriately so that they can be utilised for further analysis if required.

3.1.2 Basin and Inner Channel

The 11 boreholes carried out for the 2019 maintenance dredging campaign are located either within or adjacent to the proposed dredging associated with the Toondah Harbour Development (identified as MBH 1 – 11 on Plan 2). The target dredge depth for the 2019 campaign is less than the target depth for the current dredging (-2.5 m LAT compared to -3.5m LAT respectively) however sample cores generally extended to at least -3.0 m LAT therefore would characterise most of the sediments to be dredged.

Proposed realignment of the inner channel to the south will result in areas outside of the existing channel being dredged. Three additional boreholes will be located in these areas to characterise the sediment (identified as CBH 1 – 3 on Plan 2). Analysis will include three sub-samples tested for the complex list of analytes (one each from the top, middle and bottom layers) and with the targeted analytes list used for the remainder of the sub-samples.

3.1.3 Outer Channel

A further 9 boreholes will be located in the outer channel, which will all be capital dredge material (identified as CBH 3 – 11 on Plan 2). Sample locations have been selected at random by placing a 25 m grid over the dredge channel. As this area has not been sampled previously the complex suite of analytes will be tested for in all sub samples of one borehole and 50% of surface samples. All other sub samples will be tested using the targeted set of analytes.

3.1.4 Sub Sampling

For all boreholes sub-sampling will be carried out as follows:

- An upper layer sample is to be taken from the top 0-0.5 m of each core.
- a sample from the maximum dredge depth to approximately 0.5 m below the maximum dredge depth
- a sample from 0.5 m to the maximum dredge depth, if this sample is over 1 m long, or there are distinct changes in the sediment composition, this sample is to be divided according to the changes in composition.

Sub-samples will be mixed at the time of collection to ensure the material provided to the laboratory is a homogenous mix of the length of the core.

Each sample borehole will be carried out to approximately 0.5 m below the maximum dredge depth to account for a constructional tolerance of 0.3 m.

Borehole co-ordinates and predicted number of sub samples are outlined in **Table 1**.

Table 1: Borehole Details

Bore Holes	Approx Easting (GDA)	Approx Northing (GDA)	Seabed (LAT)	Max. dredge depth (m)	Core length (m)	No. sub-samples
MBH1	528113	6955130	-1.25	-3.50	NA	NA
MBH2	528134	6955110	-2.55	-3.50	NA	NA
MBH3	528144	6955070	-2.05	-3.50	NA	NA
MBH4	528112	6955068	-2.25	-3.50	NA	NA
MBH5	528095	6954959	-2.05	-3.50	NA	NA
MBH6	528139	6954884	-1.75	-3.50	NA	NA
MBH7	528205	6954944	-2.25	-3.50	NA	NA
MBH8	528288	6954797	-2.05	-3.50	NA	NA
MBH9	528434	6954623	-1.55	-3.50	NA	NA
MBH10	528637	6954567	-1.75	-3.50	NA	NA
MBH11	528925	6954543	-2.05	-3.50	NA	NA
REC1	528376	6955540	0.75	-3.50	4.25	5
REC2	528601	6955340	0.45	-3.50	3.95	5
REC3	528447	6955180	0.45	-3.50	3.95	5
REC4	528549	6954830	0.95	-3.50	4.45	5
CBH1	528179	6954990	-2.05	-3.50	1.45	2
CBH2	528072	6954760	0.95	-3.50	4.45	5
CBH3	528248	6954770	-0.05	-3.50	3.45	4
CBH4	528377	6954560	0.25	-3.50	3.75	5
CBH5	528848	6954430	-0.05	-3.50	3.45	4
CBH6	529047	6954390	-2.25	-3.50	1.25	2
CBH7	529073	6954260	-0.75	-3.50	2.75	4
CBH8	529247	6954190	-1.05	-3.50	2.45	3
CHB9	529225	6954090	-2.75	-3.50	0.75	2
CBH10	529402	6953960	-2.25	-3.50	1.25	2
CBH11	529450	6953810	-1.05	-3.50	2.45	3
CBH12	529598	6953810	-2.55	-3.50	0.95	2
CBH13	529749	6953710	-2.75	-3.50	0.75	2
CBH14	530073	6953560	-2.75	-3.50	0.75	2

3.2. Analytical parameters

3.2.1 Sediment characterisation

It is proposed to adopt two different lists of analytes for the testing of harbour and channel sediments. These lists comprise a 'Comprehensive' and 'Targeted' list of analytes (refer **Tables 2 and 3**). The Comprehensive list of analytes is the complete list of parameters from the NAGD, with the exception of dioxins, furans and radionuclides, which are extremely unlikely to be found in any sediments in western Moreton Bay.

Screening levels (derived from NAGD) which indicate the concentration below which there is minimal risk of adverse environmental consequence are provided in both tables. The Practical Quantitation Limits (PQL) are values assigned to each analyte which are necessary to accurately determine contaminant concentrations at or near natural levels, or to reliably detect organic substances that may have impacts at very low environmental concentrations.

Table 2: Comprehensive list of parameters (excluding dioxins, furans and radionuclides)

Parameter	PQL	Screening level	Parameter	PQL	Screening level
Particle Size Distribution (including fine fraction by hydrometer)	NS	NS	Endosulfan (total alpha, beta and sulfate)	1	NS
Moisture Content %	1	NS	Heptachlor epoxide	1	NS
pH(f) and pH(Fox)	NS	NS	Hexachlorobenzene	1	NS
Total carbon	NS	NS	Methoxychlor	1	NS
Total inorganic carbon	NS	NS	Lindane	1	0.32
Total organic carbon %	0.1	NS	Polychlorinated biphenyl	5	23
CRS Suite	NS	NS	**Organophosphorus Pesticides (µg/kg)**		
Metals (mg/kg)			Bromophs-ethyl	10-100	NS
Aluminium	200	NS	Carbophenothion	10-100	NS
Antimony	0.5	2.0	Chlorfenvinphs (E)	10-100	NS
Arsenic	1.0	20	Chlorfenvinphos (Z)	10-100	NS
Cadmium	0.1	1.5	Chlorpyrifos	10-100	NS
Chromium	1.0	80	Chlorpyrifos-methyl	10-100	NS
Copper	1.0	65	Demeton-S-methyl	10-100	NS
Cobalt	0.5	NS	Diazinon	10-100	NS
Iron	100	NS	Dichlorvos	10-100	NS
Lead	1.0	50	Dimethoate	10-100	NS

Parameter	PQL	Screening level	Parameter	PQL	Screening level
Manganese	10	NS	Ethion	10-100	NS
Mercury	0.01	0.15	Fenamiphos	10-100	NS
Nickel	1.0	21	Fenthion	10-100	NS
Selenium	0.1	NS	Malathion	10-100	NS
Silver	0.1	1.0	Azinphos Methyl	10-100	NS
Vanadium	2.0	NS	Monocrotophos	10-100	NS
Zinc	1.0	200	Parathion	10-100	NS
Total Petroleum Hydrocarbons (mg/kg)			Parathion-methyl	10-100	NS
C6-C9 Fraction	100	NS	Primphos-ethyl	10-100	NS
C10-C14 Fraction	100	NS	Prothiofos	10-100	NS
C15-C28 Fraction	100	NS	**Organotin Compounds (µg Sn/kg)**		
C29-C36 Fraction	100	NS	Tributyltin as SN	1	9
C10-C36 Fraction (sum)	100	550	**Nutrients (mg/kg)**		
BTEXN (µg/kg)			Total Phosphorus	0.1	NS
Benzene	200	NS	Total Nitrogen as N	0.1	NS
Toulene	200	NS	Nitrate as N	0.1	NS
Ethylbenzene	200	NS	Nitrite as N	0.1	NS
Xylene	200	NS	Total kjeldahl Nitrogen as N	0.1	NS
Napthalene	NS	NS	**Non-organochlorine Pesticides (µg/kg)**		
Organochlorine Pesticides (µg/kg)			Carbamates	10-100	NS
Aldrin	1	NS	Phyrethoids	10-100	NS
Alpha, beta and delta BHC	1	NS	Phenoxy Acid Herbicides	10-100	NS
Chlordane	1	5	**Other Organic Compounds (mg/kg)**		
Total chlordane	2	NS	Total Phenolics	1	NS
Endrin	1	10	Volatile chlorinated hydrocarbons	0.05-5	NS
Dieldrin	1	280	Polycyclic Aromatic Hydrocarbons	0.005	NS
DDD	1	2	Sum of Polycyclic Aromatic Hydrocarbons	0.1	10
DDE	1	2.2	Chlorobenzenes	0.05	NS
DDT	1	1.6	**Other Inorganic Compounds(mg/kg)**		

Parameter	PQL	Screening level	Parameter	PQL	Screening level
Oxychlordann	1	NS	Cyanide	0.25	NS
Heptachlor	1	NS	Ammonia as N	0.1	NS

Table 3: Targeted list of analytes

Parameter	PQL	Screening level	Parameter	PQL	Screening level
Particle Size Distribution (including fine fraction by hydrometer)	NS	NS	Silver	0.1	1.0
Moisture Content %	0.1	NS	Vanadium	2.0	NS
Ph(f) and pH(Fox)	NS	NS	Zinc	1.0	200
Total Carbon	Ns	NS	**Total Petroleum Hydrocarbons (mg/kg)**		
Total Inorganic Carbon	NS	NS	C6-C9 Fraction	100	NS
Total organic carbon (%)	0.1	NS	C10-C14 Fraction	100	NS
CRS Suite	NS	NS	C15-C28 Fraction	100	NS
Metals (mg/kg)			C29-C36 Fraction	100	NS
Aluminium	200	NS	C10-C36 Fraction (sum)	100	550
Antimony	0.5	2.0	**BTEXN (µg/kg)**		
Arsenic	1.0	20	Benzene	200	NS
Cadmium	0.1	1.5	Toluene	200	NS
Chromium	1.0	80	Ethylbenzene	200	NS
Copper	1.0	65	Xylene	200	NS
Cobalt	0.5	NS	Napthalene	NS	NS
Iron	100	NS	**Organotin Compounds (µg Sn/kg)**		
Lead	1.0	50	Tributyltin as Sn	1	9
Manganese	10	NS	**Other Organic Compounds (mg/kg)**		
Mercury	0.01	0.15	Total Phenolics	1	NS
Nickel	1.0	21	Polycyclic Aromatic Hydrocarbons	0.005	NS
Selenium	0.1	NS	Sum of Polycyclic Aromatic Hydrocarbons	0.1	10

Dioxins and furans have not been included for analysis as they are industrial point source contaminants and are highly unlikely to be present in the sediments around Toondah Harbour. Similarly, testing for radionuclides

is not proposed as these are highly unlikely to be found in the sediments around Toondah Harbour. Radionuclides are generally used for medical and industrial purposes or as a source of radiation and there are limited discharge sources for these substances in Moreton Bay. Radionuclides have been included in similar previous sampling plans in other areas of Moreton Bay and were found to be well below the NAGD guidelines.

The Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998 have been used as a guide to determine the appropriate level of ASS testing required for the proposed dredging at Toondah Harbour.

Based on available information the risk of encountering ASS is considered to be low. Consequently, testing for ASS will correspond with the proposed division of cores with each sediment sample analysed for field pH (pHf) and field oxidised pH (pHfox) as well as the full CRS suite.

3.3. Timing of sampling

It may be necessary to conduct sediment sampling of the cores at night. Sampling has previously been conducted at the site during the late evening and night after the final ferry service from North Stradbroke Island. A similar approach may be necessary due to the high frequency of ferry movements and other general vessel traffic into and out of the harbour. Some of the cores to be retrieved from the main channel area could however be sampled during times of ferry movement. This aspect would need to be confirmed with the ferry operator and other major users of the harbour prior to conducting any sampling.

3.4. Sample collection

At each location, a sediment core which is representative of the depth proposed for dredging would be collected. Borehole samples will be obtained by deploying a vibrocorer on a barge. The vibrocorer generally uses a compressor to drive a stainless-steel tube into the sediment and then applies a vacuum to the tube to retain the sample. All samples would be retained within a plastic sleeve to avoid cross contamination.

3.4.1 Sampling procedures

A strict sampling protocol is required to ensure that sediment samples are not contaminated by external factors (such as oils and greases) or by cross contamination between sediment cores. Samples required for laboratory analysis should be placed in appropriately sized glass jars and sealed accordingly. The appropriate number of jars should be used for each sampling interval and filled accordingly. Adequate material is to be collected from all sample locations to allow for further testing, if required.

the sampling protocol proposed is as follows:

- sample locations specified in Table 3.1 should be determined in the field using a GPS
- sampling, sub-sampling and sample transit is to be conducted by an environmental scientist or equivalent
- collection of the required volume of sediment
- three step cleaning process of sampling equipment between each core run

- use of stainless steel sampling tools
- collection of rinse water samples
- disposable rubber gloves to be worn when sampling
- use of disposable plastic sleeve on the tube so sample cores can be returned to the surface and laid on the deck or work area without risk of cross contamination
- sediment core sample to be placed directly into clean sample jars provided by laboratory
- sample jars/bags to be placed directly into esky with ice bricks
- where required, sample splitting/compositing to be carried out under controlled conditions
- field notes for each borehole to include any observations of fuel/oil spillages, or other potential contamination sources.

Protocols specific to the extraction of cores are as follows:

- Ensure the core remains as intact as possible.
- Recovery must be available in soft, unconsolidated and loose sediments.
- Require a reliable definition of the length of core retrieved from each location (within ±0.1 m). Note that the length of the core and the bed level at each sampling site should be calculated based on tide predictions. This method gives an accuracy of approximately ±0.1 m which is sufficient given the accuracy of dredging activities.
- The core is to be recovered on the barge deck.
- No loss of fine fraction.
- Depending on the nature of the sampling apparatus, an appropriate protective lining/material must be used or an appropriate washing method to avoid contamination of the sample.
- Depending on the overall set up, trestles with trays should be on deck to allow cores to be laid out to allow for inspection, photography, sub-sampling and splitting.
- Drilling tubes and sampling apparatus are to be washed effectively between samples.

3.4.2 Physical description and photographs

On recovery, a physical description of the core should be recorded and a photographic record of each core should be taken.

3.5. Contingency plan

To minimise the potential of failed survey and remobilisation, weather forecasts will be considered prior to commencing field investigations.

3.6. Sampling and analysis quality control

The following quality assurance protocols follow the recommendations of the NAGD.

3.6.1 Quality Control – field sampling

A sampling area should be designated and kept contaminant free throughout the sampling event. Specific QA/QC procedures required include:

- sampling which avoids cross–contamination
- decontamination of equipment between samples.

All field procedures are to be documented. These include:

- Field conditions (weather, tides, currents), location, sampling methods and handling and storage methods, field numbers, date, time, identity of sampler noted in the field log.
- Field description of sediments using the nomenclature of the Australian Soil and Land Survey Field Handbook (McDonald et al. 1990) including but not limited to physical appearance (for example, silty sand), field texture, colour, presence of foreign material, presence of shell fragments or carbonate material and/or biota (for example seagrass); where multiple samples are collected at a site, notes on the variability between samples should be made.
- A sample inventory log, a sample tracking log and a record of instrument maintenance and calibration should be kept.
- Chain-of-custody forms that list all sample numbers, locations, depth, and the analyses and Practical Quantification Limits required, to accompany each sample to the lab. At each stage of handling, samples are to be checked against the chain-of-custody forms. After receipt by the lab, a checked form is to be returned to the sampling organisation.
- Blanks/rinse samples, duplicates or blind duplicates, triplicates, and inter laboratory comparisons.

3.6.2 Quality control – analysis

Appendix F of the NAGD specifies field quality control procedures. In consideration of these requirements, the following QA/QC protocol has been developed for the proposed dredge area:

- One triplicate sediment core will be taken from one location (i.e. three separate cores taken at approximately the same location).
- One split sample (i.e. one sub-sample split into three jars for analysis) will be taken from BH6.
- All samples should be sent to the laboratories as a single batch. The analytical laboratory will need to comply with the laboratory and quality assurance procedures specified in Appendix F of the NAGD.

Chemical analysis

The analysis of marine sediments for the list of parameters specified is difficult, and requires high quality laboratory services, from a provider with a proven track record in analysing these matrices.

For elutriate based methods specified, there may only be a small number of laboratories capable of providing the services. Laboratories chosen must employ rigorous laboratory-based QA procedures, and report the results of these along with sample analysis result. Techniques should include:

- use of laboratory blank sample
- use of Standard Reference Material (SRM), that is, a sample of certified composition
- use of sample spiked with the parameters being determined at a concentration within the linear range of the method being employed, that will determine whether all the chemicals present in the sample are actually being found in the analysis (i.e. spike recovery)
- use of replicate sample to determine the precision of the analysis.

The laboratory QA/QC procedures need to be appropriate for the low concentrations expected in marine sediments. Therefore, the analysis of samples should be completed by a NATA accredited lab for the analytes specified in Section 3.4. The laboratory will be required to confirm in advance that they can meet the required practical quantitation limits.

3.7. Analysis of results

3.7.1 Sediment analysis for total concentrations

Total contaminant concentrations in sediments will be compared against the screening levels listed in Table 2 of Appendix A of the NAGD to assess whether material is suitable for unconfined disposal at sea or if further testing is required. Any exceedance of the 95% UCL of the mean for contaminant analytes will require further assessment, such as that proposed in Phase III and Phase IV of the NAGD assessment of potential contaminants.

3.7.2 Phase III – elutriate and bioavailability analysis

Elutriate and bioavailability testing is designed to simulate the release of contaminants from sediment during dredging/disposal. Bioavailability testing assesses potential impacts on sediment quality and would only be conducted if the results from elutriate testing remained below the relevant water quality guidelines.

3.7.3 Phase IV – toxicity analysis

Toxicity and bioaccumulation testing would only be undertaken if it is deemed necessary following the results of elutriate and bioavailability testing. Adequate sample volume will be collected from boreholes for these tests to avoid further drilling in the future. Samples for toxicity testing typically have a storage time of up to eight weeks if stored correctly. Thus, the standard and non-standard tests proposed as part of this SAP would need to be completed within eight weeks of sample collection to allow toxicity tests to be performed, if required.

3.8. Reporting

A report containing the following information will be required at the conclusion of the sampling and analysis program:

- introduction and description of the study area
- details of the sampling methodology including any deviation from the SAP
- a figure identifying sample locations

- descriptions of the sediment samples based on photographs and sediment logs
- description of any observations or anomalies during sampling and/or analysis
- information on laboratories used and analytical methods employed
- quality assurance procedures and results
- description and interpretation of results for all parameters
- conclusion and recommendations
- appendices containing all laboratory results.

Appendix B Core Logs

Appendix B Field Core Logs

Site CBH1

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	06-Nov-19	**Weather:**	Sunny, slight wind
Corer type:	Vibracore	**Sea conditions:**	Low tide, weak current
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
528193	6954988	10:37	0.9	2	0.9	0	-2

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	greenish black	silty	fine	nil	low	1	nil
0.25	greenish black	silty	fine	nil	low	1	nil
0.75	greenish black	silty	fine	nil	low	5	nil
1.25	very dark greenish grey	silty	fine	nil	med/high	1	nil
2.0	very dark greenish grey	silty	fine	nil	med/high	1	nil

Comments: Strips reddish brown on core bottom. Actual length of core was 2 m, however only the top 1.5 m were sampled (only 1.5 m were required).

Fig. B.1 Site CHB1 sediment core, surface to bottom (left to right)

Site CBH2

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	08-Nov-19	**Weather:**	Sunny, slight wind
Corer type:	Vibracore	**Sea conditions:**	Receeding tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
528116	6954837	7:48	0.8	2.6	1.8	1	-1.6

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	dark greenish grey	silty	fine	nil	low	5	nil
1.75	greenish grey	silty	fine	nil	low	5	nil
2.0	greenish grey	clay	fine	nil	low	5	nil
2.25	greenish grey	clay	fine	nil	med	5	nil
2.5	greenish grey	clay	fine	nil	high	5	nil

Comment: Reddish brown stripes at bottom of core. Could not achieve required core depth (4.45 m) due to hard clay.

Fig. B 2 Site CBH2, surface to bottom (left to right). First 1.5m label is incorrect, should read 0.5m.

Site CBH3

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	06-Nov-19	**Weather:**	Sunny, slight-mod wind
Corer type:	Vibracore	**Sea conditions:**	Rising tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)*	Core Length (m)	Tide wrt LAT (m)*	Top of Core wrt LAT (m)*	Bottom of Core wrt LAT (m)*
528231	6954670	14:30	2	2.3	2.3	0.3	-2

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	very dark greenish grey	silty	fine	nil	med	5	nil
0.5	very dark greenish grey	silty	fine	nil	med/high	5	nil
1.25	reddish brown	sandy silt	fine/med	nil	med	1	nil
1.5	reddish brown	sandy silt	fine/med	nil	med	0	slight
1.75	strong brown	sandy	med	nil	med	0	slight
2.0	strong brown	gravel	coarse	nil	very low	0	slight
2.25	strong brown	gravel	coarse	nil	very low	0	slight

Comments: . Required length originally not achieved due to gravel.

*Please note that depth at this site was checked on 07-04-2020

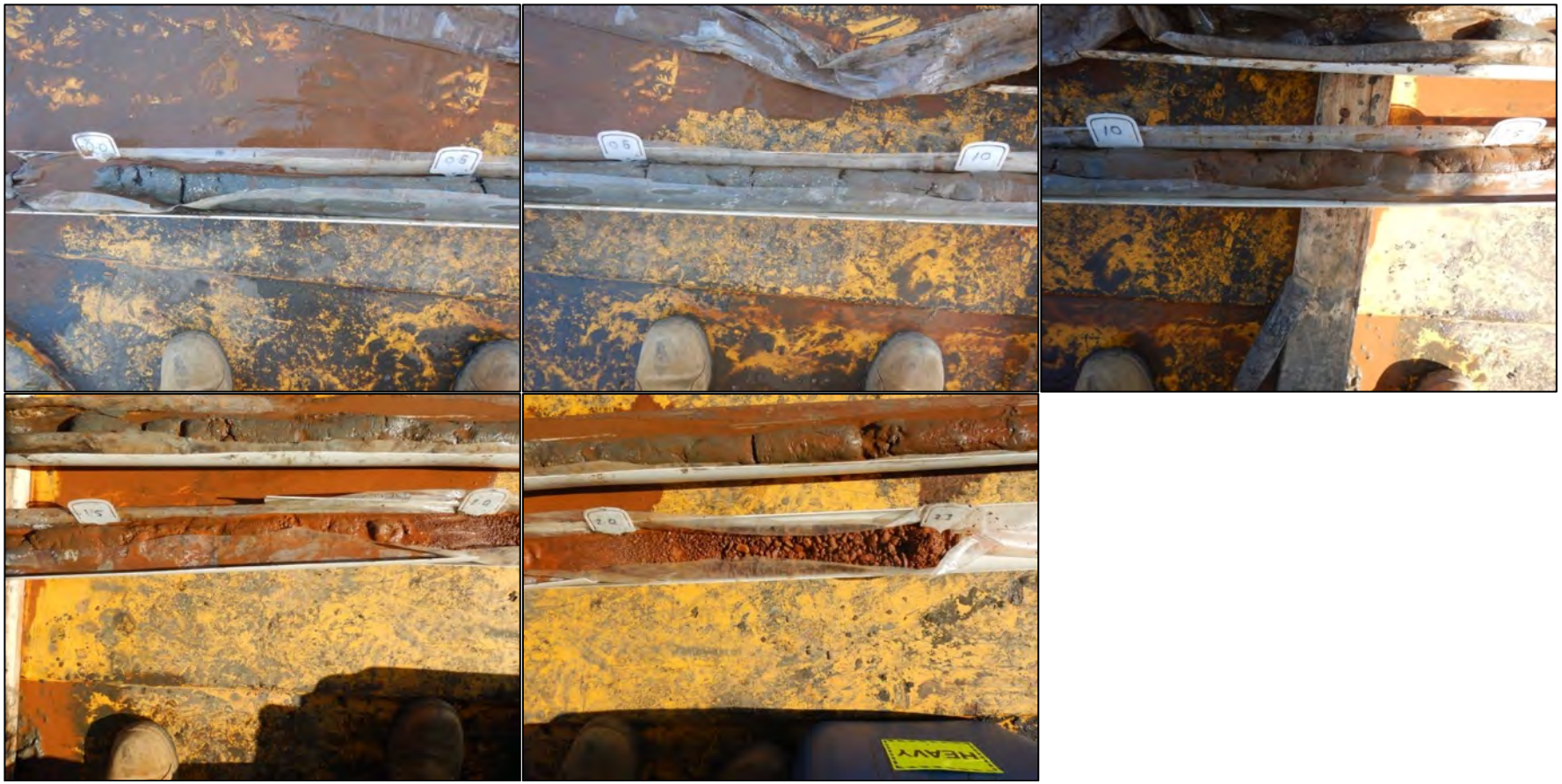

Fig. B 3 Site CBH3 sediment core, surface to bottom (left to right)

Site CBH4

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	06-Nov-19	**Weather:**	Sunny, slight wind
Corer type:	Vibracore	**Sea conditions:**	Low tide, rising, weak current
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)*	Core Length (m)	Tide wrt LAT (m)*	Top of Core wrt LAT (m)*	Bottom of Core wrt LAT (m)
528366	6954553	12:30	2.3	2.3	2.3	0	-2.3*

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	very dark greenish grey	silty clay	fine	nil	low	0	nil
0.5	very dark greenish grey	silty clay	fine	nil	low	1	nil
1	very dark greenish grey	silty clay	fine	nil	high	1	nil
1.75	very dark greenish grey	clay	fine	nil	very high	1	nil
2.0	dark greenish grey	clay	fine	nil	very high	1	nil
2.3	dark greenish grey	clay	fine	nil	very high	1	nil

Comments: Actual length of core was 2.3 , corer unable to penetrate hard clay. An extra sample was taken from the bottom of the core for the clay. Required core length not achieved due to hard clay plug.

*Please note that depth at this site was checked on 07-04-2020


2.5
2.0
2.0
0.5
0.5

Fig. B 4 Site CBH4 sediment core, bottom to surface (left to right)

Site CBH5

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	07-Nov-19	**Weather:**	Sunny
Corer type:	Vibracore	**Sea conditions:**	Receeding tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
528858	6954434	8:03	1.8	3.75	1.8	0	-3.75

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	dark grey	silty	fine	nil	med	0	slight
2.25	dark grey	silty	fine	nil	med	0	slight
2.5	dark grey	silty	fine	nil	med	0	med
3.25	dark grey	silty clay	fine	nil	high	0	med
3.5	greenish grey	silty clay	fine	nil	very high	0	med
3.75	greenish grey	silty clay	fine	nil	very high	0	med

Comments: Required core length= 3.45 m. Sample C (bottom layer) is clay which is below the required depth.

Fig. B 5 Site CBH5, surface to bottom (left to right)

Site CBH6

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	07-Nov-19	**Weather:**	Sunny, slight-mod wind
Corer type:	Vibracore	**Sea conditions:**	Receeding tide, weak current
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
529051	6954401	10:02	3.4	1.3	1.1	-2.3	-3.6

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	greenish black	silty	fine	nil	low	0	nil
0.5	dark greenish grey	silty	fine	nil	med	0	nil
0.75	dark greenish grey	silty	fine	nil	high	0	nil
1.0	greyish olive	silty clay	fine	nil	very high	0	nil
1.25	greyish olive	silty clay	fine	nil	very high	0	nil

Comments: Roots observed at core bottom and slight reddish strips at bottom of core with clay plug. Site selected for triplicate cores. Dark organic matter layer at top of core.

Fig. B 6 Site CBH6, surface to bottom (left to right)

Site CBH7

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	07-Nov-19	**Weather:**	Sunny, slight-mod wind
Corer type:	Vibracore	**Sea conditions:**	Rising tide, weak current
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
529066	6954263	14:21	2.1	3	1.1	-1	-4

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	dark greenish grey	silty	fine	nil	low	5	slight
1.5	dark greenish grey	silty	fine	nil	low	1	slight
1.75	very dark greenish grey	silty	fine	nil	low	1	slight
2.0	very dark greenish grey	silty clay	fine	nil	low	0	nil
2.25	very dark greenish grey	silty clay	fine	nil	very high	0	nil
2.5	very dark greenish grey	clay	fine	nil	very high	0	nil
3.0	very dark greenish grey	clay	fine	nil	very high	0	nil

Comment: Reddish stripes at core bottom. Core sampled down to 3 m, only 2.75 m required.

Fig. B 7 Site CBH7, surface to bottom (left to right)

Site CBH8

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	07-Nov-19	**Weather:**	Sunny, light-mod wind
Corer type:	Vibracore	**Sea conditions:**	Receeding tide, weak current
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
529247	6954190	11:09	2	3.0	0.9	-1.1	-4.1

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	very dark greenish grey	Silty	fine	nil	low	0	slight
0.25	very dark greenish grey	Silty	fine	nil	med	0	slight
2.5	very dark greenish grey	Silty	fine	nil	high	0	med
2.75	greenish grey	Silty clay	fine	nil	very high	0	med
3.0	greenish grey	Silty clay	fine	nil	very high	0	med

Comments: core length required= 2.45 m. Reddish tinge at bottom of core.

Fig. B 8 Site CBH8, surface to bottom (left to right)

Site CBH9

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	12-Nov-19	**Weather:**	Sunny, slight wind
Corer type:	Vibracore	**Sea conditions:**	Receeding tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
529186	6954092	13:00	2.6	2.75	1.3	-1.3	-4.05

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	very dark greenish grey	silty sand	med fine	nil	very low	1	nil
0.5	very dark greenish grey	silty	fine	nil	very low	1	nil
1.0	dark olive grey	silty clay	fine	nil	low	nil	nil
2.5	dark olive grey	clay	fine	nil	med	nil	nil
2.75	olive grey	clay	fine	nil	med	nil	nil

Comment: Core sampled 30 m west of original waypoint due to original waypoint being within the main channel. Only first 1.5 m of core sampled (0.75 m required).

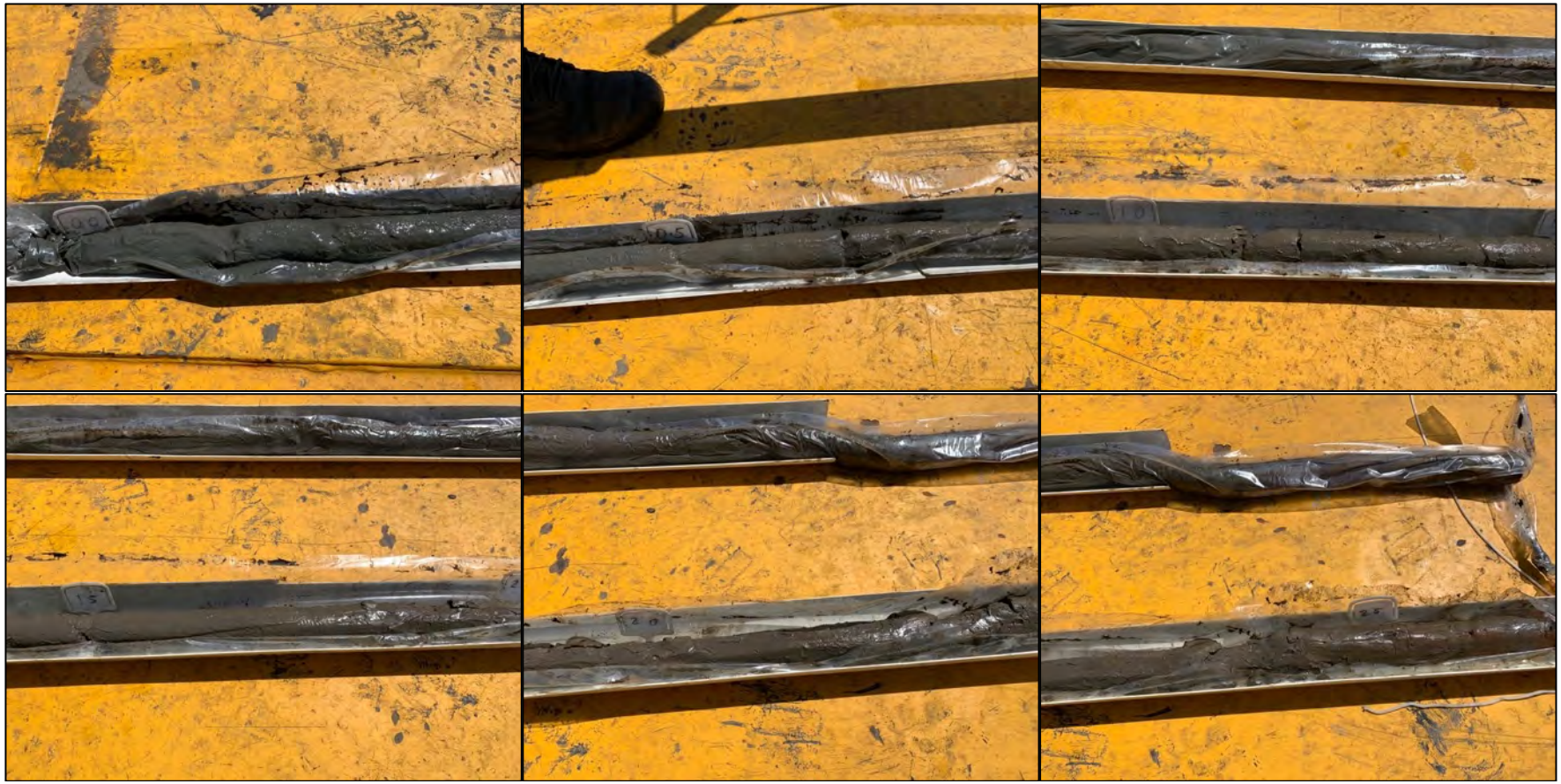

Fig. B 9 Site CBH9, surface to bottom (left to right).

Site CBH10

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	12-Nov-19	**Weather:**	Sunny, moderate wind
Corer type:	Vibracore	**Sea conditions:**	Receeding tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
529408	6953964	14:25	3.1	2.2	0.8	-2.3	-4.5

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	Greenish black	silty sand	med fine	nil	low	1	nil
0.5	Greenish black	silty clay	fine	nil	low	1	nil
0.75	very dark greenish grey	silty clay	fine	nil	low	1	nil
1.0	very dark greenish grey	silty clay	fine	nil	med	1	nil
1.5	very dark grey	silty clay	fine	nil	med	1	nil
2.0	very dark grey	clay	fine	nil	high	nil	nil
2.25	very dark grey	clay	fine	nil	high	nil	nil

Comments: Reddish stripes at bottom of core. Only first 1.25 m sampled (same length as required). Triplicate core collected here: slight dark layer of organic matter at top of third core.

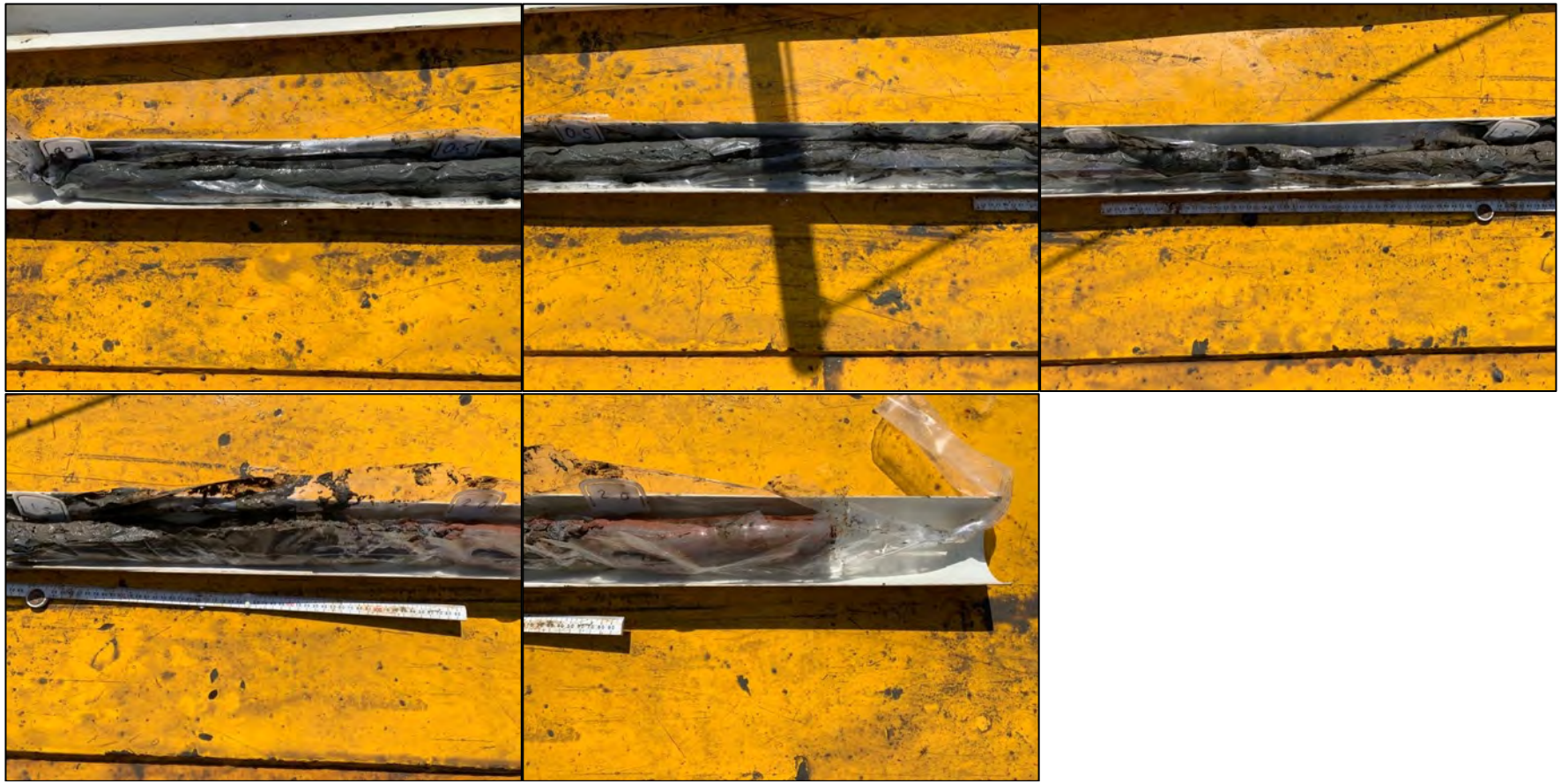

Fig. B 10 Site CBH10, surface to bottom (left to right).

Site CBH11

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	07-Nov-19	**Weather:**	Sunny, slight wind
Corer type:	Vibracore	**Sea conditions:**	Low tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
529444	6953809	13:00	1.9	4.0	0.9	-1	-5

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	dark greenish grey	silty clay	fine	nil	med	3	slight
1.0	dark greenish grey	silty clay	fine	nil	med	1	slight
1.25	dark greenish grey	silty clay	fine	nil	med	1	nil
1.5	dark greenish grey	silty clay	fine	nil	high	1	nil
2.75	dark greenish grey	silty clay	fine	nil	high	0	nil
3.25	dark greenish grey	silty clay	fine	nil	very high	0	nil
3.5	Olive	clay	fine	nil	very high	0	nil
4	Olive	clay	fine	nil	very high	0	nil

Comment: Core sampled to 3 m depth. Lots of shell material on surface made it difficult for corer to penetrate on first tries.

Fig. B 11 Site CBH11, surface to bottom (left to right)

Site CBH12

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	12-Nov-19	**Weather:**	Sunny, slight wind
Corer type:	Vibracore	**Sea conditions:**	Receeding tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
529613	6953827	13:55	4	2.0	0.9	-3.1	-5.1

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	Very dark greenish grey	silty sand	med fine	nil	low	1	nil
0.25	Very dark greenish grey	silty	fine	nil	low	1	nil
1.0	dark olive grey	silty	fine	nil	low	nil	nil
1.5	dark olive grey	silty clay	fine	nil	low	nil	nil
1.75	dark olive grey	clay	fine	Nil	med	nil	nil
2.0	dark olive grey	clay	fine	Nil	med	nil	nil

Comment: Red stripes at bottom of core. Only 1 m sampled (0.95 m required).

Fig. B 12 Site CBH12, surface to bottom (left to right).

Site CBH13

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	14-Nov-19	**Weather:**	Sunny, slight wind
Corer type:	Vibracore	**Sea conditions:**	Rising tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
529727	6953716	9:15	5	2.5	2.1	-2.9	-5.4

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	very dark greenish grey	silty sand	med fine	nil	low	<1	slight
0.5	very dark greenish grey	silty	fine	nil	low	nil	nil
1.5	dark greyish olive	silty	fine	nil	low med	nil	nil
2.25	greyish olive	silty	fine	nil	high	nil	nil

Comment: Layer of organic matter on surface. Reddish brown stripes at bottom of core. Only top 1 m sampled (0.75 m required).

Fig. B 13 Site CBH13, surface to bottom (left to right).

Site CBH14

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	14-Nov-19	**Weather:**	Sunny, light wind
Corer type:	Vibracore	**Sea conditions:**	Receeding tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
530086	6953611	8:01	4.1	3.2	1.5	-2.6	-5.8

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	greenish black	silty sand	med fine	nil	very low	1	nil
0.5	very dark greenish grey	silty	fine	nil	low	1	nil
1.0	very dark greenish grey	silty	fine	nil	low	nil	nil
1.5	very dark greyish olive	silt	fine	nil	low	nil	nil
2.0	very dark greyish olive	clay	fine	nil	low med	nil	nil
3.0	very dark greyish olive	clay	fine	nil	med	5	nil
3.2	very dark greyish olive	gravel clay	coarse fine	nil	high	5	nil

Comments: Only first 1 m of core was sampled (0.75 m required).

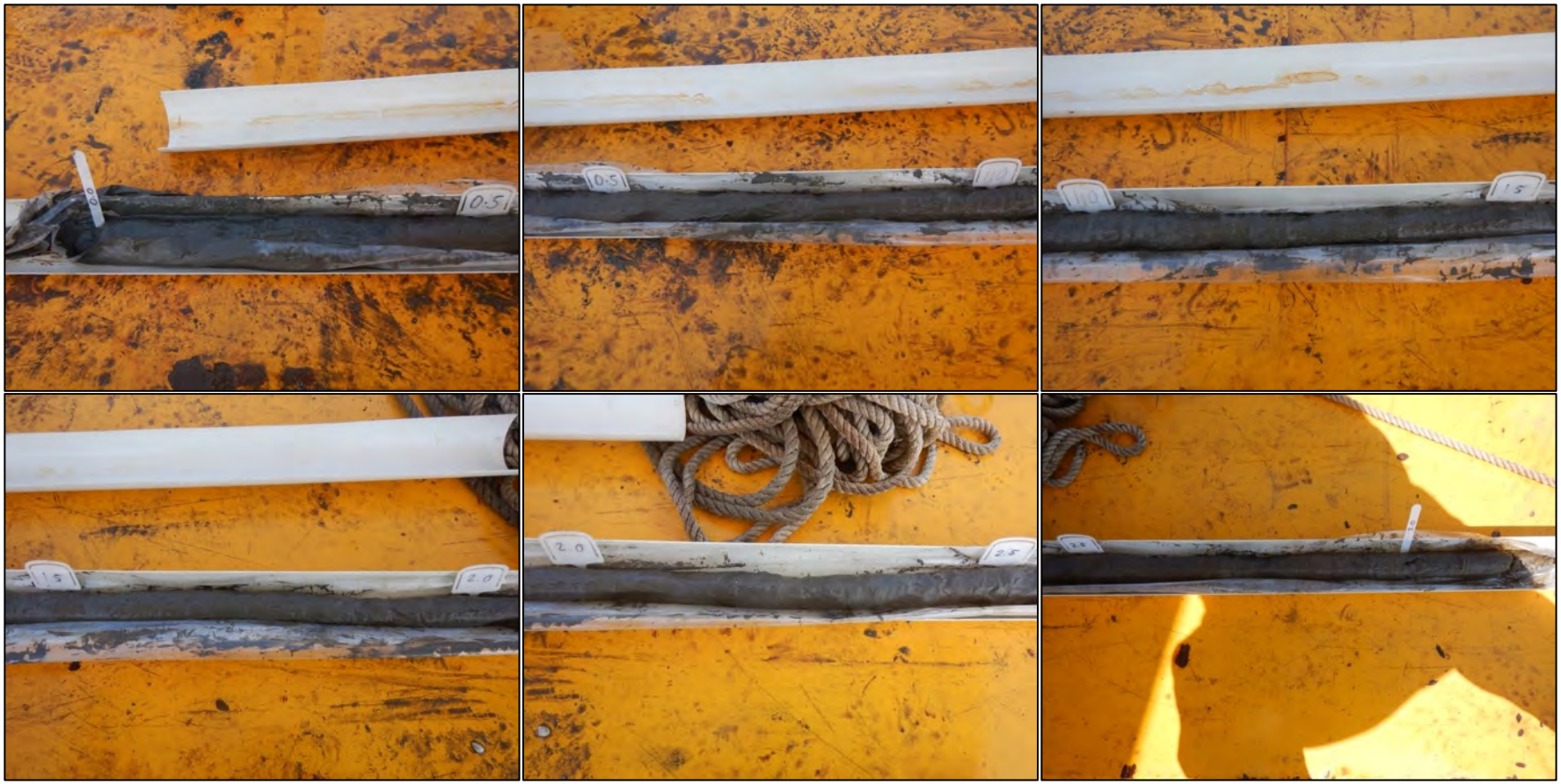

Fig. B 14 Site CBH14, surface to bottom (left to right).

Site REC1

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	13-Nov-19	**Weather:**	Sunny, moderate wind
Corer type:	Vibracore	**Sea conditions:**	Receeding tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
528376	6955544	9:40	1.1	0.25	2.4	1.3	1.05

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	greenish grey	clay	fine	nil	high	nil	nil
0.25	dark red	clay	fine	nil	high	nil	nil

Comments: All gravel with clay. It took several attempts to retrieve core due to substrate being gravel and hard clay. Site was close to park and residential areas, people present.
Samples were not mixed properly in field due to clay hardness, laboratory was advised to ensure sample gets properly mixed before analysing.

Please note that core photographed was not sampled, but used for example only.

Fig. B 15 Site REC1, surface to bottom (left to right).

Site REC2

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	13-Nov-19	**Weather:**	Sunny, slight wind
Corer type:	Vibracore	**Sea conditions:**	Rising tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
528605	6955343	8:10	1.3	0.5	2	0.7	0.2

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	dark olive grey	silty sand	course fine	nil	low	20	nil
0.75	olive	clay	fine	nil	med	nil	nil
1.0	olive	clay	fine	nil	med	nil	nil

Comments: Sample depth not reached due to substrate type (3.95 m depth required). Only the first 0.5 m was retrieved and sampled, not all samples were successfully collected due to limited volume of sediment. Several attempts were made to collect enough sediment for sampling.
Gravel present on surface.

Fig. B 16 Site REC2, surface to bottom (left to right).

Site REC3

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	12-Nov-19	**Weather:**	Sunny, moderate wind
Corer type:	Vibracore	**Sea conditions:**	Rising tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
528451	6955185	8:00	1.3	2.5	2.1	0.8	-1.7

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	very dark greenish grey	silty sand	med fine	nil	very low	12	nil
0.75	very dark greenish grey	silty	fine	nil	very low	2	nil
1.0	dark olive grey	silty	fine	nil	very low	2	nil
1.25	dark olive grey	silty clay	fine	nil	med	2	nil
1.75	olive	silty clay	fine	nil	med	0	nil
2.25	olive grey	clay	fine	nil	high	0	nil
2.5	olive grey	clay	fine	nil	high	0	nil

Comments: Required length not achieved (3.95 m) due to hard clay plug at bottom of the core. Reddish stripes at bottom of the core.

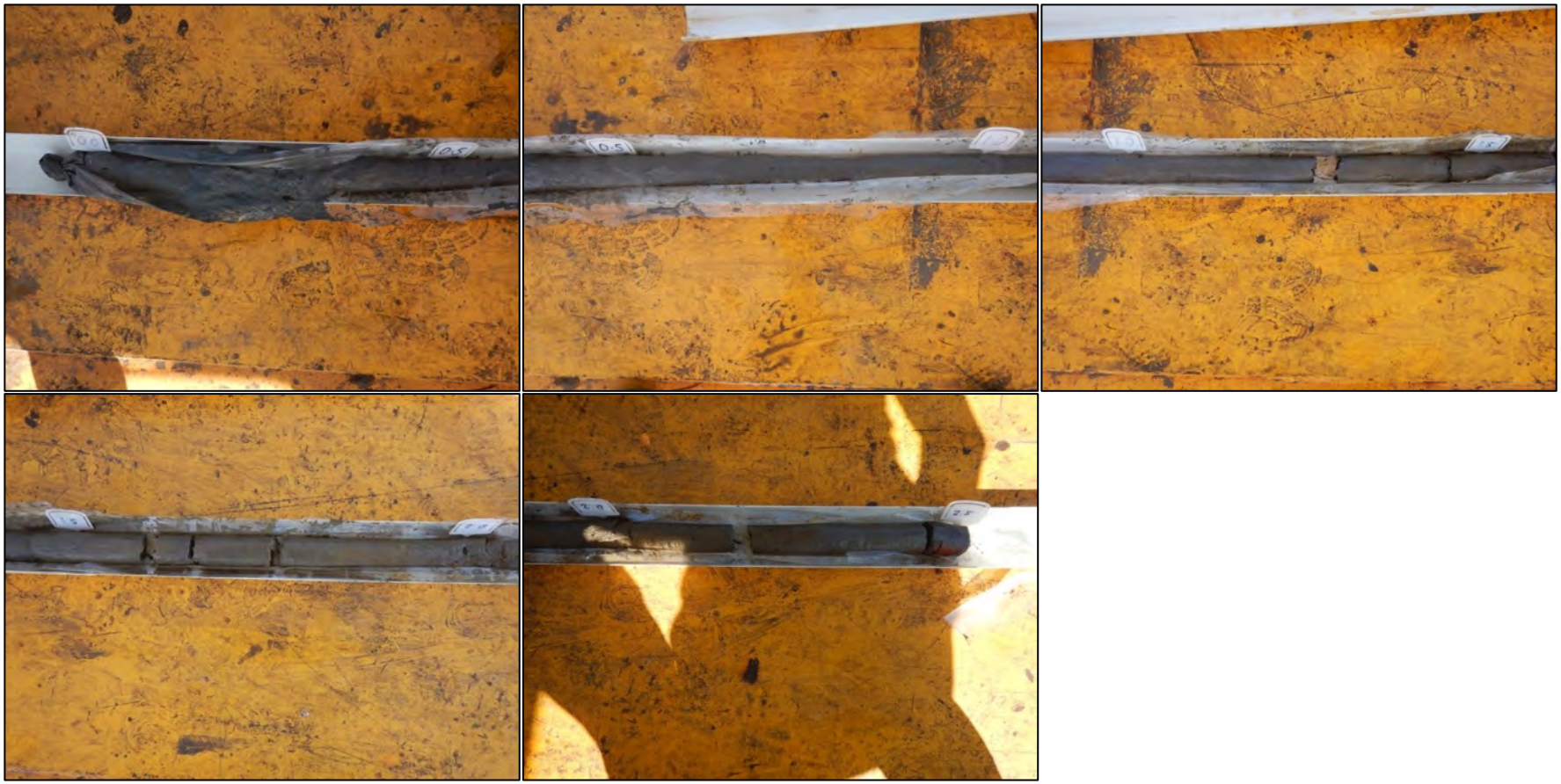

Fig. B 17 Site REC3, surface to bottom (left to right).

Site REC4

Client:	Walker Group	**Location:**	Toondah Harbour
Date:	12-Nov-19	**Weather:**	Sunny, moderate wind
Corer type:	Vibracore	**Sea conditions:**	High tide
Scientist:	DA	**Core taken by:**	GeoTech
Composite subsample taken by:	DA	**Core cleaned by:**	GeoTech

Easting (MGA, Zone 56)	Northing (MGA, Zone 56)	Time (24 hrs)	Water Depth (m)	Core Length (m)	Tide wrt LAT (m)	Top of Core wrt LAT (m)	Bottom of Core wrt LAT (m)
528552	6954836	9:15	1.8	4.0	2.3	0.5	-3.5

Depth (m)	Colour (Munsell)	Particle Size	Texture	Mottles	Plasticity	Shell (%)	Odour
0	dark greenish grey	silty sand	med fine	nil	low	5	nil
1.5	dark greenish grey	silty	fine	nil	low	5	nil
1.75	dark greenish grey	silty clay	fine	nil	low	5	nil
2.0	dark greenish grey	silty clay	fine	nil	low	1	nil
2.5	greenish black	silty clay	fine	nil	low	0	nil
3.5	greenish black	clay	fine	nil	high	0	nil
3.75	very dark grey	clay	fine	nil	high	0	nil
4.0	very dark grey	clay	fine	nil	high	0	nil

Comments: Required core depth (4.25 m) not achieved due to hard clay plug at bottom of the core.

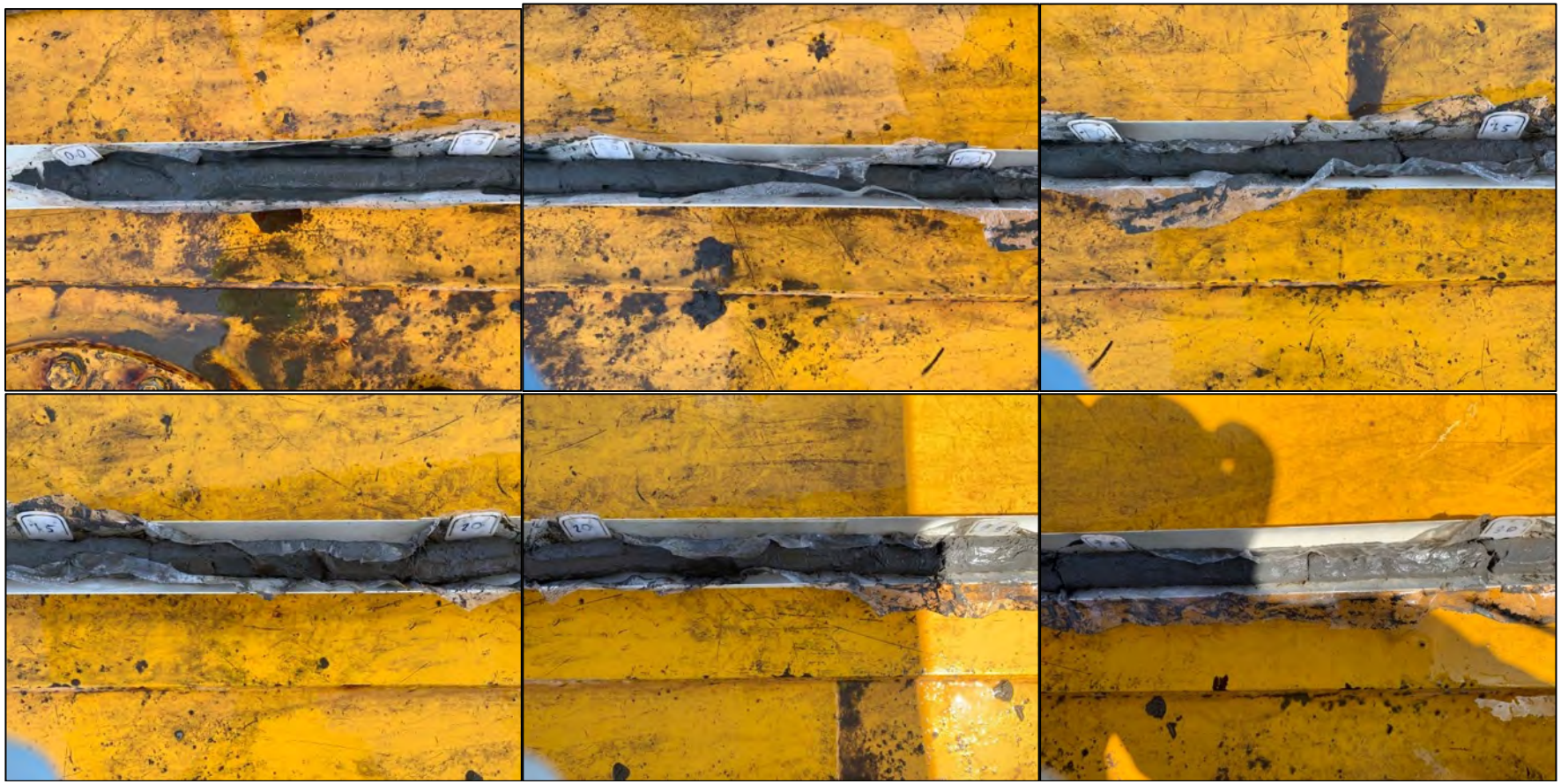

Fig. B 18 Site REC4, surface to bottom (left to right).

Appendix C Laboratory Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1929789**	Page	: 1 of 82
Client	: **FRC ENVIRONMENTAL**	Laboratory	: Environmental Division Brisbane
Contact	: MS DEYA ANGULO	Contact	: Andrew Epps
Address	: PO BOX 2363 WELLINGTON POINT QLD, AUSTRALIA 4160	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61 7 3552 8639
Project	: Q001969	Date Samples Received	: 07-Nov-2019 13:20
Order number	: ----	Date Analysis Commenced	: 08-Nov-2019
C-O-C number	: ----	Issue Date	: 09-Dec-2019 09:11
Sampler	: DEYA ANGULO		
Site	: WG Toondah Sediment		
Quote number	: BN/268/19		
No. of samples received	: 47		
No. of samples analysed	: 43		

ilac-MRA NATA
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*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Dave Gitsham	Metals Instrument Chemist	Brisbane Inorganics, Stafford, QLD
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
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	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.

- EK026SF (Total Cyanide): Some samples have raised LOR due to high moisture content.
- EA150H: Soil particle density results for Sample #37 fell outside the scope of AS1289.3.6.3. Results should be scrutinised accordingly.
- EA150H: Soil Particle Density required for Hydrometer analysis according to AS 1289.3.5.1 2006 was unable to be performed on samples #3, #4, #10 & #17 as insufficient sample was supplied by the client. Typical sediment SPD values used for calculations and consequently NATA endorsement does not apply to hydrometer results.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EK067G (Total Phosphorous as P): Sample EB1929789_003 shows poor spike recovery due to sample heterogeneity. This has been confirmed by visual inspection.
- EK026SF (Total Cyanide by SFA): LOR raised due to high moisture content.
- EP201: Some samples have raised LOR due to high moisture content.
- EP132B-SD : Particular sample raised LOR due to high amount of moistures is present.
- EP131B : LOR is raised due to high amount of moistures is present.
- EP202: Poor matrix spike recoveries for Picloram and Clopyralid due to matrix effects.
- **Specialised Organics analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). Estimated due date for results 26/11/19**
- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- EG020-SD (Total Metals in Sediments by ICP-MS): Sample EB1929789-018(REC3_A) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EG020-SD (Total Metals in Sediments by ICP-MS): Sample EB1929789-021(REC3_C) shows poor matrix spike recovery results due to sample heterogeneity. Confirmed by visual inspection.
- EB094: The LOR for particular sample has been raised due to matrix interference.
- EP074-LL: Sample 'CBH1.3_A' shows poor matrix spike recovery due to matrix interference. Confirmed by re-extraction and re-analysis.
- EP090 Organotins: Sample 'CBH2_B1' shows poor matrix spike recovery due to matrix interference.
- EP090: High surrogate recovery deemed acceptable as all associated analyte results are less than LOR
- EK067G (Total Phosphorous as P): Sample EB1929789_002 shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- EG020-SD (Total Metals in Sediments by ICP-MS): Sample EB1929789 – 001 (CBH4_CLAY) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EG020-SD (Total Metals in Sediments by ICP-MS): Sample EB1929789 – 011 (CBH3_B2) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EG005SD (Total Fe and Al in Sediment by ICPAES): Sample EB1929789-001 (CBH4_CLAY) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.

- EG005T (Total Metals by ICP-AES): Sample EB1929789 – 018 (REC3_A) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EG005-SD (Total Fe and Al in Sediments by ICP-AES): Sample EB1929789 - 041 (CBH13_A_S2) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- ASS: EA033 (CRS Suite): Laboratory determinations of ANC needs to be corroborated by effectiveness of the measured ANC in relation to incubation ANC. Unless corroborated, the results of ANC testing should be discounted when determining Net Acidity for comparison with action criteria, or for the determination of the acidity hazard and required liming amounts.
- ASS: EA033 (CRS Suite): 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'.
- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_CLAY	CBH1.1_CLAY	CBH1.3_A	CBH4_C	CBH4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-001	EB1929789-002	EB1929789-003	EB1929789-004	EB1929789-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.2	8.5	8.8	7.4	9.1
pH (Fox)	----	0.1	pH Unit	3.0	7.0	7.3	2.5	7.1
Reaction Rate	----	1	Reaction Unit	3	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.5	8.3	8.4	6.6	8.9
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.033	0.710	0.538	0.566	1.09
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	21	443	336	353	679
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	4.66	3.29	7.06	4.01	27.5
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	932	658	1410	801	5490
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.49	1.05	2.26	1.28	8.80
EA033-E: 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	0.03	0.71	0.54	0.56	1.09
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	21	443	336	353	679
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	33	25	26	51
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	28.1	56.0	48.0	33.5	42.0
EA150: Particle Sizing								
+75µm	----	1	%	21	11	14	11	27
+150µm	----	1	%	14	10	12	6	23
+300µm	----	1	%	7	9	10	2	21
+425µm	----	1	%	6	9	9	2	20
+600µm	----	1	%	5	8	7	1	19
+1180µm	----	1	%	4	8	4	<1	17

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_CLAY	CBH1.1_CLAY	CBH1.3_A	CBH4_C	CBH4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-001	EB1929789-002	EB1929789-003	EB1929789-004	EB1929789-005
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	3	6	2	<1	15
+4.75mm	----	1	%	2	4	2	<1	12
+9.5mm	----	1	%	<1	<1	<1	<1	3
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	58	69	44	67	32
Silt (2-60 µm)	----	1	%	18	17	36	18	36
Sand (0.06-2.00 mm)	----	1	%	21	7	17	15	17
Gravel (>2mm)	----	1	%	3	7	3	<1	15
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	3.00	2.81	----	----	2.75
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	5900	16000	9780	9780	10400
Iron	7439-89-6	50	mg/kg	54000	45800	64800	62500	28800
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	2.01	15.2	23.4	2.24	11.4
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	35.5	56.4	154	55.8	27.9
Copper	7440-50-8	1.0	mg/kg	37.1	12.1	24.3	33.9	5.7
Cobalt	7440-48-4	0.5	mg/kg	8.4	12.0	7.9	23.2	7.8
Lead	7439-92-1	1.0	mg/kg	6.9	11.8	10.7	9.3	5.1
Manganese	7439-96-5	10	mg/kg	41	320	247	55	206
Nickel	7440-02-0	1.0	mg/kg	5.9	16.3	10.5	19.9	11.3
Selenium	7782-49-2	0.1	mg/kg	0.2	0.7	0.3	0.3	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	84.4	69.7	74.3	112	33.4
Zinc	7440-66-6	1.0	mg/kg	1.8	45.9	54.4	1.6	29.2
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	0.04	0.02	<0.01	<0.01
EK026SF: Total CN by Segmented Flow Analyser								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_CLAY	CBH1.1_CLAY	CBH1.3_A	CBH4_C	CBH4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-001	EB1929789-002	EB1929789-003	EB1929789-004	EB1929789-005
				Result	Result	Result	Result	Result
EK026SF: Total CN by Segmented Flow Analyser - Continued								
Total Cyanide	57-12-5	1	mg/kg	----	<2	<1	----	<1
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	----	<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
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
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	1750	1100	----	760
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	1750	1100	----	760
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	424	491	----	311
EK255A SD: Ammonia in Sediment								
Ammonia as N	7664-41-7	0.2	mg/kg	----	220	99.6	----	1.3
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.43	0.84	0.92	0.73	0.49
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	2.04	1.49	1.98	1.83	4.13
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	1.61	0.65	1.06	1.10	3.64
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.1	mg/kg	----	<0.1	<0.1	----	<0.1
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
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
Chloromethane	74-87-3	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
Vinyl chloride	75-01-4	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
Bromomethane	74-83-9	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
Chloroethane	75-00-3	0.5	mg/kg	----	<0.5	<0.5	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_CLAY	CBH1.1_CLAY	CBH1.3_A	CBH4_C	CBH4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-001	EB1929789-002	EB1929789-003	EB1929789-004	EB1929789-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Trichlorofluoromethane	75-69-4	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
trans-1.2-Dichloroethene	156-60-5	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
1.1-Dichloroethane	75-34-3	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
cis-1.2-Dichloroethene	156-59-2	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
1.1.1-Trichloroethane	71-55-6	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Carbon Tetrachloride	56-23-5	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
1.2-Dichloroethane	107-06-2	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Trichloroethene	79-01-6	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Tetrachloroethene	127-18-4	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
1.1.1.2-Tetrachloroethane	630-20-6	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
1.1.2.2-Tetrachloroethane	79-34-5	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Hexachlorobutadiene	87-68-3	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Bromobenzene	108-86-1	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
2-Chlorotoluene	95-49-8	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
4-Chlorotoluene	106-43-4	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
1.3-Dichlorobenzene	541-73-1	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
1.4-Dichlorobenzene	106-46-7	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
1.2-Dichlorobenzene	95-50-1	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
1.2.4-Trichlorobenzene	120-82-1	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
1.2.3-Trichlorobenzene	87-61-6	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Bromodichloromethane	75-27-4	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Dibromochloromethane	124-48-1	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Bromoform	75-25-2	0.10	mg/kg	----	<0.10	<0.10	----	<0.10
EP074H: Naphthalene								
Naphthalene	91-20-3	0.10	mg/kg	----	<0.10	<0.10	----	<0.10
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_CLAY	CBH1.1_CLAY	CBH1.3_A	CBH4_C	CBH4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-001	EB1929789-002	EB1929789-003	EB1929789-004	EB1929789-005
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	<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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_CLAY	CBH1.1_CLAY	CBH1.3_A	CBH4_C	CBH4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-001	EB1929789-002	EB1929789-003	EB1929789-004	EB1929789-005
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	**1.4**	<0.5	<0.5
EP094A: Synthetic Pyrethroids								
Bioresmethrin	28434-01-07	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Bifenthrin	82657-04-3	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Phenothrin	26002-80-2	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Lambda-cyhalothrin	68085-85-8	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Permethrin	52645-53-1	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Cyfluthrin	68359-37-5	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Cypermethrin	52315-07-8	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Fenvalerate & Esfenvalerate	51630-58-1/66230-04-	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Deltamethrin & Tralomethrin	62229-77-0/66841-25-	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Allethrin	584-79-2	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Transfluthrin	118712-89-3	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Tetramethrin	7696-12-0	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Tau-fluvalinate	102851-06-9	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
EP094B: Synergist								
Piperonyl Butoxide	63993-73-7	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_CLAY	CBH1.1_CLAY	CBH1.3_A	CBH4_C	CBH4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-001	EB1929789-002	EB1929789-003	EB1929789-004	EB1929789-005
				Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
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
4.4`-DDT	50-29-3	0.50	µg/kg	----	<0.50	<0.50	----	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_CLAY	CBH1.1_CLAY	CBH1.3_A	CBH4_C	CBH4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-001	EB1929789-002	EB1929789-003	EB1929789-004	EB1929789-005
				Result	Result	Result	Result	Result
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	----	<6.2	<5.0	----	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	----	<6.2	<5.0	----	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	----	<6.2	<5.0	----	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	----	<6.2	<5.0	----	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	----	<6.2	<5.0	----	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	----	<6.2	<5.0	----	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	----	<6.2	<5.0	----	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	----	<6.2	<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	<5	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg	<4	<5	<4	<4	<4
Fluorene	86-73-7	4	µg/kg	<4	<5	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg	<4	<5	**6**	<4	<4
Anthracene	120-12-7	4	µg/kg	<4	<5	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg	<4	**6**	**10**	<4	<4
Pyrene	129-00-0	4	µg/kg	<4	**7**	**10**	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg	<4	<5	**6**	<4	<4
Chrysene	218-01-9	4	µg/kg	<4	<5	**6**	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	**6**	**7**	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<5	**4**	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<5	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<5	**6**	<4	<4
Perylene	198-55-0	4	µg/kg	<4	**46**	**34**	<4	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	**5**	<5	**6**	<4	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	<5	<4	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<5	**5**	<4	<4
Coronene	191-07-1	5	µg/kg	<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg	**5**	**65**	**100**	<4	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	----	----	<4	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	**5**	----	----	**5**	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	**10**	----	----	**10**	----
EP201: Carbamate Pesticides by LCMS								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_CLAY	CBH1.1_CLAY	CBH1.3_A	CBH4_C	CBH4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-001	EB1929789-002	EB1929789-003	EB1929789-004	EB1929789-005
				Result	Result	Result	Result	Result
EP201: Carbamate Pesticides by LCMS - Continued								
Oxamyl	23135-22-0	0.02	mg/kg	----	<0.04	<0.02	----	<0.02
Methomyl	16752-77-5	0.02	mg/kg	----	<0.04	<0.02	----	<0.02
3-Hydroxy Carbofuran	16655-82-6	0.02	mg/kg	----	<0.04	<0.02	----	<0.02
Aldicarb	116-06-3	0.02	mg/kg	----	<0.04	<0.02	----	<0.02
Bendiocarb	22781-23-3	0.02	mg/kg	----	<0.04	<0.02	----	<0.02
Thiodicarb	59669-26-0	0.02	mg/kg	----	<0.04	<0.02	----	<0.02
Carbofuran	1563-66-2	0.02	mg/kg	----	<0.04	<0.02	----	<0.02
Carbaryl	63-25-2	0.02	mg/kg	----	<0.04	<0.02	----	<0.02
Methiocarb	2032-65-7	0.02	mg/kg	----	<0.04	<0.02	----	<0.02
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
2.4-DB	94-82-6	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Dicamba	1918-00-9	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Mecoprop	93-65-2	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
MCPA	94-74-6	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
2.4-DP	120-36-5	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
2.4-D	94-75-7	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Triclopyr	55335-06-3	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
2.4.5-T	93-76-5	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
MCPB	94-81-5	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Picloram	1918-02-1	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Clopyralid	1702-17-6	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg	----	<0.02	<0.02	----	<0.02
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.5	%	----	**77.4**	**61.8**	----	**87.7**
Toluene-D8	2037-26-5	0.5	%	----	**80.1**	**60.6**	----	**83.5**
4-Bromofluorobenzene	460-00-4	0.5	%	----	**98.4**	**84.9**	----	**105**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**102**	**102**	**98.1**	**96.0**	**98.4**
2-Chlorophenol-D4	93951-73-6	0.5	%	**102**	**102**	**97.6**	**95.0**	**97.7**
2.4.6-Tribromophenol	118-79-6	0.5	%	**79.5**	**90.0**	**87.7**	**76.2**	**77.9**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**107**	**104**	**97.1**	**98.1**	**99.4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_CLAY	CBH1.1_CLAY	CBH1.3_A	CBH4_C	CBH4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-001	EB1929789-002	EB1929789-003	EB1929789-004	EB1929789-005
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
Anthracene-d10	1719-06-8	0.5	%	115	113	108	107	109
4-Terphenyl-d14	1718-51-0	0.5	%	134	136	128	123	125
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	99.3	93.3	89.8	97.1	98.8
Toluene-D8	2037-26-5	0.2	%	90.0	80.3	81.7	87.3	82.8
4-Bromofluorobenzene	460-00-4	0.2	%	109	99.7	93.9	105	102
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	111	97.8	99.7	93.8	62.2
EP094S: Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	94.1	87.7	----	71.3
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	----	50.8	62.9	----	51.0
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	----	83.8	74.0	----	70.9
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.5	%	----	56.6	76.6	----	95.5
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	89.6	73.0	76.3	72.2	72.8
Anthracene-d10	1719-06-8	10	%	112	85.4	103	86.6	94.1
4-Terphenyl-d14	1718-51-0	10	%	110	87.6	82.0	96.7	96.0
EP201S: Carbamate Surrogate								
4-Bromo-3.5-dimethylphenyl-N-m ethylcarbamate	672-99-1	0.02	%	----	108	102	----	114
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%	----	65.5	99.1	----	98.6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH1.1_A	CBH3_B1	CBH3_C	CBH1.1_C	CBH1.2_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-006	EB1929789-007	EB1929789-008	EB1929789-009	EB1929789-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.8	9.1	7.2	8.6	8.5
pH (Fox)	----	0.1	pH Unit	7.2	6.8	5.8	7.3	7.2
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.5	8.9	7.2	8.5	8.3
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.612	1.18	0.031	0.939	0.710
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	382	734	19	586	443
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	8.20	27.0	0.19	8.74	4.82
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1640	5400	38	1750	964
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.63	8.66	0.06	2.80	1.54
EA033-E: 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	0.61	1.18	0.03	0.94	0.71
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	382	734	19	586	443
Liming Rate excluding ANC	----	1	kg CaCO3/t	29	55	1	44	33
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	51.4	34.5	18.6	59.2	58.3
EA150: Particle Sizing								
+75µm	----	1	%	18	51	86	<1	2
+150µm	----	1	%	16	47	86	<1	2
+300µm	----	1	%	14	41	83	<1	2
+425µm	----	1	%	12	37	81	<1	1
+600µm	----	1	%	11	32	76	<1	1
+1180µm	----	1	%	8	26	56	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH1.1_A	CBH3_B1	CBH3_C	CBH1.1_C	CBH1.2_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-006	EB1929789-007	EB1929789-008	EB1929789-009	EB1929789-010
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	5	20	34	<1	<1
+4.75mm	----	1	%	4	13	14	<1	<1
+9.5mm	----	1	%	<1	3	4	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	40	26	14	60	60
Silt (2-60 µm)	----	1	%	38	17	<1	36	34
Sand (0.06-2.00 mm)	----	1	%	16	35	45	4	5
Gravel (>2mm)	----	1	%	6	22	41	<1	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.76	2.80	2.98	2.76	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	11500	9490	11300	16800	15400
Iron	7439-89-6	50	mg/kg	40700	44300	99000	47400	48000
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	16.4	16.9	5.93	16.8	16.2
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	45.0	155	321	48.8	48.4
Copper	7440-50-8	1.0	mg/kg	12.6	5.5	5.3	12.1	11.5
Cobalt	7440-48-4	0.5	mg/kg	9.1	5.7	7.3	12.0	11.7
Lead	7439-92-1	1.0	mg/kg	10.2	4.7	5.2	13.2	11.6
Manganese	7439-96-5	10	mg/kg	311	130	58	534	530
Nickel	7440-02-0	1.0	mg/kg	12.0	9.4	18.9	17.2	16.6
Selenium	7782-49-2	0.1	mg/kg	0.3	0.5	0.3	0.6	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	57.9	55.8	113	64.4	64.1
Zinc	7440-66-6	1.0	mg/kg	53.8	17.3	16.4	53.6	48.8
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.02	0.01	0.01	0.04	0.04
EK026SF: Total CN by Segmented Flow Analyser								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH1.1_A	CBH3_B1	CBH3_C	CBH1.1_C	CBH1.2_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-006	EB1929789-007	EB1929789-008	EB1929789-009	EB1929789-010
				Result	Result	Result	Result	Result
EK026SF: Total CN by Segmented Flow Analyser - Continued								
Total Cyanide	57-12-5	1	mg/kg	<2	----	----	<2	<2
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<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
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
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	1290	----	----	2040	1950
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	1290	----	----	2040	1950
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	435	----	----	552	534
EK255A SD: Ammonia in Sediment								
Ammonia as N	7664-41-7	0.2	mg/kg	85.0	----	----	264	249
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.86	0.41	0.11	1.25	1.46
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	2.11	3.98	0.22	2.44	2.10
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	1.25	3.57	0.11	1.19	0.64
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.1	mg/kg	<0.1	----	----	<0.1	<0.1
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
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Chloromethane	74-87-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Vinyl chloride	75-01-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Bromomethane	74-83-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Chloroethane	75-00-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH1.1_A	CBH3_B1	CBH3_C	CBH1.1_C	CBH1.2_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-006	EB1929789-007	EB1929789-008	EB1929789-009	EB1929789-010
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Trichlorofluoromethane	75-69-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
trans-1.2-Dichloroethene	156-60-5	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
1.1-Dichloroethane	75-34-3	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
cis-1.2-Dichloroethene	156-59-2	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
1.1.1-Trichloroethane	71-55-6	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Carbon Tetrachloride	56-23-5	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
1.2-Dichloroethane	107-06-2	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Trichloroethene	79-01-6	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Tetrachloroethene	127-18-4	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
1.1.1.2-Tetrachloroethane	630-20-6	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
1.1.2.2-Tetrachloroethane	79-34-5	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Hexachlorobutadiene	87-68-3	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Bromobenzene	108-86-1	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
2-Chlorotoluene	95-49-8	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
4-Chlorotoluene	106-43-4	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
1.3-Dichlorobenzene	541-73-1	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
1.4-Dichlorobenzene	106-46-7	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
1.2-Dichlorobenzene	95-50-1	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
1.2.4-Trichlorobenzene	120-82-1	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
1.2.3-Trichlorobenzene	87-61-6	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Bromodichloromethane	75-27-4	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Dibromochloromethane	124-48-1	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Bromoform	75-25-2	0.10	mg/kg	<0.10	----	----	<0.10	<0.10
EP074H: Naphthalene								
Naphthalene	91-20-3	0.10	mg/kg	<0.10	----	----	<0.10	<0.10
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH1.1_A	CBH3_B1	CBH3_C	CBH1.1_C	CBH1.2_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-006	EB1929789-007	EB1929789-008	EB1929789-009	EB1929789-010
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	<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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH1.1_A	CBH3_B1	CBH3_C	CBH1.1_C	CBH1.2_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-006	EB1929789-007	EB1929789-008	EB1929789-009	EB1929789-010
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	**13.4**	<0.5	<0.5	<0.5	<0.5
EP094A: Synthetic Pyrethroids								
Bioresmethrin	28434-01-07	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Phenothrin	26002-80-2	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Lambda-cyhalothrin	68085-85-8	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Permethrin	52645-53-1	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Cyfluthrin	68359-37-5	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Cypermethrin	52315-07-8	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Fenvalerate & Esfenvalerate	51630-58-1/66230-04-	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Deltamethrin & Tralomethrin	62229-77-0/66841-25-	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Allethrin	584-79-2	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Transfluthrin	118712-89-3	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Tetramethrin	7696-12-0	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
Tau-fluvalinate	102851-06-9	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
EP094B: Synergist								
Piperonyl Butoxide	63993-73-7	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH1.1_A	CBH3_B1	CBH3_C	CBH1.1_C	CBH1.2_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-006	EB1929789-007	EB1929789-008	EB1929789-009	EB1929789-010
				Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
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
4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	----	----	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH1.1_A	CBH3_B1	CBH3_C	CBH1.1_C	CBH1.2_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-006	EB1929789-007	EB1929789-008	EB1929789-009	EB1929789-010
				Result	Result	Result	Result	Result
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<6.2	----	----	<6.2	<6.2
Aroclor 1016	12674-11-2	5.0	µg/kg	<6.2	----	----	<6.2	<6.2
Aroclor 1221	11104-28-2	5.0	µg/kg	<6.2	----	----	<6.2	<6.2
Aroclor 1232	11141-16-5	5.0	µg/kg	<6.2	----	----	<6.2	<6.2
Aroclor 1242	53469-21-9	5.0	µg/kg	<6.2	----	----	<6.2	<6.2
Aroclor 1248	12672-29-6	5.0	µg/kg	<6.2	----	----	<6.2	<6.2
Aroclor 1254	11097-69-1	5.0	µg/kg	<6.2	----	----	<6.2	<6.2
Aroclor 1260	11096-82-5	5.0	µg/kg	<6.2	----	----	<6.2	<6.2
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	<5	<5	6	6
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg	<5	<4	<4	<5	<5
Acenaphthene	83-32-9	4	µg/kg	<5	<4	<4	<5	<5
Fluorene	86-73-7	4	µg/kg	<5	<4	<4	<5	<5
Phenanthrene	85-01-8	4	µg/kg	<5	<4	<4	<5	<5
Anthracene	120-12-7	4	µg/kg	<5	<4	<4	<5	<5
Fluoranthene	206-44-0	4	µg/kg	5	<4	<4	9	10
Pyrene	129-00-0	4	µg/kg	5	<4	<4	10	10
Benz(a)anthracene	56-55-3	4	µg/kg	<5	<4	<4	6	<5
Chrysene	218-01-9	4	µg/kg	<5	<4	<4	<5	6
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<5	<4	<4	8	8
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<5	<4	<4	5	<5
Benzo(e)pyrene	192-97-2	4	µg/kg	<5	<4	<4	<5	<5
Benzo(a)pyrene	50-32-8	4	µg/kg	<5	<4	<4	6	6
Perylene	198-55-0	4	µg/kg	7	<4	<4	240	212
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<5	<4	<4	7	6
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<5	<4	<4	<5	<5
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<5	<4	<4	5	<5
Coronene	191-07-1	5	µg/kg	<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg	17	<4	<4	302	264
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	----	<4	<4	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	----	5	5	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	----	10	10	----	----
EP201: Carbamate Pesticides by LCMS								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH1.1_A	CBH3_B1	CBH3_C	CBH1.1_C	CBH1.2_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-006	EB1929789-007	EB1929789-008	EB1929789-009	EB1929789-010
				Result	Result	Result	Result	Result
EP201: Carbamate Pesticides by LCMS - Continued								
Oxamyl	23135-22-0	0.02	mg/kg	<0.04	----	----	<0.04	<0.04
Methomyl	16752-77-5	0.02	mg/kg	<0.04	----	----	<0.04	<0.04
3-Hydroxy Carbofuran	16655-82-6	0.02	mg/kg	<0.04	----	----	<0.04	<0.04
Aldicarb	116-06-3	0.02	mg/kg	<0.04	----	----	<0.04	<0.04
Bendiocarb	22781-23-3	0.02	mg/kg	<0.04	----	----	<0.04	<0.04
Thiodicarb	59669-26-0	0.02	mg/kg	<0.04	----	----	<0.04	<0.04
Carbofuran	1563-66-2	0.02	mg/kg	<0.04	----	----	<0.04	<0.04
Carbaryl	63-25-2	0.02	mg/kg	<0.04	----	----	<0.04	<0.04
Methiocarb	2032-65-7	0.02	mg/kg	<0.04	----	----	<0.04	<0.04
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
2.4-DB	94-82-6	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Dicamba	1918-00-9	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Mecoprop	93-65-2	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
MCPA	94-74-6	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
2.4-DP	120-36-5	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
2.4-D	94-75-7	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Triclopyr	55335-06-3	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
2.4.5-T	93-76-5	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
MCPB	94-81-5	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Picloram	1918-02-1	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Clopyralid	1702-17-6	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	----	----	<0.02	<0.02
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.5	%	**80.9**	----	----	**82.5**	**77.0**
Toluene-D8	2037-26-5	0.5	%	**80.1**	----	----	**80.2**	**74.2**
4-Bromofluorobenzene	460-00-4	0.5	%	**97.4**	----	----	**97.4**	**91.1**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**95.8**	**105**	**101**	**107**	**102**
2-Chlorophenol-D4	93951-73-6	0.5	%	**102**	**102**	**97.3**	**107**	**102**
2.4.6-Tribromophenol	118-79-6	0.5	%	**93.5**	**105**	**102**	**116**	**107**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**86.8**	**93.5**	**91.7**	**103**	**93.9**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH1.1_A	CBH3_B1	CBH3_C	CBH1.1_C	CBH1.2_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-006	EB1929789-007	EB1929789-008	EB1929789-009	EB1929789-010
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
Anthracene-d10	1719-06-8	0.5	%	101	105	108	112	104
4-Terphenyl-d14	1718-51-0	0.5	%	128	123	129	131	124
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	90.7	93.3	89.7	94.4	86.0
Toluene-D8	2037-26-5	0.2	%	79.5	85.6	77.6	79.6	73.7
4-Bromofluorobenzene	460-00-4	0.2	%	94.6	102	98.0	95.7	88.6
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	89.8	119	104	93.4	114
EP094S: Pesticide Surrogate								
DEF	78-48-8	0.05	%	83.4	----	----	87.5	79.4
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	62.8	----	----	38.8	50.0
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	78.0	----	----	39.8	55.3
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.5	%	81.1	----	----	59.4	68.2
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	80.9	71.8	71.5	77.6	78.0
Anthracene-d10	1719-06-8	10	%	88.9	87.5	86.9	81.5	90.9
4-Terphenyl-d14	1718-51-0	10	%	87.6	90.6	90.2	84.6	89.5
EP201S: Carbamate Surrogate								
4-Bromo-3.5-dimethylphenyl-N-m ethylcarbamate	672-99-1	0.02	%	120	----	----	109	117
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%	68.6	----	----	60.9	76.7

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH3_B2	CBH3_A	CBH4_B1	CBH4_A_R2	CBH1.2_C
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-011	EB1929789-012	EB1929789-013	EB1929789-014	EB1929789-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.8	9.1	8.7	9.2	8.7
pH (Fox)	----	0.1	pH Unit	4.1	6.5	7.3	7.1	7.3
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	7.7	8.7	8.6	8.8	8.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	1.30	1.09	0.949	1.07	0.694
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	811	678	592	668	433
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.31	18.1	14.5	19.1	5.07
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	262	3610	2900	3820	1010
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.42	5.79	4.66	6.13	1.62
EA033-E: 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	1.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	636	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	48	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	1.30	1.09	0.95	1.07	0.69
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	811	678	592	668	433
Liming Rate excluding ANC	----	1	kg CaCO3/t	61	51	44	50	32
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	30.6	38.9	47.8	----	52.4
EA150: Particle Sizing								
+75µm	----	1	%	62	42	18	----	10
+150µm	----	1	%	59	37	14	----	8
+300µm	----	1	%	50	31	10	----	6
+425µm	----	1	%	45	28	9	----	5
+600µm	----	1	%	39	26	7	----	3
+1180µm	----	1	%	31	21	5	----	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH3_B2	CBH3_A	CBH4_B1	CBH4_A_R2	CBH1.2_C
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-011	EB1929789-012	EB1929789-013	EB1929789-014	EB1929789-015
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	24	16	3	----	1
+4.75mm	----	1	%	16	10	1	----	<1
+9.5mm	----	1	%	3	4	<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	%	30	28	44	----	49
Silt (2-60 µm)	----	1	%	6	22	37	----	38
Sand (0.06-2.00 mm)	----	1	%	38	32	16	----	12
Gravel (>2mm)	----	1	%	26	18	3	----	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	----	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.80	2.73	2.76	----	2.69
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	18200	8440	12800	----	12100
Iron	7439-89-6	50	mg/kg	70100	44700	46600	----	47100
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	11.0	18.8	20.7	----	16.2
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	----	<0.1
Chromium	7440-47-3	1.0	mg/kg	234	78.7	60.6	----	54.5
Copper	7440-50-8	1.0	mg/kg	12.0	4.6	7.7	----	11.1
Cobalt	7440-48-4	0.5	mg/kg	12.5	6.6	7.0	----	9.4
Lead	7439-92-1	1.0	mg/kg	4.8	5.3	6.5	----	9.6
Manganese	7439-96-5	10	mg/kg	127	331	148	----	397
Nickel	7440-02-0	1.0	mg/kg	23.8	9.3	12.2	----	12.4
Selenium	7782-49-2	0.1	mg/kg	0.6	0.5	0.5	----	0.5
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	----	<0.1
Vanadium	7440-62-2	2.0	mg/kg	135	35.1	71.2	----	60.3
Zinc	7440-66-6	1.0	mg/kg	8.9	23.5	24.8	----	53.3
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.03	0.01	0.01	----	0.02
EK026SF: Total CN by Segmented Flow Analyser								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH3_B2	CBH3_A	CBH4_B1	CBH4_A_R2	CBH1.2_C
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-011	EB1929789-012	EB1929789-013	EB1929789-014	EB1929789-015
				Result	Result	Result	Result	Result
EK026SF: Total CN by Segmented Flow Analyser - Continued								
Total Cyanide	57-12-5	1	mg/kg	----	----	----	----	<2
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	----	----	----	----	1560
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	----	----	1560
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	----	----	473
EK255A SD: Ammonia in Sediment								
Ammonia as N	7664-41-7	0.2	mg/kg	----	----	----	----	128
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.87	0.77	0.51	----	1.25
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	1.21	3.15	2.63	----	1.94
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	0.34	2.38	2.12	----	0.69
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.1	mg/kg	----	----	----	----	<0.1
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
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	0.5	mg/kg	----	----	----	----	<0.5
Chloromethane	74-87-3	0.5	mg/kg	----	----	----	----	<0.5
Vinyl chloride	75-01-4	0.5	mg/kg	----	----	----	----	<0.5
Bromomethane	74-83-9	0.5	mg/kg	----	----	----	----	<0.5
Chloroethane	75-00-3	0.5	mg/kg	----	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH3_B2	CBH3_A	CBH4_B1	CBH4_A_R2	CBH1.2_C
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-011	EB1929789-012	EB1929789-013	EB1929789-014	EB1929789-015
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Trichlorofluoromethane	75-69-4	0.5	mg/kg	----	----	----	----	<0.5
trans-1.2-Dichloroethene	156-60-5	0.05	mg/kg	----	----	----	----	<0.05
1.1-Dichloroethane	75-34-3	0.05	mg/kg	----	----	----	----	<0.05
cis-1.2-Dichloroethene	156-59-2	0.05	mg/kg	----	----	----	----	<0.05
1.1.1-Trichloroethane	71-55-6	0.05	mg/kg	----	----	----	----	<0.05
Carbon Tetrachloride	56-23-5	0.05	mg/kg	----	----	----	----	<0.05
1.2-Dichloroethane	107-06-2	0.05	mg/kg	----	----	----	----	<0.05
Trichloroethene	79-01-6	0.05	mg/kg	----	----	----	----	<0.05
Tetrachloroethene	127-18-4	0.05	mg/kg	----	----	----	----	<0.05
1.1.1.2-Tetrachloroethane	630-20-6	0.05	mg/kg	----	----	----	----	<0.05
1.1.2.2-Tetrachloroethane	79-34-5	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobutadiene	87-68-3	0.05	mg/kg	----	----	----	----	<0.05
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.05	mg/kg	----	----	----	----	<0.05
Bromobenzene	108-86-1	0.05	mg/kg	----	----	----	----	<0.05
2-Chlorotoluene	95-49-8	0.05	mg/kg	----	----	----	----	<0.05
4-Chlorotoluene	106-43-4	0.05	mg/kg	----	----	----	----	<0.05
1.3-Dichlorobenzene	541-73-1	0.05	mg/kg	----	----	----	----	<0.05
1.4-Dichlorobenzene	106-46-7	0.05	mg/kg	----	----	----	----	<0.05
1.2-Dichlorobenzene	95-50-1	0.05	mg/kg	----	----	----	----	<0.05
1.2.4-Trichlorobenzene	120-82-1	0.05	mg/kg	----	----	----	----	<0.05
1.2.3-Trichlorobenzene	87-61-6	0.05	mg/kg	----	----	----	----	<0.05
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.05	mg/kg	----	----	----	----	<0.05
Bromodichloromethane	75-27-4	0.05	mg/kg	----	----	----	----	<0.05
Dibromochloromethane	124-48-1	0.05	mg/kg	----	----	----	----	<0.05
Bromoform	75-25-2	0.10	mg/kg	----	----	----	----	<0.10
EP074H: Naphthalene								
Naphthalene	91-20-3	0.10	mg/kg	----	----	----	----	<0.10
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH3_B2	CBH3_A	CBH4_B1	CBH4_A_R2	CBH1.2_C
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-011	EB1929789-012	EB1929789-013	EB1929789-014	EB1929789-015
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	----	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH3_B2	CBH3_A	CBH4_B1	CBH4_A_R2	CBH1.2_C
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-011	EB1929789-012	EB1929789-013	EB1929789-014	EB1929789-015
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	<0.2
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	----	**28.4**
EP094A: Synthetic Pyrethroids								
Bioresmethrin	28434-01-07	0.05	mg/kg	----	----	----	----	<0.05
Bifenthrin	82657-04-3	0.05	mg/kg	----	----	----	----	<0.05
Phenothrin	26002-80-2	0.05	mg/kg	----	----	----	----	<0.05
Lambda-cyhalothrin	68085-85-8	0.05	mg/kg	----	----	----	----	<0.05
Permethrin	52645-53-1	0.05	mg/kg	----	----	----	----	<0.05
Cyfluthrin	68359-37-5	0.05	mg/kg	----	----	----	----	<0.05
Cypermethrin	52315-07-8	0.05	mg/kg	----	----	----	----	<0.05
Fenvalerate & Esfenvalerate	51630-58-1/66230-04-	0.05	mg/kg	----	----	----	----	<0.05
Deltamethrin & Tralomethrin	62229-77-0/66841-25-	0.05	mg/kg	----	----	----	----	<0.05
Allethrin	584-79-2	0.05	mg/kg	----	----	----	----	<0.05
Transfluthrin	118712-89-3	0.05	mg/kg	----	----	----	----	<0.05
Tetramethrin	7696-12-0	0.05	mg/kg	----	----	----	----	<0.05
Tau-fluvalinate	102851-06-9	0.05	mg/kg	----	----	----	----	<0.05
EP094B: Synergist								
Piperonyl Butoxide	63993-73-7	0.05	mg/kg	----	----	----	----	<0.05
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH3_B2	CBH3_A	CBH4_B1	CBH4_A_R2	CBH1.2_C
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-011	EB1929789-012	EB1929789-013	EB1929789-014	EB1929789-015
				Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
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	72-54-8/72-55-9/50-2	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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH3_B2	CBH3_A	CBH4_B1	CBH4_A_R2	CBH1.2_C
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-011	EB1929789-012	EB1929789-013	EB1929789-014	EB1929789-015
				Result	Result	Result	Result	Result
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	----	----	----	----	<6.2
Aroclor 1016	12674-11-2	5.0	µg/kg	----	----	----	----	<6.2
Aroclor 1221	11104-28-2	5.0	µg/kg	----	----	----	----	<6.2
Aroclor 1232	11141-16-5	5.0	µg/kg	----	----	----	----	<6.2
Aroclor 1242	53469-21-9	5.0	µg/kg	----	----	----	----	<6.2
Aroclor 1248	12672-29-6	5.0	µg/kg	----	----	----	----	<6.2
Aroclor 1254	11097-69-1	5.0	µg/kg	----	----	----	----	<6.2
Aroclor 1260	11096-82-5	5.0	µg/kg	----	----	----	----	<6.2
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	----	<5
Acenaphthene	83-32-9	4	µg/kg	<4	<4	<4	----	<5
Fluorene	86-73-7	4	µg/kg	<4	<4	<4	----	<5
Phenanthrene	85-01-8	4	µg/kg	<4	<4	<4	----	<5
Anthracene	120-12-7	4	µg/kg	<4	<4	<4	----	<5
Fluoranthene	206-44-0	4	µg/kg	<4	<4	<4	----	7
Pyrene	129-00-0	4	µg/kg	<4	<4	<4	----	8
Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	<4	----	<5
Chrysene	218-01-9	4	µg/kg	<4	<4	<4	----	<5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	<4	<4	----	6
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	<4	----	<5
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	<4	----	<5
Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	<4	----	5
Perylene	198-55-0	4	µg/kg	<4	<4	<4	----	46
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<4	<4	<4	----	5
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	<4	<4	----	<5
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	<4	----	<5
Coronene	191-07-1	5	µg/kg	<5	<5	<5	----	<5
^ Sum of PAHs	----	4	µg/kg	<4	<4	<4	----	82
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	<4	<4	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	5	5	5	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	10	10	10	----	----
EP201: Carbamate Pesticides by LCMS								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH3_B2	CBH3_A	CBH4_B1	CBH4_A_R2	CBH1.2_C
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-011	EB1929789-012	EB1929789-013	EB1929789-014	EB1929789-015
				Result	Result	Result	Result	Result
EP201: Carbamate Pesticides by LCMS - Continued								
Oxamyl	23135-22-0	0.02	mg/kg	----	----	----	----	<0.04
Methomyl	16752-77-5	0.02	mg/kg	----	----	----	----	<0.04
3-Hydroxy Carbofuran	16655-82-6	0.02	mg/kg	----	----	----	----	<0.04
Aldicarb	116-06-3	0.02	mg/kg	----	----	----	----	<0.04
Bendiocarb	22781-23-3	0.02	mg/kg	----	----	----	----	<0.04
Thiodicarb	59669-26-0	0.02	mg/kg	----	----	----	----	<0.04
Carbofuran	1563-66-2	0.02	mg/kg	----	----	----	----	<0.04
Carbaryl	63-25-2	0.02	mg/kg	----	----	----	----	<0.04
Methiocarb	2032-65-7	0.02	mg/kg	----	----	----	----	<0.04
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	----	----	----	----	<0.02
2.4-DB	94-82-6	0.02	mg/kg	----	----	----	----	<0.02
Dicamba	1918-00-9	0.02	mg/kg	----	----	----	----	<0.02
Mecoprop	93-65-2	0.02	mg/kg	----	----	----	----	<0.02
MCPA	94-74-6	0.02	mg/kg	----	----	----	----	<0.02
2.4-DP	120-36-5	0.02	mg/kg	----	----	----	----	<0.02
2.4-D	94-75-7	0.02	mg/kg	----	----	----	----	<0.02
Triclopyr	55335-06-3	0.02	mg/kg	----	----	----	----	<0.02
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	----	----	----	----	<0.02
2.4.5-T	93-76-5	0.02	mg/kg	----	----	----	----	<0.02
MCPB	94-81-5	0.02	mg/kg	----	----	----	----	<0.02
Picloram	1918-02-1	0.02	mg/kg	----	----	----	----	<0.02
Clopyralid	1702-17-6	0.02	mg/kg	----	----	----	----	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg	----	----	----	----	<0.02
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.5	%	----	----	----	----	**74.7**
Toluene-D8	2037-26-5	0.5	%	----	----	----	----	**74.0**
4-Bromofluorobenzene	460-00-4	0.5	%	----	----	----	----	**90.2**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**97.6**	**107**	**104**	----	**110**
2-Chlorophenol-D4	93951-73-6	0.5	%	**95.5**	**108**	**104**	----	**109**
2.4.6-Tribromophenol	118-79-6	0.5	%	**95.6**	**105**	**106**	----	**109**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**88.4**	**95.4**	**90.4**	----	**92.3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH3_B2	CBH3_A	CBH4_B1	CBH4_A_R2	CBH1.2_C
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00	06-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-011	EB1929789-012	EB1929789-013	EB1929789-014	EB1929789-015
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
Anthracene-d10	1719-06-8	0.5	%	105	113	108	----	109
4-Terphenyl-d14	1718-51-0	0.5	%	124	138	131	----	128
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	92.4	90.5	86.5	----	80.2
Toluene-D8	2037-26-5	0.2	%	85.9	85.4	78.4	----	73.4
4-Bromofluorobenzene	460-00-4	0.2	%	100	101	96.4	----	87.6
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	91.2	108	113	----	110
EP094S: Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	82.2
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	----	----	----	----	65.7
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	----	----	----	----	58.8
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.5	%	----	----	----	----	92.2
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	69.0	75.4	79.4	----	79.8
Anthracene-d10	1719-06-8	10	%	86.8	92.6	94.5	----	91.3
4-Terphenyl-d14	1718-51-0	10	%	88.6	97.4	98.2	----	79.3
EP201S: Carbamate Surrogate								
4-Bromo-3.5-dimethylphenyl-N-m ethylcarbamate	672-99-1	0.02	%	----	----	----	----	129
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%	----	----	----	----	69.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_B2	CBH1.3_C	REC3_A	REC3_C	REC4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-016	EB1929789-017	EB1929789-018	EB1929789-021	EB1929789-022
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	9.1	8.6	8.9	7.4	9.0
pH (Fox)	----	0.1	pH Unit	7.0	7.3	6.8	3.3	7.1
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.8	8.4	8.7	7.5	8.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	1.11	0.820	0.949	0.120	1.18
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	694	512	592	75	733
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	17.3	5.14	11.0	3.04	27.9
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3450	1030	2190	607	5580
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	5.53	1.64	3.51	0.97	8.95
EA033-E: 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	1.11	0.82	0.95	0.12	1.18
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	694	512	592	75	733
Liming Rate excluding ANC	----	1	kg CaCO3/t	52	38	44	6	55
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	42.8	59.0	34.3	28.8	38.1
EA150: Particle Sizing								
+75µm	----	1	%	11	<1	68	19	36
+150µm	----	1	%	7	<1	65	14	26
+300µm	----	1	%	4	<1	56	6	19
+425µm	----	1	%	3	<1	48	4	16
+600µm	----	1	%	3	<1	36	4	13
+1180µm	----	1	%	2	<1	20	2	9

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_B2	CBH1.3_C	REC3_A	REC3_C	REC4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-016	EB1929789-017	EB1929789-018	EB1929789-021	EB1929789-022
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	<1	<1	15	1	4
+4.75mm	----	1	%	<1	<1	11	<1	2
+9.5mm	----	1	%	<1	<1	5	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	52	60	17	62	34
Silt (2-60 µm)	----	1	%	37	36	12	18	25
Sand (0.06-2.00 mm)	----	1	%	10	4	54	18	35
Gravel (>2mm)	----	1	%	1	<1	17	2	6
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.72	----	2.75	2.79	2.83
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	11000	17200	5020	12200	7820
Iron	7439-89-6	50	mg/kg	39000	47800	55100	55600	21800
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	8.53	18.2	10.2	2.20	49.0
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	22.2
Chromium	7440-47-3	1.0	mg/kg	30.4	53.4	178	36.8	120
Copper	7440-50-8	1.0	mg/kg	9.8	12.8	3.5	14.9	93.3
Cobalt	7440-48-4	0.5	mg/kg	8.2	12.7	3.2	7.5	94.9
Lead	7439-92-1	1.0	mg/kg	9.4	11.5	5.1	11.9	130
Manganese	7439-96-5	10	mg/kg	649	516	95	61	119
Nickel	7440-02-0	1.0	mg/kg	8.8	18.0	4.5	9.9	92.7
Selenium	7782-49-2	0.1	mg/kg	0.5	0.7	0.2	0.4	0.5
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	62.8	70.9	71.5	87.1	152
Zinc	7440-66-6	1.0	mg/kg	13.6	53.2	10.1	3.2	87.8
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.01	0.05	<0.01	0.01	<0.01
EK026SF: Total CN by Segmented Flow Analyser								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_B2	CBH1.3_C	REC3_A	REC3_C	REC4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-016	EB1929789-017	EB1929789-018	EB1929789-021	EB1929789-022
				Result	Result	Result	Result	Result
EK026SF: Total CN by Segmented Flow Analyser - Continued								
Total Cyanide	57-12-5	1	mg/kg	----	<2	----	----	----
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	----	2060	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	2060	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	647	----	----	----
EK255A SD: Ammonia in Sediment								
Ammonia as N	7664-41-7	0.2	mg/kg	----	263	----	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.63	1.40	0.53	0.34	0.61
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	2.88	2.10	2.14	1.22	4.34
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	2.25	0.70	1.61	0.88	3.73
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.1	mg/kg	----	<0.1	----	----	----
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	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	0.5	mg/kg	----	<0.5	----	----	----
Chloromethane	74-87-3	0.5	mg/kg	----	<0.5	----	----	----
Vinyl chloride	75-01-4	0.5	mg/kg	----	<0.5	----	----	----
Bromomethane	74-83-9	0.5	mg/kg	----	<0.5	----	----	----
Chloroethane	75-00-3	0.5	mg/kg	----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_B2	CBH1.3_C	REC3_A	REC3_C	REC4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-016	EB1929789-017	EB1929789-018	EB1929789-021	EB1929789-022
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Trichlorofluoromethane	75-69-4	0.5	mg/kg	----	<0.5	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.05	mg/kg	----	<0.05	----	----	----
1.1-Dichloroethane	75-34-3	0.05	mg/kg	----	<0.05	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.05	mg/kg	----	<0.05	----	----	----
1.1.1-Trichloroethane	71-55-6	0.05	mg/kg	----	<0.05	----	----	----
Carbon Tetrachloride	56-23-5	0.05	mg/kg	----	<0.05	----	----	----
1.2-Dichloroethane	107-06-2	0.05	mg/kg	----	<0.05	----	----	----
Trichloroethene	79-01-6	0.05	mg/kg	----	<0.05	----	----	----
Tetrachloroethene	127-18-4	0.05	mg/kg	----	<0.05	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.05	mg/kg	----	<0.05	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobutadiene	87-68-3	0.05	mg/kg	----	<0.05	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.05	mg/kg	----	<0.05	----	----	----
Bromobenzene	108-86-1	0.05	mg/kg	----	<0.05	----	----	----
2-Chlorotoluene	95-49-8	0.05	mg/kg	----	<0.05	----	----	----
4-Chlorotoluene	106-43-4	0.05	mg/kg	----	<0.05	----	----	----
1.3-Dichlorobenzene	541-73-1	0.05	mg/kg	----	<0.05	----	----	----
1.4-Dichlorobenzene	106-46-7	0.05	mg/kg	----	<0.05	----	----	----
1.2-Dichlorobenzene	95-50-1	0.05	mg/kg	----	<0.05	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.05	mg/kg	----	<0.05	----	----	----
1.2.3-Trichlorobenzene	87-61-6	0.05	mg/kg	----	<0.05	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.05	mg/kg	----	<0.05	----	----	----
Bromodichloromethane	75-27-4	0.05	mg/kg	----	<0.05	----	----	----
Dibromochloromethane	124-48-1	0.05	mg/kg	----	<0.05	----	----	----
Bromoform	75-25-2	0.10	mg/kg	----	<0.10	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	0.10	mg/kg	----	<0.10	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_B2	CBH1.3_C	REC3_A	REC3_C	REC4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-016	EB1929789-017	EB1929789-018	EB1929789-021	EB1929789-022
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	<3	**12**	**4**
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg	<3	<3	<3	**12**	**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	<3	<3	<3	**10**	<3
C29 - C36 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg	<3	<3	<3	**10**	<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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_B2	CBH1.3_C	REC3_A	REC3_C	REC4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-016	EB1929789-017	EB1929789-018	EB1929789-021	EB1929789-022
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP094A: Synthetic Pyrethroids								
Bioresmethrin	28434-01-07	0.05	mg/kg	----	<0.05	----	----	----
Bifenthrin	82657-04-3	0.05	mg/kg	----	<0.05	----	----	----
Phenothrin	26002-80-2	0.05	mg/kg	----	<0.05	----	----	----
Lambda-cyhalothrin	68085-85-8	0.05	mg/kg	----	<0.05	----	----	----
Permethrin	52645-53-1	0.05	mg/kg	----	<0.05	----	----	----
Cyfluthrin	68359-37-5	0.05	mg/kg	----	<0.05	----	----	----
Cypermethrin	52315-07-8	0.05	mg/kg	----	<0.05	----	----	----
Fenvalerate & Esfenvalerate	51630-58-1/66230-04-	0.05	mg/kg	----	<0.05	----	----	----
Deltamethrin & Tralomethrin	62229-77-0/66841-25-	0.05	mg/kg	----	<0.05	----	----	----
Allethrin	584-79-2	0.05	mg/kg	----	<0.05	----	----	----
Transfluthrin	118712-89-3	0.05	mg/kg	----	<0.05	----	----	----
Tetramethrin	7696-12-0	0.05	mg/kg	----	<0.05	----	----	----
Tau-fluvalinate	102851-06-9	0.05	mg/kg	----	<0.10	----	----	----
EP094B: Synergist								
Piperonyl Butoxide	63993-73-7	0.05	mg/kg	----	<0.05	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_B2	CBH1.3_C	REC3_A	REC3_C	REC4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-016	EB1929789-017	EB1929789-018	EB1929789-021	EB1929789-022
				Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
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	72-54-8/72-55-9/50-2	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	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_B2	CBH1.3_C	REC3_A	REC3_C	REC4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-016	EB1929789-017	EB1929789-018	EB1929789-021	EB1929789-022
				Result	Result	Result	Result	Result
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	----	<6.2	----	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg	----	<6.2	----	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg	----	<6.2	----	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg	----	<6.2	----	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	----	<6.2	----	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	----	<6.2	----	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg	----	<6.2	----	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg	----	<6.2	----	----	----
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	<5	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg	<4	<5	<4	<4	<4
Fluorene	86-73-7	4	µg/kg	<4	<5	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg	<4	**10**	<4	<4	<4
Anthracene	120-12-7	4	µg/kg	<4	<5	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg	<4	**16**	<4	<4	<4
Pyrene	129-00-0	4	µg/kg	<4	**15**	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg	<4	**11**	<4	<4	<4
Chrysene	218-01-9	4	µg/kg	<4	**10**	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	**16**	**4**	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	**6**	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	**8**	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<5	<4	<4	<4
Perylene	198-55-0	4	µg/kg	<4	**506**	<4	<4	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	**5**	**11**	<4	<4	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	<5	<4	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	**8**	<4	<4	<4
Coronene	191-07-1	5	µg/kg	<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg	**5**	**617**	**4**	<4	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	----	<4	<4	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	**5**	----	**5**	**5**	**5**
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	**10**	----	**10**	**10**	**10**
EP201: Carbamate Pesticides by LCMS								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_B2	CBH1.3_C	REC3_A	REC3_C	REC4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-016	EB1929789-017	EB1929789-018	EB1929789-021	EB1929789-022
				Result	Result	Result	Result	Result
EP201: Carbamate Pesticides by LCMS - Continued								
Oxamyl	23135-22-0	0.02	mg/kg	----	<0.04	----	----	----
Methomyl	16752-77-5	0.02	mg/kg	----	<0.04	----	----	----
3-Hydroxy Carbofuran	16655-82-6	0.02	mg/kg	----	<0.04	----	----	----
Aldicarb	116-06-3	0.02	mg/kg	----	<0.04	----	----	----
Bendiocarb	22781-23-3	0.02	mg/kg	----	<0.04	----	----	----
Thiodicarb	59669-26-0	0.02	mg/kg	----	<0.04	----	----	----
Carbofuran	1563-66-2	0.02	mg/kg	----	<0.04	----	----	----
Carbaryl	63-25-2	0.02	mg/kg	----	<0.04	----	----	----
Methiocarb	2032-65-7	0.02	mg/kg	----	<0.04	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	----	<0.02	----	----	----
2.4-DB	94-82-6	0.02	mg/kg	----	<0.02	----	----	----
Dicamba	1918-00-9	0.02	mg/kg	----	<0.02	----	----	----
Mecoprop	93-65-2	0.02	mg/kg	----	<0.02	----	----	----
MCPA	94-74-6	0.02	mg/kg	----	<0.02	----	----	----
2.4-DP	120-36-5	0.02	mg/kg	----	<0.02	----	----	----
2.4-D	94-75-7	0.02	mg/kg	----	<0.02	----	----	----
Triclopyr	55335-06-3	0.02	mg/kg	----	<0.02	----	----	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	----	<0.02	----	----	----
2.4.5-T	93-76-5	0.02	mg/kg	----	<0.02	----	----	----
MCPB	94-81-5	0.02	mg/kg	----	<0.02	----	----	----
Picloram	1918-02-1	0.02	mg/kg	----	<0.02	----	----	----
Clopyralid	1702-17-6	0.02	mg/kg	----	<0.02	----	----	----
Fluroxypyr	69377-81-7	0.02	mg/kg	----	<0.02	----	----	----
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.5	%	----	**69.3**	----	----	----
Toluene-D8	2037-26-5	0.5	%	----	**65.4**	----	----	----
4-Bromofluorobenzene	460-00-4	0.5	%	----	**69.1**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**105**	**104**	**100**	**102**	**100**
2-Chlorophenol-D4	93951-73-6	0.5	%	**106**	**106**	**105**	**105**	**104**
2.4.6-Tribromophenol	118-79-6	0.5	%	**107**	**105**	**92.1**	**92.3**	**92.1**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**96.7**	**92.6**	**99.5**	**98.0**	**95.8**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH4_B2	CBH1.3_C	REC3_A	REC3_C	REC4_A
			Client sampling date / time	06-Nov-2019 00:00	06-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-016	EB1929789-017	EB1929789-018	EB1929789-021	EB1929789-022
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
Anthracene-d10	1719-06-8	0.5	%	110	108	113	114	113
4-Terphenyl-d14	1718-51-0	0.5	%	132	128	135	136	136
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	82.7	75.2	99.8	96.9	94.8
Toluene-D8	2037-26-5	0.2	%	68.3	64.9	90.4	87.4	87.7
4-Bromofluorobenzene	460-00-4	0.2	%	90.1	79.7	105	106	101
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	90.8	83.8	120	101	104
EP094S: Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	76.5	----	----	----
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	----	55.8	----	----	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	----	43.4	----	----	----
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.5	%	----	72.4	----	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	71.2	86.9	89.2	97.1	98.7
Anthracene-d10	1719-06-8	10	%	92.4	97.6	90.6	110	91.5
4-Terphenyl-d14	1718-51-0	10	%	85.6	75.6	80.2	87.9	90.6
EP201S: Carbamate Surrogate								
4-Bromo-3.5-dimethylphenyl-N-m ethylcarbamate	672-99-1	0.02	%	----	120	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%	----	67.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	REC4_B2	REC4_C	CBH9_A	CBH9_B	CBH9_C
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-024	EB1929789-026	EB1929789-027	EB1929789-028	EB1929789-029
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.8	8.0	9.1	9.0	8.8
pH (Fox)	----	0.1	pH Unit	6.9	2.9	7.2	7.4	7.5
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.6	8.4	8.8	8.8	8.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	1.38	0.388	0.768	0.663	0.798
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	858	242	479	414	498
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	14.1	2.59	25.6	19.8	13.6
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	2810	517	5120	3960	2730
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	4.51	0.83	8.20	6.35	4.37
EA033-E: 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	1.38	0.39	0.77	0.66	0.80
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	858	242	479	414	498
Liming Rate excluding ANC	----	1	kg CaCO3/t	64	18	36	31	37
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	40.8	27.8	42.9	48.4	49.7
EA150: Particle Sizing								
+75µm	----	1	%	56	6	28	5	3
+150µm	----	1	%	46	3	15	3	1
+300µm	----	1	%	39	2	11	2	1
+425µm	----	1	%	32	1	8	2	<1
+600µm	----	1	%	17	1	7	2	<1
+1180µm	----	1	%	2	<1	4	1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	REC4_B2	REC4_C	CBH9_A	CBH9_B	CBH9_C
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-024	EB1929789-026	EB1929789-027	EB1929789-028	EB1929789-029
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	1	<1	2	<1	<1
+4.75mm	----	1	%	<1	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	24	63	31	47	49
Silt (2-60 µm)	----	1	%	12	28	36	46	43
Sand (0.06-2.00 mm)	----	1	%	63	9	31	6	8
Gravel (>2mm)	----	1	%	1	<1	2	1	<1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.86	2.82	2.79	2.75	2.84
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	10800	9340	10400	11900	12500
Iron	7439-89-6	50	mg/kg	41400	35500	27000	32100	38900
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	18.5	2.86	10.2	13.6	17.3
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	68.5	22.7	25.6	38.0	47.8
Copper	7440-50-8	1.0	mg/kg	6.4	5.8	4.6	5.8	7.2
Cobalt	7440-48-4	0.5	mg/kg	5.3	0.8	6.3	6.3	6.5
Lead	7439-92-1	1.0	mg/kg	4.0	11.7	4.3	6.6	7.6
Manganese	7439-96-5	10	mg/kg	178	36	156	149	150
Nickel	7440-02-0	1.0	mg/kg	8.3	1.2	9.7	11.1	11.0
Selenium	7782-49-2	0.1	mg/kg	0.5	0.3	0.4	0.5	0.5
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	61.8	66.1	28.2	42.8	55.3
Zinc	7440-66-6	1.0	mg/kg	15.9	<1.0	24.5	23.0	21.3
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EP003: Total Organic Carbon (TOC) in Soil								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	REC4_B2	REC4_C	CBH9_A	CBH9_B	CBH9_C
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-024	EB1929789-026	EB1929789-027	EB1929789-028	EB1929789-029
				Result	Result	Result	Result	Result
EP003: Total Organic Carbon (TOC) in Soil - Continued								
Total Organic Carbon	----	0.02	%	**0.78**	**0.47**	**0.58**	**0.42**	**0.55**
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	**2.64**	**0.99**	**3.90**	**3.16**	**2.33**
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	**1.86**	**0.52**	**3.32**	**2.74**	**1.78**
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	**6**	<3	<3	<3
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg	<3	**6**	<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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	REC4_B2	REC4_C	CBH9_A	CBH9_B	CBH9_C
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-024	EB1929789-026	EB1929789-027	EB1929789-028	EB1929789-029
				Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons - Continued								
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								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	**5**	<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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	REC4_B2	REC4_C	CBH9_A	CBH9_B	CBH9_C
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-024	EB1929789-026	EB1929789-027	EB1929789-028	EB1929789-029
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Sum of PAHs	----	4	µg/kg	<4	5	<4	<4	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	<4	<4	<4	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	5	5	5	5	5
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	10	10	10	10	10
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	105	99.7	102	100	102
2-Chlorophenol-D4	93951-73-6	0.5	%	109	102	106	103	104
2.4.6-Tribromophenol	118-79-6	0.5	%	92.0	88.7	92.5	87.7	89.5
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	103	94.2	96.6	96.9	99.9
Anthracene-d10	1719-06-8	0.5	%	119	109	115	114	113
4-Terphenyl-d14	1718-51-0	0.5	%	142	133	136	134	135
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	77.2	112	75.0	62.8	66.4
Toluene-D8	2037-26-5	0.2	%	66.7	101	88.7	71.1	72.5
4-Bromofluorobenzene	460-00-4	0.2	%	83.9	118	98.4	84.3	88.2
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	85.8	93.2	100	98.0	105
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	85.5	95.7	84.9	95.8	82.3
Anthracene-d10	1719-06-8	10	%	89.3	97.5	108	90.7	85.7
4-Terphenyl-d14	1718-51-0	10	%	88.2	104	81.9	80.1	77.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH10.1_A	CBH10.1_C	CBH10.2_A	CBH10.2_C	CBH10.3_A
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-030	EB1929789-031	EB1929789-032	EB1929789-033	EB1929789-034
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	9.0	9.1	9.1	8.8	9.0
pH (Fox)	----	0.1	pH Unit	7.1	7.4	7.2	7.3	7.3
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.9	8.8	8.8	8.7	8.9
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.487	0.727	0.486	0.704	0.496
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	304	453	303	439	309
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	31.5	21.8	33.3	21.1	34.6
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	6290	4350	6650	4220	6920
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	10.1	6.97	10.7	6.76	11.1
EA033-E: 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	0.49	0.73	0.48	0.70	0.50
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	304	453	303	439	309
Liming Rate excluding ANC	----	1	kg CaCO3/t	23	34	23	33	23
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	46.2	43.1	47.3	45.9	38.5
EA150: Particle Sizing								
+75µm	----	1	%	28	24	30	32	32
+150µm	----	1	%	16	18	20	27	20
+300µm	----	1	%	10	13	15	22	13
+425µm	----	1	%	7	10	12	20	10
+600µm	----	1	%	5	8	10	18	7
+1180µm	----	1	%	3	4	6	14	4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH10.1_A	CBH10.1_C	CBH10.2_A	CBH10.2_C	CBH10.3_A
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-030	EB1929789-031	EB1929789-032	EB1929789-033	EB1929789-034
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	2	2	3	10	2
+4.75mm	----	1	%	<1	<1	1	5	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	34	36	37	35	36
Silt (2-60 µm)	----	1	%	37	36	29	31	31
Sand (0.06-2.00 mm)	----	1	%	27	26	30	23	30
Gravel (>2mm)	----	1	%	2	2	4	11	3
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.84	2.84	2.83	2.84	2.84
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	10300	12600	11000	12600	8610
Iron	7439-89-6	50	mg/kg	25200	30300	27300	37200	21100
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	11.9	10.5	10.3	8.02
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	25.2	29.8	26.0	34.1	20.1
Copper	7440-50-8	1.0	mg/kg	5.1	5.2	5.4	4.3	4.4
Cobalt	7440-48-4	0.5	mg/kg	7.2	7.7	7.4	5.4	6.1
Lead	7439-92-1	1.0	mg/kg	7.1	6.6	3.8	7.5	6.0
Manganese	7439-96-5	10	mg/kg	217	179	211	138	172
Nickel	7440-02-0	1.0	mg/kg	10.0	11.6	10.4	8.3	8.5
Selenium	7782-49-2	0.1	mg/kg	0.4	0.5	0.6	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	28.9	34.8	31.3	36.4	23.8
Zinc	7440-66-6	1.0	mg/kg	28.9	28.7	29.3	17.9	24.6
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EP003: Total Organic Carbon (TOC) in Soil								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH10.1_A	CBH10.1_C	CBH10.2_A	CBH10.2_C	CBH10.3_A
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-030	EB1929789-031	EB1929789-032	EB1929789-033	EB1929789-034
				Result	Result	Result	Result	Result
EP003: Total Organic Carbon (TOC) in Soil - Continued								
Total Organic Carbon	----	0.02	%	**0.61**	**0.62**	**0.71**	**0.65**	**0.69**
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	**5.03**	**3.60**	**5.22**	**3.49**	**5.61**
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	**4.42**	**2.98**	**4.51**	**2.84**	**4.92**
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	**4**	<3	**3**	<3	<3
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg	**4**	<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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH10.1_A	CBH10.1_C	CBH10.2_A	CBH10.2_C	CBH10.3_A
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-030	EB1929789-031	EB1929789-032	EB1929789-033	EB1929789-034
				Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons - Continued								
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								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	**5**	<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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH10.1_A	CBH10.1_C	CBH10.2_A	CBH10.2_C	CBH10.3_A
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-030	EB1929789-031	EB1929789-032	EB1929789-033	EB1929789-034
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Sum of PAHs	----	4	µg/kg	9	<4	<4	<4	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	<4	<4	<4	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	5	5	5	5	5
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	10	10	10	10	10
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	102	101	99.6	101	101
2-Chlorophenol-D4	93951-73-6	0.5	%	105	103	102	104	103
2.4.6-Tribromophenol	118-79-6	0.5	%	92.0	87.1	88.0	87.1	90.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	102	95.5	98.5	99.9	99.6
Anthracene-d10	1719-06-8	0.5	%	112	113	111	108	112
4-Terphenyl-d14	1718-51-0	0.5	%	136	137	134	131	134
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	78.2	67.8	73.0	67.8	64.3
Toluene-D8	2037-26-5	0.2	%	91.3	78.5	82.6	77.1	70.6
4-Bromofluorobenzene	460-00-4	0.2	%	101	90.5	96.3	90.7	82.1
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	168	110	95.1	103	105
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	116	106	96.5	87.8	101
Anthracene-d10	1719-06-8	10	%	93.2	97.5	81.7	91.5	100
4-Terphenyl-d14	1718-51-0	10	%	75.7	89.2	92.0	73.6	88.0

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH10.3_C	CBH12_A	CBH12_C	REC1_CLAY	REC2_CLAY
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-035	EB1929789-036	EB1929789-037	EB1929789-038	EB1929789-039
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	9.1	8.8	8.8	7.9	8.9
pH (Fox)	----	0.1	pH Unit	7.3	7.8	7.8	5.9	7.7
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.8	8.8	8.7	8.4	8.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.801	0.462	0.603	0.023	0.778
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	499	288	376	14	486
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	32.4	17.9	10.3	0.61	32.4
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	6480	3570	2060	121	6480
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	10.4	5.72	3.30	0.19	10.4
EA033-E: 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	0.80	0.46	0.60	0.02	0.78
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	499	288	376	14	486
Liming Rate excluding ANC	----	1	kg CaCO3/t	37	22	28	1	36
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	46.3	50.0	48.9	21.2	59.1
EA150: Particle Sizing								
+75µm	----	1	%	27	4	4	30	40
+150µm	----	1	%	20	3	2	28	40
+300µm	----	1	%	14	2	1	26	35
+425µm	----	1	%	11	2	1	25	30
+600µm	----	1	%	9	2	1	24	26
+1180µm	----	1	%	6	1	<1	23	19

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH10.3_C	CBH12_A	CBH12_C	REC1_CLAY	REC2_CLAY
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-035	EB1929789-036	EB1929789-037	EB1929789-038	EB1929789-039
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	2	<1	<1	20	14
+4.75mm	----	1	%	<1	<1	<1	17	10
+9.5mm	----	1	%	<1	<1	<1	7	4
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	38	45	55	47	39
Silt (2-60 µm)	----	1	%	34	48	39	22	19
Sand (0.06-2.00 mm)	----	1	%	25	6	5	10	27
Gravel (>2mm)	----	1	%	3	1	1	21	15
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.79	2.79	1.27	2.78	2.78
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	11700	12400	13100	4420	14700
Iron	7439-89-6	50	mg/kg	42900	35200	40500	45600	37600
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	17.0	14.3	15.8	<1.00	16.1
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	79.2	39.5	49.0	79.1	53.0
Copper	7440-50-8	1.0	mg/kg	5.0	6.5	7.1	6.1	7.2
Cobalt	7440-48-4	0.5	mg/kg	7.6	6.6	6.8	1.8	6.2
Lead	7439-92-1	1.0	mg/kg	8.0	4.9	7.8	1.9	7.8
Manganese	7439-96-5	10	mg/kg	206	169	150	15	213
Nickel	7440-02-0	1.0	mg/kg	12.4	11.5	11.6	9.5	11.2
Selenium	7782-49-2	0.1	mg/kg	0.5	0.5	0.5	0.9	0.5
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	54.1	46.5	58.2	59.4	66.2
Zinc	7440-66-6	1.0	mg/kg	27.6	23.8	22.2	12.0	19.5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EP003: Total Organic Carbon (TOC) in Soil								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH10.3_C	CBH12_A	CBH12_C	REC1_CLAY	REC2_CLAY
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-035	EB1929789-036	EB1929789-037	EB1929789-038	EB1929789-039
				Result	Result	Result	Result	Result
EP003: Total Organic Carbon (TOC) in Soil - Continued								
Total Organic Carbon	----	0.02	%	**0.68**	**0.57**	**0.57**	**0.03**	**0.50**
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	**5.07**	**2.88**	**1.84**	**0.07**	**4.79**
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	**4.39**	**2.31**	**1.27**	**0.04**	**4.29**
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	<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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH10.3_C	CBH12_A	CBH12_C	REC1_CLAY	REC2_CLAY
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-035	EB1929789-036	EB1929789-037	EB1929789-038	EB1929789-039
				Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons - Continued								
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								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	<5	<4	<4	<5
Acenaphthene	83-32-9	4	µg/kg	<4	<5	<4	<4	<5
Fluorene	86-73-7	4	µg/kg	<4	<5	<4	<4	<5
Phenanthrene	85-01-8	4	µg/kg	<4	<5	<4	<4	<5
Anthracene	120-12-7	4	µg/kg	<4	<5	<4	<4	<5
Fluoranthene	206-44-0	4	µg/kg	<4	<5	<4	<4	<5
Pyrene	129-00-0	4	µg/kg	<4	<5	<4	<4	<5
Benz(a)anthracene	56-55-3	4	µg/kg	<4	<5	<4	<4	<5
Chrysene	218-01-9	4	µg/kg	<4	<5	**4**	<4	<5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	<5	<4	<4	<5
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<5	<4	<4	<5
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<5	<4	<4	<5
Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<5	<4	<4	<5
Perylene	198-55-0	4	µg/kg	<4	<5	<4	<4	<5
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<4	<5	<4	<4	<5
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	<5	<4	<4	<5
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<5	<4	<4	<5
Coronene	191-07-1	5	µg/kg	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH10.3_C	CBH12_A	CBH12_C	REC1_CLAY	REC2_CLAY
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-035	EB1929789-036	EB1929789-037	EB1929789-038	EB1929789-039
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Sum of PAHs	----	4	µg/kg	<4	<5	4	<4	<5
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	<5	<4	<4	<5
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	5	<5	5	5	<5
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	10	10	10	10	10
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	98.2	100	102	101	100
2-Chlorophenol-D4	93951-73-6	0.5	%	101	102	104	102	99.2
2.4.6-Tribromophenol	118-79-6	0.5	%	89.2	86.0	90.8	85.9	82.9
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	97.0	101	100	103	90.9
Anthracene-d10	1719-06-8	0.5	%	110	113	113	116	110
4-Terphenyl-d14	1718-51-0	0.5	%	134	140	138	143	135
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	72.2	70.8	73.6	85.2	70.1
Toluene-D8	2037-26-5	0.2	%	78.2	78.2	79.8	89.9	69.8
4-Bromofluorobenzene	460-00-4	0.2	%	90.4	90.6	94.7	98.6	96.4
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	115	108	98.7	131	104
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	108	103	102	110	106
Anthracene-d10	1719-06-8	10	%	106	114	104	86.8	77.2
4-Terphenyl-d14	1718-51-0	10	%	85.6	77.3	86.2	76.3	76.8

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH13_A	CBH13_A_S2	CBH13_C	CBH14_A	CBH14_C
			Client sampling date / time	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-040	EB1929789-041	EB1929789-042	EB1929789-043	EB1929789-044
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.9	8.9	8.8	9.1	9.1
pH (Fox)	----	0.1	pH Unit	7.5	7.6	7.8	7.5	7.6
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.7	8.6	8.7	8.8	8.9
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.656	0.649	0.689	0.636	0.537
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	409	405	430	397	335
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	17.2	17.5	9.30	16.3	33.6
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3450	3500	1860	3250	6720
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	5.52	5.62	2.98	5.22	10.8
EA033-E: 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	0.66	0.65	0.69	0.64	0.54
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	409	405	430	397	335
Liming Rate excluding ANC	----	1	kg CaCO3/t	31	30	32	30	25
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	50.4	49.8	48.4	44.1	46.6
EA150: Particle Sizing								
+75µm	----	1	%	4	2	2	26	8
+150µm	----	1	%	2	1	1	13	6
+300µm	----	1	%	1	<1	1	6	3
+425µm	----	1	%	<1	<1	1	5	2
+600µm	----	1	%	<1	<1	1	4	2
+1180µm	----	1	%	<1	<1	<1	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH13_A	CBH13_A_S2	CBH13_C	CBH14_A	CBH14_C
			Client sampling date / time	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-040	EB1929789-041	EB1929789-042	EB1929789-043	EB1929789-044
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	<1	<1	<1	<1	<1
+4.75mm	----	1	%	<1	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	48	53	56	42	52
Silt (2-60 µm)	----	1	%	44	41	38	29	36
Sand (0.06-2.00 mm)	----	1	%	8	6	5	28	11
Gravel (>2mm)	----	1	%	<1	<1	1	1	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.77	2.77	2.71	2.80	2.76
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	12600	6740	11400	6990	7410
Iron	7439-89-6	50	mg/kg	36400	19300	35700	20400	20100
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	15.1	11.2	14.7	9.07	8.43
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	41.8	38.3	46.5	21.7	31.6
Copper	7440-50-8	1.0	mg/kg	7.4	5.8	7.1	4.3	5.1
Cobalt	7440-48-4	0.5	mg/kg	7.8	6.3	7.0	5.7	5.9
Lead	7439-92-1	1.0	mg/kg	8.1	6.4	7.4	4.9	5.6
Manganese	7439-96-5	10	mg/kg	170	147	150	172	128
Nickel	7440-02-0	1.0	mg/kg	12.7	9.7	11.9	8.2	10.0
Selenium	7782-49-2	0.1	mg/kg	0.6	0.4	0.5	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	46.6	47.3	51.1	24.0	33.5
Zinc	7440-66-6	1.0	mg/kg	28.5	24.6	23.1	20.5	22.2
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EK026SF: Total CN by Segmented Flow Analyser								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH13_A	CBH13_A_S2	CBH13_C	CBH14_A	CBH14_C
			Client sampling date / time	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-040	EB1929789-041	EB1929789-042	EB1929789-043	EB1929789-044
				Result	Result	Result	Result	Result
EK026SF: Total CN by Segmented Flow Analyser - Continued								
Total Cyanide	57-12-5	1	mg/kg	<2	<1	----	<1	<1
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	750	740	----	610	600
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	750	740	----	610	600
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	395	375	----	339	463
EK255A SD: Ammonia in Sediment								
Ammonia as N	7664-41-7	0.2	mg/kg	7.1	7.4	----	6.5	7.7
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.46	0.59	0.54	0.55	0.48
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	2.97	2.99	1.84	2.59	5.56
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	2.51	2.40	1.30	2.04	5.08
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.1	mg/kg	<0.1	<0.1	----	<0.1	<0.1
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
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Chloromethane	74-87-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Vinyl chloride	75-01-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Bromomethane	74-83-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Chloroethane	75-00-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH13_A	CBH13_A_S2	CBH13_C	CBH14_A	CBH14_C
			Client sampling date / time	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-040	EB1929789-041	EB1929789-042	EB1929789-043	EB1929789-044
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Trichlorofluoromethane	75-69-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
trans-1.2-Dichloroethene	156-60-5	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
1.1-Dichloroethane	75-34-3	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
cis-1.2-Dichloroethene	156-59-2	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
1.1.1-Trichloroethane	71-55-6	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Carbon Tetrachloride	56-23-5	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
1.2-Dichloroethane	107-06-2	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Trichloroethene	79-01-6	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Tetrachloroethene	127-18-4	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
1.1.1.2-Tetrachloroethane	630-20-6	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
1.1.2.2-Tetrachloroethane	79-34-5	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Hexachlorobutadiene	87-68-3	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Bromobenzene	108-86-1	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
2-Chlorotoluene	95-49-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
4-Chlorotoluene	106-43-4	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
1.3-Dichlorobenzene	541-73-1	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
1.4-Dichlorobenzene	106-46-7	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
1.2-Dichlorobenzene	95-50-1	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
1.2.4-Trichlorobenzene	120-82-1	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
1.2.3-Trichlorobenzene	87-61-6	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Bromodichloromethane	75-27-4	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Dibromochloromethane	124-48-1	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Bromoform	75-25-2	0.10	mg/kg	<0.10	<0.10	----	<0.10	<0.10
EP074H: Naphthalene								
Naphthalene	91-20-3	0.10	mg/kg	<0.10	<0.10	----	<0.10	<0.10
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH13_A	CBH13_A_S2	CBH13_C	CBH14_A	CBH14_C
			Client sampling date / time	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-040	EB1929789-041	EB1929789-042	EB1929789-043	EB1929789-044
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	4	4	4
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg	<3	4	4	4	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	<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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH13_A	CBH13_A_S2	CBH13_C	CBH14_A	CBH14_C
			Client sampling date / time	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-040	EB1929789-041	EB1929789-042	EB1929789-043	EB1929789-044
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP094A: Synthetic Pyrethroids								
Bioresmethrin	28434-01-07	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Phenothrin	26002-80-2	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Lambda-cyhalothrin	68085-85-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Permethrin	52645-53-1	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Cyfluthrin	68359-37-5	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Cypermethrin	52315-07-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Fenvalerate & Esfenvalerate	51630-58-1/66230-04-	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Deltamethrin & Tralomethrin	62229-77-0/66841-25-	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Allethrin	584-79-2	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Transfluthrin	118712-89-3	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Tetramethrin	7696-12-0	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Tau-fluvalinate	102851-06-9	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
EP094B: Synergist								
Piperonyl Butoxide	63993-73-7	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
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
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH13_A	CBH13_A_S2	CBH13_C	CBH14_A	CBH14_C
			Client sampling date / time	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-040	EB1929789-041	EB1929789-042	EB1929789-043	EB1929789-044
				Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
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
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH13_A	CBH13_A_S2	CBH13_C	CBH14_A	CBH14_C
			Client sampling date / time	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-040	EB1929789-041	EB1929789-042	EB1929789-043	EB1929789-044
				Result	Result	Result	Result	Result
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<6.2	<5.0	----	<5.0	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	<6.2	<5.0	----	<5.0	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	<6.2	<5.0	----	<5.0	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	<6.2	<5.0	----	<5.0	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	<6.2	<5.0	----	<5.0	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	<6.2	<5.0	----	<5.0	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	<6.2	<5.0	----	<5.0	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	<6.2	<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	<5	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg	<5	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg	<5	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg	<5	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg	<5	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg	<5	<4	<4	<4	<4
Pyrene	129-00-0	4	µg/kg	<5	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg	<5	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg	<5	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<5	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<5	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg	<5	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg	<5	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg	<5	<4	<4	<4	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<5	<4	<4	<4	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<5	<4	<4	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<5	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg	<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg	<5	<4	<4	<4	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	----	----	<4	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	----	----	5	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	----	----	10	----	----
EP201: Carbamate Pesticides by LCMS								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH13_A	CBH13_A_S2	CBH13_C	CBH14_A	CBH14_C
			Client sampling date / time	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-040	EB1929789-041	EB1929789-042	EB1929789-043	EB1929789-044
				Result	Result	Result	Result	Result
EP201: Carbamate Pesticides by LCMS - Continued								
Oxamyl	23135-22-0	0.02	mg/kg	<0.04	<0.02	----	<0.02	<0.02
Methomyl	16752-77-5	0.02	mg/kg	<0.04	<0.02	----	<0.02	<0.02
3-Hydroxy Carbofuran	16655-82-6	0.02	mg/kg	<0.04	<0.02	----	<0.02	<0.02
Aldicarb	116-06-3	0.02	mg/kg	<0.04	<0.02	----	<0.02	<0.02
Bendiocarb	22781-23-3	0.02	mg/kg	<0.04	<0.02	----	<0.02	<0.02
Thiodicarb	59669-26-0	0.02	mg/kg	<0.04	<0.02	----	<0.02	<0.02
Carbofuran	1563-66-2	0.02	mg/kg	<0.04	<0.02	----	<0.02	<0.02
Carbaryl	63-25-2	0.02	mg/kg	<0.04	<0.02	----	<0.02	<0.02
Methiocarb	2032-65-7	0.02	mg/kg	<0.04	<0.02	----	<0.02	<0.02
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	----	<0.02	<0.02
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.5	%	**93.3**	**74.7**	----	**77.7**	**79.0**
Toluene-D8	2037-26-5	0.5	%	**93.5**	**72.5**	----	**90.5**	**85.2**
4-Bromofluorobenzene	460-00-4	0.5	%	**110**	**70.9**	----	**111**	**74.7**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**128**	**111**	**121**	**115**	**122**
2-Chlorophenol-D4	93951-73-6	0.5	%	**123**	**110**	**116**	**112**	**120**
2.4.6-Tribromophenol	118-79-6	0.5	%	**76.8**	**102**	**100**	**98.3**	**102**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**122**	**109**	**115**	**106**	**115**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH13_A	CBH13_A_S2	CBH13_C	CBH14_A	CBH14_C
			Client sampling date / time	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00	14-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929789-040	EB1929789-041	EB1929789-042	EB1929789-043	EB1929789-044
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
Anthracene-d10	1719-06-8	0.5	%	116	108	114	109	114
4-Terphenyl-d14	1718-51-0	0.5	%	129	124	133	129	137
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	104	74.8	53.7	69.5	78.0
Toluene-D8	2037-26-5	0.2	%	92.7	67.6	62.6	72.9	79.6
4-Bromofluorobenzene	460-00-4	0.2	%	108	83.3	75.8	81.7	88.5
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	122	92.3	54.6	98.7	89.0
EP094S: Pesticide Surrogate								
DEF	78-48-8	0.05	%	83.2	80.6	----	82.7	79.4
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	64.4	53.8	----	75.0	59.6
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	81.7	53.4	----	65.9	65.8
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.5	%	67.2	52.4	----	72.4	70.9
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	113	99.9	120	77.4	91.9
Anthracene-d10	1719-06-8	10	%	107	101	108	89.5	87.8
4-Terphenyl-d14	1718-51-0	10	%	73.8	77.2	94.6	85.5	82.5
EP201S: Carbamate Surrogate								
4-Bromo-3.5-dimethylphenyl-N-m ethylcarbamate	672-99-1	0.02	%	94.3	94.7	----	92.8	93.0
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%	57.1	60.2	----	63.0	58.0

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH14_BL	CBH5_A	CBH2_B1	----	----
			Client sampling date / time	14-Nov-2019 00:00	07-Nov-2019 00:00	08-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1929789-045	EB1929789-046	EB1929789-047	--------	--------
				Result	Result	Result	----	----
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	----	8.8	8.6	----	----
pH (Fox)	----	0.1	pH Unit	----	7.0	6.6	----	----
Reaction Rate	----	1	Reaction Unit	----	4	4	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	8.8	8.7	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	0.700	1.35	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	437	839	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	29.1	12.7	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	5810	2540	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	9.31	4.08	----	----
EA033-E: 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	----	0.70	1.35	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	437	839	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	33	63	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	38.8	46.0	----	----
EA150: Particle Sizing								
+75µm	----	1	%	----	48	24	----	----
+150µm	----	1	%	----	43	10	----	----
+300µm	----	1	%	----	34	7	----	----
+425µm	----	1	%	----	30	6	----	----
+600µm	----	1	%	----	27	6	----	----
+1180µm	----	1	%	----	22	5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH14_BL	CBH5_A	CBH2_B1	----	----
			Client sampling date / time	14-Nov-2019 00:00	07-Nov-2019 00:00	08-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1929789-045	EB1929789-046	EB1929789-047	--------	--------
				Result	Result	Result	----	----
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	----	17	3	----	----
+4.75mm	----	1	%	----	10	2	----	----
+9.5mm	----	1	%	----	5	<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	%	----	18	45	----	----
Silt (2-60 µm)	----	1	%	----	34	26	----	----
Sand (0.06-2.00 mm)	----	1	%	----	30	25	----	----
Gravel (>2mm)	----	1	%	----	18	4	----	----
Cobbles (>6cm)	----	1	%	----	<1	<1	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	2.37	2.72	----	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	7770	11500	----	----
Iron	7439-89-6	50	mg/kg	----	22600	38900	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	----	<0.50	<0.50	----	----
Arsenic	7440-38-2	1.00	mg/kg	----	11.4	16.2	----	----
Cadmium	7440-43-9	0.1	mg/kg	----	<0.1	<0.1	----	----
Chromium	7440-47-3	1.0	mg/kg	----	26.3	49.2	----	----
Copper	7440-50-8	1.0	mg/kg	----	4.7	8.8	----	----
Cobalt	7440-48-4	0.5	mg/kg	----	6.9	9.9	----	----
Lead	7439-92-1	1.0	mg/kg	----	4.2	7.3	----	----
Manganese	7439-96-5	10	mg/kg	----	178	181	----	----
Nickel	7440-02-0	1.0	mg/kg	----	10.5	13.9	----	----
Selenium	7782-49-2	0.1	mg/kg	----	0.4	0.6	----	----
Silver	7440-22-4	0.1	mg/kg	----	<0.1	<0.1	----	----
Vanadium	7440-62-2	2.0	mg/kg	----	30.0	56.2	----	----
Zinc	7440-66-6	1.0	mg/kg	----	24.1	29.9	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	----	0.01	0.03	----	----
EK026SF: Total CN by Segmented Flow Analyser								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH14_BL	CBH5_A	CBH2_B1	----	----
			Client sampling date / time	14-Nov-2019 00:00	07-Nov-2019 00:00	08-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1929789-045	EB1929789-046	EB1929789-047	--------	--------
				Result	Result	Result	----	----
EK026SF: Total CN by Segmented Flow Analyser - Continued								
Total Cyanide	57-12-5	1	mg/kg	----	<1	----	----	----
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	----	328	----	----	----
EK255A SD: Ammonia in Sediment								
Ammonia as N	7664-41-7	0.2	mg/kg	----	3.7	----	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	----	0.34	0.91	----	----
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	----	4.20	2.63	----	----
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	----	3.86	1.72	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.1	mg/kg	----	<0.1	----	----	----
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	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	0.5	mg/kg	----	<0.5	----	----	----
Chloromethane	74-87-3	0.5	mg/kg	----	<0.5	----	----	----
Vinyl chloride	75-01-4	0.5	mg/kg	----	<0.5	----	----	----
Bromomethane	74-83-9	0.5	mg/kg	----	<0.5	----	----	----
Chloroethane	75-00-3	0.5	mg/kg	----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH14_BL	CBH5_A	CBH2_B1	----	----
			Client sampling date / time	14-Nov-2019 00:00	07-Nov-2019 00:00	08-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1929789-045	EB1929789-046	EB1929789-047	--------	--------
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
Trichlorofluoromethane	75-69-4	0.5	mg/kg	----	<0.5	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.05	mg/kg	----	<0.05	----	----	----
1.1-Dichloroethane	75-34-3	0.05	mg/kg	----	<0.05	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.05	mg/kg	----	<0.05	----	----	----
1.1.1-Trichloroethane	71-55-6	0.05	mg/kg	----	<0.05	----	----	----
Carbon Tetrachloride	56-23-5	0.05	mg/kg	----	<0.05	----	----	----
1.2-Dichloroethane	107-06-2	0.05	mg/kg	----	<0.05	----	----	----
Trichloroethene	79-01-6	0.05	mg/kg	----	<0.05	----	----	----
Tetrachloroethene	127-18-4	0.05	mg/kg	----	<0.05	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.05	mg/kg	----	<0.05	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobutadiene	87-68-3	0.05	mg/kg	----	<0.05	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.05	mg/kg	----	<0.05	----	----	----
Bromobenzene	108-86-1	0.05	mg/kg	----	<0.05	----	----	----
2-Chlorotoluene	95-49-8	0.05	mg/kg	----	<0.05	----	----	----
4-Chlorotoluene	106-43-4	0.05	mg/kg	----	<0.05	----	----	----
1.3-Dichlorobenzene	541-73-1	0.05	mg/kg	----	<0.05	----	----	----
1.4-Dichlorobenzene	106-46-7	0.05	mg/kg	----	<0.05	----	----	----
1.2-Dichlorobenzene	95-50-1	0.05	mg/kg	----	<0.05	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.05	mg/kg	----	<0.05	----	----	----
1.2.3-Trichlorobenzene	87-61-6	0.05	mg/kg	----	<0.05	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.05	mg/kg	----	<0.05	----	----	----
Bromodichloromethane	75-27-4	0.05	mg/kg	----	<0.05	----	----	----
Dibromochloromethane	124-48-1	0.05	mg/kg	----	<0.05	----	----	----
Bromoform	75-25-2	0.10	mg/kg	----	<0.10	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	0.10	mg/kg	----	<0.10	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	<0.5	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	<0.5	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	<0.5	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	<1	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH14_BL	CBH5_A	CBH2_B1	----	----
			Client sampling date / time	14-Nov-2019 00:00	07-Nov-2019 00:00	08-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1929789-045	EB1929789-046	EB1929789-047	--------	--------
				Result	Result	Result	----	----
EP075(SIM)A: Phenolic Compounds - Continued								
2-Nitrophenol	88-75-5	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	<0.5	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	<0.5	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	<0.5	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg	----	<2	<2	----	----
^ Sum of Phenols	----	0.5	mg/kg	----	<0.5	<0.5	----	----
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	----	<3	<3	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C16 - C34 Fraction	----	3	mg/kg	----	<3	**15**	----	----
>C34 - C40 Fraction	----	5	mg/kg	----	<5	**5**	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg	----	<3	**20**	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg	----	<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	----	----
C10 - C14 Fraction	----	3	mg/kg	----	<3	<3	----	----
C15 - C28 Fraction	----	3	mg/kg	----	<3	**7**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH14_BL	CBH5_A	CBH2_B1	----	----
			Client sampling date / time	14-Nov-2019 00:00	07-Nov-2019 00:00	08-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1929789-045	EB1929789-046	EB1929789-047	--------	--------
				Result	Result	Result	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons - Continued								
C29 - C36 Fraction	----	5	mg/kg	----	<5	11	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg	----	<3	18	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	----	<3	<3	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	----	<3.0	<3.0	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	----	----
Toluene	108-88-3	0.2	mg/kg	----	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	----	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	----	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	----	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	<0.2	----	----
Naphthalene	91-20-3	0.2	mg/kg	----	<0.2	<0.2	----	----
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	<0.5	<0.5	----	----
EP094A: Synthetic Pyrethroids								
Bioresmethrin	28434-01-07	0.05	mg/kg	----	<0.05	----	----	----
Bifenthrin	82657-04-3	0.05	mg/kg	----	<0.05	----	----	----
Phenothrin	26002-80-2	0.05	mg/kg	----	<0.05	----	----	----
Lambda-cyhalothrin	68085-85-8	0.05	mg/kg	----	<0.05	----	----	----
Permethrin	52645-53-1	0.05	mg/kg	----	<0.05	----	----	----
Cyfluthrin	68359-37-5	0.05	mg/kg	----	<0.05	----	----	----
Cypermethrin	52315-07-8	0.05	mg/kg	----	<0.05	----	----	----
Fenvalerate & Esfenvalerate	51630-58-1/66230-04-	0.05	mg/kg	----	<0.05	----	----	----
Deltamethrin & Tralomethrin	62229-77-0/66841-25-	0.05	mg/kg	----	<0.05	----	----	----
Allethrin	584-79-2	0.05	mg/kg	----	<0.05	----	----	----
Transfluthrin	118712-89-3	0.05	mg/kg	----	<0.05	----	----	----
Tetramethrin	7696-12-0	0.05	mg/kg	----	<0.05	----	----	----
Tau-fluvalinate	102851-06-9	0.05	mg/kg	----	<0.05	----	----	----
EP094B: Synergist								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH14_BL	CBH5_A	CBH2_B1	----	----
			Client sampling date / time	14-Nov-2019 00:00	07-Nov-2019 00:00	08-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1929789-045	EB1929789-046	EB1929789-047	--------	--------
				Result	Result	Result	----	----
EP094B: Synergist - Continued								
Piperonyl Butoxide	63993-73-7	0.05	mg/kg	----	<0.05	----	----	----
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	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH14_BL	CBH5_A	CBH2_B1	----	----
			Client sampling date / time	14-Nov-2019 00:00	07-Nov-2019 00:00	08-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1929789-045	EB1929789-046	EB1929789-047	--------	--------
				Result	Result	Result	----	----
EP131A: Organochlorine Pesticides - Continued								
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	<5	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	----	<5	<5	----	----
Acenaphthylene	208-96-8	4	µg/kg	----	<4	<4	----	----
Acenaphthene	83-32-9	4	µg/kg	----	<4	<4	----	----
Fluorene	86-73-7	4	µg/kg	----	<4	<4	----	----
Phenanthrene	85-01-8	4	µg/kg	----	<4	<4	----	----
Anthracene	120-12-7	4	µg/kg	----	<4	<4	----	----
Fluoranthene	206-44-0	4	µg/kg	----	<4	**13**	----	----
Pyrene	129-00-0	4	µg/kg	----	<4	**12**	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	----	<4	**9**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH14_BL	CBH5_A	CBH2_B1	----	----
			Client sampling date / time	14-Nov-2019 00:00	07-Nov-2019 00:00	08-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1929789-045	EB1929789-046	EB1929789-047	--------	--------
				Result	Result	Result	----	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	4	µg/kg	----	<4	8	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	----	<4	11	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	----	<4	4	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	----	<4	5	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	----	<4	10	----	----
Perylene	198-55-0	4	µg/kg	----	<4	5	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	----	<4	7	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	----	<4	<4	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	----	<4	6	----	----
Coronene	191-07-1	5	µg/kg	----	<5	<5	----	----
^ Sum of PAHs	----	4	µg/kg	----	<4	90	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	----	----	13	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	----	----	15	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	----	----	17	----	----
EP201: Carbamate Pesticides by LCMS								
Oxamyl	23135-22-0	0.02	mg/kg	----	<0.02	----	----	----
Methomyl	16752-77-5	0.02	mg/kg	----	<0.02	----	----	----
3-Hydroxy Carbofuran	16655-82-6	0.02	mg/kg	----	<0.02	----	----	----
Aldicarb	116-06-3	0.02	mg/kg	----	<0.02	----	----	----
Bendiocarb	22781-23-3	0.02	mg/kg	----	<0.02	----	----	----
Thiodicarb	59669-26-0	0.02	mg/kg	----	<0.02	----	----	----
Carbofuran	1563-66-2	0.02	mg/kg	----	<0.02	----	----	----
Carbaryl	63-25-2	0.02	mg/kg	----	<0.02	----	----	----
Methiocarb	2032-65-7	0.02	mg/kg	----	<0.02	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	----	<0.02	----	----	----
2.4-DB	94-82-6	0.02	mg/kg	----	<0.02	----	----	----
Dicamba	1918-00-9	0.02	mg/kg	----	<0.02	----	----	----
Mecoprop	93-65-2	0.02	mg/kg	----	<0.02	----	----	----
MCPA	94-74-6	0.02	mg/kg	----	<0.02	----	----	----
2.4-DP	120-36-5	0.02	mg/kg	----	<0.02	----	----	----
2.4-D	94-75-7	0.02	mg/kg	----	<0.02	----	----	----
Triclopyr	55335-06-3	0.02	mg/kg	----	<0.02	----	----	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	----	<0.02	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH14_BL	CBH5_A	CBH2_B1	----	----
			Client sampling date / time	14-Nov-2019 00:00	07-Nov-2019 00:00	08-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1929789-045	EB1929789-046	EB1929789-047	--------	--------
				Result	Result	Result	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued								
2.4.5-T	93-76-5	0.02	mg/kg	----	<0.02	----	----	----
MCPB	94-81-5	0.02	mg/kg	----	<0.02	----	----	----
Picloram	1918-02-1	0.02	mg/kg	----	<0.02	----	----	----
Clopyralid	1702-17-6	0.02	mg/kg	----	<0.02	----	----	----
Fluroxypyr	69377-81-7	0.02	mg/kg	----	<0.02	----	----	----
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.5	%	----	79.3	----	----	----
Toluene-D8	2037-26-5	0.5	%	----	80.0	----	----	----
4-Bromofluorobenzene	460-00-4	0.5	%	----	108	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	101	105	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	101	104	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	94.1	97.7	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	98.9	106	----	----
Anthracene-d10	1719-06-8	0.5	%	----	101	102	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	128	128	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	66.4	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	78.7	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	99.5	----	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	87.7	83.1	----	----
Toluene-D8	2037-26-5	0.2	%	----	73.8	69.2	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	85.4	81.2	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	----	77.6	67.1	----	----
EP094S: Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	82.8	----	----	----
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	----	67.7	----	----	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	----	61.3	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	CBH14_BL	CBH5_A	CBH2_B1	----	----
			Client sampling date / time	14-Nov-2019 00:00	07-Nov-2019 00:00	08-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EB1929789-045	EB1929789-046	EB1929789-047	--------	--------
				Result	Result	Result	----	----
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.5	%	----	87.1	----	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	----	70.0	88.5	----	----
Anthracene-d10	1719-06-8	10	%	----	80.4	114	----	----
4-Terphenyl-d14	1718-51-0	10	%	----	79.7	113	----	----
EP201S: Carbamate Surrogate								
4-Bromo-3.5-dimethylphenyl-N-methylcarbamate	672-99-1	0.02	%	----	118	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%	----	58.2	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	154
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	156
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
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
EP094S: Pesticide Surrogate			
DEF	78-48-8	10	110
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
EP201S: Carbamate Surrogate			
4-Bromo-3.5-dimethylphenyl-N-methylcarbamate	672-99-1	59	137
EP202S: Phenoxyacetic Acid Herbicide Surrogate			

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP202S: Phenoxyacetic Acid Herbicide Surrogate - Continued			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	45	139

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1929953**	Page	: 1 of 33
Client	: **FRC ENVIRONMENTAL**	Laboratory	: Environmental Division Brisbane
Contact	: MS DEYA ANGULO	Contact	: Customer Services EB
Address	: PO BOX 2363 WELLINGTON POINT QLD, AUSTRALIA 4160	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Q001969 WG Toondah Sediment	Date Samples Received	: 08-Nov-2019 13:00
Order number	: ----	Date Analysis Commenced	: 12-Nov-2019
C-O-C number	: ----	Issue Date	: 27-Nov-2019 11:18
Sampler	: DEYA ANGULO		
Site	:		
Quote number	: BN/268/19		
No. of samples received	: 21		
No. of samples analysed	: 20		

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*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	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.

- EA150H: Soil particle density results fell outside the scope of AS1289.3.6.3. Results should be scrutinised accordingly.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- **Ultra-trace pesticides, Carbamate Pesticides & Phenoxyacetic Acid Herbicide analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- EK067G (Total Phosphorous as P): Sample EB1929953_016 shows poor spike recovery due to sample heterogeneity. This has been confirmed by visual inspection.
- EK067G (Total Phosphorous as P): Sample EB1929953_016 shows poor spike recovery due to sample heterogeneity. This has been confirmed by re-extraction and analysis.
- ASS: EA033 (CRS Suite): Laboratory determinations of ANC needs to be corroborated by effectiveness of the measured ANC in relation to incubation ANC. Unless corroborated, the results of ANC testing should be discounted when determining Net Acidity for comparison with action criteria, or for the determination of the acidity hazard and required liming amounts.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime ($CaCO_3$) 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'.
- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH7_B1	CBH7_A	CBH7_B2	CBH7_C	CBH11_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-001	EB1929953-002	EB1929953-003	EB1929953-004	EB1929953-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.4	9.0	8.3	7.5	8.5
pH (Fox)	----	0.1	pH Unit	7.5	7.3	6.5	2.0	7.2
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.7	8.9	8.3	6.7	8.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.731	0.559	2.56	0.486	0.735
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	456	349	1600	303	459
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	17.0	30.3	3.98	1.14	12.4
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3400	6050	795	228	2480
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	5.45	9.70	1.27	0.36	3.98
EA033-E: 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	1.71	0.24	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	1070	151	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	80	11	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.73	0.56	2.56	0.48	0.74
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	456	349	1600	303	459
Liming Rate excluding ANC	----	1	kg CaCO3/t	34	26	120	23	34
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	43.6	38.4	43.6	29.6	48.4
EA150: Particle Sizing								
+75µm	----	1	%	4	27	2	5	4
+150µm	----	1	%	2	10	<1	3	2
+300µm	----	1	%	1	6	<1	2	2
+425µm	----	1	%	1	5	<1	2	2
+600µm	----	1	%	1	5	<1	1	2
+1180µm	----	1	%	<1	4	<1	<1	1

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH7_B1	CBH7_A	CBH7_B2	CBH7_C	CBH11_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-001	EB1929953-002	EB1929953-003	EB1929953-004	EB1929953-005
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	<1	3	<1	<1	<1
+4.75mm	----	1	%	<1	2	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	48	35	44	63	56
Silt (2-60 µm)	----	1	%	47	35	51	31	38
Sand (0.06-2.00 mm)	----	1	%	5	27	5	6	5
Gravel (>2mm)	----	1	%	<1	3	<1	<1	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.65	2.68	2.64	2.69	2.63
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	11300	7990	9320	8780	11900
Iron	7439-89-6	50	mg/kg	34200	24600	50600	27400	40500
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	15.1	10.2	21.3	3.70	16.4
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	43.7	26.1	48.4	31.4	51.2
Copper	7440-50-8	1.0	mg/kg	6.1	4.0	7.5	9.1	7.0
Cobalt	7440-48-4	0.5	mg/kg	6.9	5.8	7.0	5.0	7.3
Lead	7439-92-1	1.0	mg/kg	6.8	2.4	7.6	11.7	7.2
Manganese	7439-96-5	10	mg/kg	164	154	138	47	157
Nickel	7440-02-0	1.0	mg/kg	11.4	8.0	9.2	5.4	11.8
Selenium	7782-49-2	0.1	mg/kg	0.5	0.4	0.6	0.4	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	49.5	27.9	62.4	72.6	58.6
Zinc	7440-66-6	1.0	mg/kg	24.5	21.6	16.4	1.2	24.0
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EP003: Total Organic Carbon (TOC) in Soil								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH7_B1	CBH7_A	CBH7_B2	CBH7_C	CBH11_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-001	EB1929953-002	EB1929953-003	EB1929953-004	EB1929953-005
				Result	Result	Result	Result	Result
EP003: Total Organic Carbon (TOC) in Soil - Continued								
Total Organic Carbon	----	0.02	%	**0.53**	**0.45**	**1.38**	**0.51**	**0.46**
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	**2.66**	**4.52**	**1.99**	**0.89**	**2.10**
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	**2.13**	**4.07**	**0.61**	**0.38**	**1.64**
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	**15**	**8**	<3
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg	<3	<3	**15**	**8**	<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	**12**	<3	<3
C29 - C36 Fraction	----	5	mg/kg	<5	<5	**7**	**9**	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg	<3	<3	**19**	**9**	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH7_B1	CBH7_A	CBH7_B2	CBH7_C	CBH11_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-001	EB1929953-002	EB1929953-003	EB1929953-004	EB1929953-005
				Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons - Continued								
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								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	**6**	<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

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH7_B1	CBH7_A	CBH7_B2	CBH7_C	CBH11_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-001	EB1929953-002	EB1929953-003	EB1929953-004	EB1929953-005
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Sum of PAHs	----	4	µg/kg	<4	<4	<4	6	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	<4	<4	<4	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	5	5	5	5	5
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	10	10	10	10	10
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	105	106	105	104	103
2-Chlorophenol-D4	93951-73-6	0.5	%	99.4	98.9	101	99.9	97.8
2.4.6-Tribromophenol	118-79-6	0.5	%	93.3	103	98.0	98.8	92.3
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	92.0	103	99.6	100	98.2
Anthracene-d10	1719-06-8	0.5	%	107	112	107	106	109
4-Terphenyl-d14	1718-51-0	0.5	%	129	136	130	132	132
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	51.4	73.3	56.4	52.0	72.0
Toluene-D8	2037-26-5	0.2	%	61.3	68.5	65.6	63.4	60.1
4-Bromofluorobenzene	460-00-4	0.2	%	78.7	82.5	87.0	83.4	81.7
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	103	71.6	63.2	50.7	97.0
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	100	96.2	102	108	88.6
Anthracene-d10	1719-06-8	10	%	108	88.2	94.5	95.9	80.4
4-Terphenyl-d14	1718-51-0	10	%	92.3	80.6	84.0	82.0	74.6

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH11_B1	CBH11_C	CBH11_A	CBH8_B	CBH8_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-006	EB1929953-008	EB1929953-009	EB1929953-010	EB1929953-011
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.8	8.3	9.0	8.8	8.8
pH (Fox)	----	0.1	pH Unit	7.4	7.3	7.3	7.5	7.5
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.7	8.6	9.0	8.7	8.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.729	1.01	0.486	0.700	0.618
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	455	632	303	436	386
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	20.4	5.78	35.5	15.7	19.5
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	4070	1150	7090	3130	3890
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	6.53	1.85	11.4	5.02	6.24
EA033-E: 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	0.73	1.01	0.49	0.70	0.62
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	455	632	303	436	386
Liming Rate excluding ANC	----	1	kg CaCO3/t	34	47	23	33	29
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	44.4	40.0	36.8	45.6	45.9
EA150: Particle Sizing								
+75µm	----	1	%	9	9	45	2	5
+150µm	----	1	%	6	4	32	2	3
+300µm	----	1	%	4	3	26	1	2
+425µm	----	1	%	3	2	20	1	2
+600µm	----	1	%	3	2	15	<1	2
+1180µm	----	1	%	1	2	8	<1	1

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH11_B1	CBH11_C	CBH11_A	CBH8_B	CBH8_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-006	EB1929953-008	EB1929953-009	EB1929953-010	EB1929953-011
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	<1	1	3	<1	<1
+4.75mm	----	1	%	<1	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	46	40	26	51	51
Silt (2-60 µm)	----	1	%	43	48	24	45	43
Sand (0.06-2.00 mm)	----	1	%	11	11	46	4	5
Gravel (>2mm)	----	1	%	<1	1	4	<1	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.68	2.69	2.62	2.58	2.77
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	11700	8780	7700	10800	11200
Iron	7439-89-6	50	mg/kg	32400	37600	21100	33800	31300
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	12.1	14.7	8.15	16.2	10.3
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	39.2	50.2	23.4	46.1	39.8
Copper	7440-50-8	1.0	mg/kg	6.5	7.4	4.0	6.4	5.7
Cobalt	7440-48-4	0.5	mg/kg	8.2	6.4	6.5	7.0	7.0
Lead	7439-92-1	1.0	mg/kg	7.1	6.8	5.2	6.9	7.6
Manganese	7439-96-5	10	mg/kg	168	117	178	167	166
Nickel	7440-02-0	1.0	mg/kg	12.8	8.9	8.4	11.6	11.4
Selenium	7782-49-2	0.1	mg/kg	0.5	0.4	0.4	0.5	0.5
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	43.0	61.8	26.1	51.4	42.6
Zinc	7440-66-6	1.0	mg/kg	30.3	16.7	23.0	25.3	27.2
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EP003: Total Organic Carbon (TOC) in Soil								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH11_B1	CBH11_C	CBH11_A	CBH8_B	CBH8_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-006	EB1929953-008	EB1929953-009	EB1929953-010	EB1929953-011
				Result	Result	Result	Result	Result
EP003: Total Organic Carbon (TOC) in Soil - Continued								
Total Organic Carbon	----	0.02	%	**0.50**	**0.65**	**0.41**	**0.52**	**0.50**
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	**3.16**	**1.44**	**6.43**	**2.04**	**3.03**
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	**2.66**	**0.79**	**6.02**	**1.52**	**2.53**
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	**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

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH11_B1	CBH11_C	CBH11_A	CBH8_B	CBH8_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-006	EB1929953-008	EB1929953-009	EB1929953-010	EB1929953-011
				Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons - Continued								
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								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH11_B1	CBH11_C	CBH11_A	CBH8_B	CBH8_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-006	EB1929953-008	EB1929953-009	EB1929953-010	EB1929953-011
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Sum of PAHs	----	4	µg/kg	<4	<4	<4	<4	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	<4	<4	<4	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	5	5	5	5	5
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	10	10	10	10	10
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	109	101	143	102	98.0
2-Chlorophenol-D4	93951-73-6	0.5	%	106	94.5	138	96.8	94.3
2.4.6-Tribromophenol	118-79-6	0.5	%	97.7	90.8	126	86.6	83.1
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	99.7	93.4	132	95.8	95.9
Anthracene-d10	1719-06-8	0.5	%	110	106	110	108	104
4-Terphenyl-d14	1718-51-0	0.5	%	134	130	134	134	129
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	52.2	61.9	70.3	70.8	66.4
Toluene-D8	2037-26-5	0.2	%	60.0	69.0	63.0	51.4	56.1
4-Bromofluorobenzene	460-00-4	0.2	%	79.0	87.4	84.6	68.5	80.4
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	42.3	36.2	123	92.3	59.8
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	94.4	114	86.1	79.8	105
Anthracene-d10	1719-06-8	10	%	111	95.5	84.0	78.8	79.2
4-Terphenyl-d14	1718-51-0	10	%	85.0	82.9	87.2	79.7	78.8

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH8_B2	CBH8_C	CBH6_A_S2	CBH6_C	CBH6_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-012	EB1929953-013	EB1929953-014	EB1929953-015	EB1929953-016
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.4	7.8	7.7	7.6	8.3
pH (Fox)	----	0.1	pH Unit	7.5	3.3	1.9	3.2	6.3
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.5	6.8	8.3	6.1	8.3
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	6	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.832	0.404	1.20	0.287	1.36
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	519	252	747	179	851
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	7.63	1.17	3.25	----	2.75
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1520	234	649	----	550
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.44	0.37	1.04	----	0.88
EA033-E: 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	0.15	0.50	0.30	0.78
Net Acidity (acidity units)	----	10	mole H+ / t	<10	96	315	185	484
Liming Rate	----	1	kg CaCO3/t	<1	7	24	14	36
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.83	0.40	1.20	0.30	1.36
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	519	252	747	185	851
Liming Rate excluding ANC	----	1	kg CaCO3/t	39	19	56	14	64
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	43.7	28.9	40.0	28.7	40.3
EA150: Particle Sizing								
+75µm	----	1	%	11	7	6	5	6
+150µm	----	1	%	6	3	2	2	2
+300µm	----	1	%	4	2	1	<1	1
+425µm	----	1	%	3	2	<1	<1	<1
+600µm	----	1	%	3	2	<1	<1	<1
+1180µm	----	1	%	2	2	<1	<1	<1

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH8_B2	CBH8_C	CBH6_A_S2	CBH6_C	CBH6_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-012	EB1929953-013	EB1929953-014	EB1929953-015	EB1929953-016
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	<1	1	<1	<1	<1
+4.75mm	----	1	%	<1	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	49	59	54	59	46
Silt (2-60 µm)	----	1	%	38	33	39	35	46
Sand (0.06-2.00 mm)	----	1	%	12	7	7	6	8
Gravel (>2mm)	----	1	%	1	1	<1	<1	<1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.71	2.69	3.23	2.64	2.81
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	10800	8280	8190	7510	7240
Iron	7439-89-6	50	mg/kg	50800	37100	35100	37300	27200
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	22.2	5.23	10.7	4.22	9.61
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	76.7	38.6	41.8	27.6	43.2
Copper	7440-50-8	1.0	mg/kg	6.7	10.0	6.6	6.0	7.4
Cobalt	7440-48-4	0.5	mg/kg	6.6	3.6	4.9	8.1	6.8
Lead	7439-92-1	1.0	mg/kg	2.2	11.3	8.9	11.4	8.9
Manganese	7439-96-5	10	mg/kg	150	78	103	45	81
Nickel	7440-02-0	1.0	mg/kg	8.8	3.9	6.0	3.2	6.9
Selenium	7782-49-2	0.1	mg/kg	0.5	0.4	0.5	0.4	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	72.4	84.7	67.5	81.3	79.0
Zinc	7440-66-6	1.0	mg/kg	15.8	1.6	8.4	<1.0	7.0
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EK026SF: Total CN by Segmented Flow Analyser								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH8_B2	CBH8_C	CBH6_A_S2	CBH6_C	CBH6_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-012	EB1929953-013	EB1929953-014	EB1929953-015	EB1929953-016
				Result	Result	Result	Result	Result
EK026SF: Total CN by Segmented Flow Analyser - Continued								
Total Cyanide	57-12-5	1	mg/kg	----	----	<1	----	<1
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	----	----	<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
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	<0.1	----	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	650	----	700
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	650	----	700
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	279	----	321
EK255A SD: Ammonia in Sediment								
Ammonia as N	7664-41-7	0.2	mg/kg	----	----	1.5	----	1.9
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.65	0.35	0.98	0.28	1.03
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	1.68	0.80	1.41	0.89	1.40
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	1.03	0.45	0.43	0.61	0.37
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.1	mg/kg	----	----	<0.1	----	<0.1
Toluene	108-88-3	0.2	mg/kg	----	----	<0.2	----	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	----	----	<0.2	----	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	----	----	<0.2	----	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	----	----	<0.2	----	<0.2
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Chloromethane	74-87-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Vinyl chloride	75-01-4	0.5	mg/kg	----	----	<0.5	----	<0.5
Bromomethane	74-83-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Chloroethane	75-00-3	0.5	mg/kg	----	----	<0.5	----	<0.5

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH8_B2	CBH8_C	CBH6_A_S2	CBH6_C	CBH6_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-012	EB1929953-013	EB1929953-014	EB1929953-015	EB1929953-016
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Trichlorofluoromethane	75-69-4	0.5	mg/kg	----	----	<0.5	----	<0.5
trans-1.2-Dichloroethene	156-60-5	0.05	mg/kg	----	----	<0.05	----	<0.05
1.1-Dichloroethane	75-34-3	0.05	mg/kg	----	----	<0.05	----	<0.05
cis-1.2-Dichloroethene	156-59-2	0.05	mg/kg	----	----	<0.05	----	<0.05
1.1.1-Trichloroethane	71-55-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Carbon Tetrachloride	56-23-5	0.05	mg/kg	----	----	<0.05	----	<0.05
1.2-Dichloroethane	107-06-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Trichloroethene	79-01-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Tetrachloroethene	127-18-4	0.05	mg/kg	----	----	<0.05	----	<0.05
1.1.1.2-Tetrachloroethane	630-20-6	0.05	mg/kg	----	----	<0.05	----	<0.05
1.1.2.2-Tetrachloroethane	79-34-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Hexachlorobutadiene	87-68-3	0.05	mg/kg	----	----	<0.05	----	<0.05
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.05	mg/kg	----	----	<0.05	----	<0.05
Bromobenzene	108-86-1	0.05	mg/kg	----	----	<0.05	----	<0.05
2-Chlorotoluene	95-49-8	0.05	mg/kg	----	----	<0.05	----	<0.05
4-Chlorotoluene	106-43-4	0.05	mg/kg	----	----	<0.05	----	<0.05
1.3-Dichlorobenzene	541-73-1	0.05	mg/kg	----	----	<0.05	----	<0.05
1.4-Dichlorobenzene	106-46-7	0.05	mg/kg	----	----	<0.05	----	<0.05
1.2-Dichlorobenzene	95-50-1	0.05	mg/kg	----	----	<0.05	----	<0.05
1.2.4-Trichlorobenzene	120-82-1	0.05	mg/kg	----	----	<0.05	----	<0.05
1.2.3-Trichlorobenzene	87-61-6	0.05	mg/kg	----	----	<0.05	----	<0.05
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.05	mg/kg	----	----	<0.05	----	<0.05
Bromodichloromethane	75-27-4	0.05	mg/kg	----	----	<0.05	----	<0.05
Dibromochloromethane	124-48-1	0.05	mg/kg	----	----	<0.05	----	<0.05
Bromoform	75-25-2	0.10	mg/kg	----	----	<0.10	----	<0.10
EP074H: Naphthalene								
Naphthalene	91-20-3	0.10	mg/kg	----	----	<0.10	----	<0.10
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1

Analytical Results

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Compound	CAS Number	LOR	Unit	EB1929953-012	EB1929953-013	EB1929953-014	EB1929953-015	EB1929953-016
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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**	**11**	**7**	**7**
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg	<3	**9**	**11**	**7**	**7**
>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	**4**	<3	**4**
C29 - C36 Fraction	----	5	mg/kg	<5	**10**	**10**	**7**	**5**
^ C10 - C36 Fraction (sum)	----	3	mg/kg	<3	**10**	**14**	**7**	**9**
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

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			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-012	EB1929953-013	EB1929953-014	EB1929953-015	EB1929953-016
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP094A: Synthetic Pyrethroids								
Bioresmethrin	28434-01-07	0.05	mg/kg	----	----	<0.05	----	<0.05
Bifenthrin	82657-04-3	0.05	mg/kg	----	----	<0.05	----	<0.05
Phenothrin	26002-80-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Lambda-cyhalothrin	68085-85-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Permethrin	52645-53-1	0.05	mg/kg	----	----	<0.05	----	<0.05
Cyfluthrin	68359-37-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Cypermethrin	52315-07-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Fenvalerate & Esfenvalerate	51630-58-1/66230-04-	0.05	mg/kg	----	----	<0.05	----	<0.05
Deltamethrin & Tralomethrin	62229-77-0/66841-25-	0.05	mg/kg	----	----	<0.05	----	<0.05
Allethrin	584-79-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Transfluthrin	118712-89-3	0.05	mg/kg	----	----	<0.05	----	<0.05
Tetramethrin	7696-12-0	0.05	mg/kg	----	----	<0.05	----	<0.05
Tau-fluvalinate	102851-06-9	0.05	mg/kg	----	----	<0.05	----	<0.05
EP094B: Synergist								
Piperonyl Butoxide	63993-73-7	0.05	mg/kg	----	----	<0.05	----	<0.05
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Bromophos-ethyl	4824-78-6	10	µg/kg	----	----	<10	----	<10
Carbophenothion	786-19-6	10	µg/kg	----	----	<10	----	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg	----	----	<10.0	----	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	----	----	<10	----	<10
Chlorpyrifos	2921-88-2	10	µg/kg	----	----	<10	----	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg	----	----	<10	----	<10
Demeton-S-methyl	919-86-8	10	µg/kg	----	----	<10	----	<10
Diazinon	333-41-5	10	µg/kg	----	----	<10	----	<10
Dichlorvos	62-73-7	10	µg/kg	----	----	<10	----	<10
Dimethoate	60-51-5	10	µg/kg	----	----	<10	----	<10
Ethion	563-12-2	10	µg/kg	----	----	<10	----	<10
Fenamiphos	22224-92-6	10	µg/kg	----	----	<10	----	<10

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Compound	CAS Number	LOR	Unit	EB1929953-012	EB1929953-013	EB1929953-014	EB1929953-015	EB1929953-016
				Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
Fenthion	55-38-9	10	µg/kg	----	----	<10	----	<10
Malathion	121-75-5	10	µg/kg	----	----	<10	----	<10
Azinphos Methyl	86-50-0	10	µg/kg	----	----	<10	----	<10
Monocrotophos	6923-22-4	10	µg/kg	----	----	<10	----	<10
Parathion	56-38-2	10	µg/kg	----	----	<10	----	<10
Parathion-methyl	298-00-0	10	µg/kg	----	----	<10	----	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	----	----	<10	----	<10
Prothiofos	34643-46-4	10	µg/kg	----	----	<10	----	<10
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	----	----	<0.50	----	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	----	----	<0.50	----	<0.50
beta-BHC	319-85-7	0.50	µg/kg	----	----	<0.50	----	<0.50
delta-BHC	319-86-8	0.50	µg/kg	----	----	<0.50	----	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg	----	----	<0.50	----	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg	----	----	<0.50	----	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg	----	----	<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
Dieldrin	60-57-1	0.50	µg/kg	----	----	<0.50	----	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	----	----	<0.50	----	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	----	----	<0.50	----	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	----	----	<0.50	----	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	----	----	<0.50	----	<0.50
Endrin	72-20-8	0.50	µg/kg	----	----	<0.50	----	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg	----	----	<0.50	----	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg	----	----	<0.50	----	<0.50
Heptachlor	76-44-8	0.50	µg/kg	----	----	<0.50	----	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg	----	----	<0.50	----	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	----	----	<0.50	----	<0.50
gamma-BHC	58-89-9	0.25	µg/kg	----	----	<0.25	----	<0.25
Methoxychlor	72-43-5	0.50	µg/kg	----	----	<0.50	----	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg	----	----	<0.25	----	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg	----	----	<0.25	----	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg	----	----	<0.25	----	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg	----	----	<0.50	----	<0.50

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH8_B2	CBH8_C	CBH6_A_S2	CBH6_C	CBH6_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-012	EB1929953-013	EB1929953-014	EB1929953-015	EB1929953-016
				Result	Result	Result	Result	Result
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	----	----	<5.0	----	<5.0
Aroclor 1016	12674-11-2	5.0	µg/kg	----	----	<5.0	----	<5.0
Aroclor 1221	11104-28-2	5.0	µg/kg	----	----	<5.0	----	<5.0
Aroclor 1232	11141-16-5	5.0	µg/kg	----	----	<5.0	----	<5.0
Aroclor 1242	53469-21-9	5.0	µg/kg	----	----	<5.0	----	<5.0
Aroclor 1248	12672-29-6	5.0	µg/kg	----	----	<5.0	----	<5.0
Aroclor 1254	11097-69-1	5.0	µg/kg	----	----	<5.0	----	<5.0
Aroclor 1260	11096-82-5	5.0	µg/kg	----	----	<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	5
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	5
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	<4	----	<4	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	5	5	----	5	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	10	10	----	10	----
EP201: Carbamate Pesticides by LCMS								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH8_B2	CBH8_C	CBH6_A_S2	CBH6_C	CBH6_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-012	EB1929953-013	EB1929953-014	EB1929953-015	EB1929953-016
				Result	Result	Result	Result	Result
EP201: Carbamate Pesticides by LCMS - Continued								
Oxamyl	23135-22-0	0.02	mg/kg	----	----	<0.02	----	<0.02
Methomyl	16752-77-5	0.02	mg/kg	----	----	<0.02	----	<0.02
3-Hydroxy Carbofuran	16655-82-6	0.02	mg/kg	----	----	<0.02	----	<0.02
Aldicarb	116-06-3	0.02	mg/kg	----	----	<0.02	----	<0.02
Bendiocarb	22781-23-3	0.02	mg/kg	----	----	<0.02	----	<0.02
Thiodicarb	59669-26-0	0.02	mg/kg	----	----	<0.02	----	<0.02
Carbofuran	1563-66-2	0.02	mg/kg	----	----	<0.02	----	<0.02
Carbaryl	63-25-2	0.02	mg/kg	----	----	<0.02	----	<0.02
Methiocarb	2032-65-7	0.02	mg/kg	----	----	<0.02	----	<0.02
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	----	----	<0.02	----	<0.02
2.4-DB	94-82-6	0.02	mg/kg	----	----	<0.02	----	<0.02
Dicamba	1918-00-9	0.02	mg/kg	----	----	<0.02	----	<0.02
Mecoprop	93-65-2	0.02	mg/kg	----	----	<0.02	----	<0.02
MCPA	94-74-6	0.02	mg/kg	----	----	<0.02	----	<0.02
2.4-DP	120-36-5	0.02	mg/kg	----	----	<0.02	----	<0.02
2.4-D	94-75-7	0.02	mg/kg	----	----	<0.02	----	<0.02
Triclopyr	55335-06-3	0.02	mg/kg	----	----	<0.02	----	<0.02
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	----	----	<0.02	----	<0.02
2.4.5-T	93-76-5	0.02	mg/kg	----	----	<0.02	----	<0.02
MCPB	94-81-5	0.02	mg/kg	----	----	<0.02	----	<0.02
Picloram	1918-02-1	0.02	mg/kg	----	----	<0.02	----	<0.02
Clopyralid	1702-17-6	0.02	mg/kg	----	----	<0.02	----	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg	----	----	<0.02	----	<0.02
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.5	%	----	----	**79.9**	----	**67.6**
Toluene-D8	2037-26-5	0.5	%	----	----	**77.6**	----	**63.7**
4-Bromofluorobenzene	460-00-4	0.5	%	----	----	**100.0**	----	**64.5**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**104**	**111**	**97.9**	**109**	**97.4**
2-Chlorophenol-D4	93951-73-6	0.5	%	**98.4**	**106**	**95.5**	**103**	**94.0**
2.4.6-Tribromophenol	118-79-6	0.5	%	**88.0**	**99.7**	**86.6**	**94.8**	**91.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**92.8**	**99.4**	**77.7**	**97.0**	**90.9**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH8_B2	CBH8_C	CBH6_A_S2	CBH6_C	CBH6_A
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-012	EB1929953-013	EB1929953-014	EB1929953-015	EB1929953-016
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
Anthracene-d10	1719-06-8	0.5	%	107	115	102	111	98.3
4-Terphenyl-d14	1718-51-0	0.5	%	134	144	123	138	116
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	71.5	72.8	59.4	73.7	67.8
Toluene-D8	2037-26-5	0.2	%	62.0	65.3	53.7	68.6	59.4
4-Bromofluorobenzene	460-00-4	0.2	%	82.4	85.6	70.4	91.4	78.3
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	120	108	109	113	123
EP094S: Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	81.3	----	83.1
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	----	----	65.2	----	51.9
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	----	----	57.4	----	48.9
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.5	%	----	----	71.9	----	62.2
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	96.4	118	95.6	87.8	80.9
Anthracene-d10	1719-06-8	10	%	111	96.6	117	113	122
4-Terphenyl-d14	1718-51-0	10	%	87.4	97.8	114	77.2	81.5
EP201S: Carbamate Surrogate								
4-Bromo-3.5-dimethylphenyl-N-m ethylcarbamate	672-99-1	0.02	%	----	----	121	----	118
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%	----	----	71.1	----	79.4

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH5_B3	CBH5_A	CBH5_C	CBH5_B1	CBH5_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-017	EB1929953-018	EB1929953-019	EB1929953-020	EB1929953-021
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.0	8.8	7.6	8.7	8.4
pH (Fox)	----	0.1	pH Unit	2.2	7.1	2.7	7.4	7.5
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.7	8.8	8.2	8.7	8.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	3.21	0.755	0.159	0.694	0.777
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	2000	471	99	433	485
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.95	16.0	3.11	34.4	9.64
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	389	3200	621	6870	1920
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.62	5.13	1.00	11.0	3.09
EA033-E: 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	2.79	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	1740	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	131	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	3.21	0.76	0.16	0.69	0.78
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	2000	471	99	433	485
Liming Rate excluding ANC	----	1	kg CaCO3/t	150	35	7	32	36
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	43.9	33.0	23.8	42.2	44.8
EA150: Particle Sizing								
+75µm	----	1	%	6	28	6	9	5
+150µm	----	1	%	4	15	2	3	1
+300µm	----	1	%	3	13	1	2	<1
+425µm	----	1	%	2	12	<1	2	<1
+600µm	----	1	%	2	12	<1	1	<1
+1180µm	----	1	%	2	11	<1	<1	<1

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH5_B3	CBH5_A	CBH5_C	CBH5_B1	CBH5_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-017	EB1929953-018	EB1929953-019	EB1929953-020	EB1929953-021
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	1	10	<1	<1	<1
+4.75mm	----	1	%	1	8	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	61	29	62	41	50
Silt (2-60 µm)	----	1	%	33	41	32	48	45
Sand (0.06-2.00 mm)	----	1	%	4	20	6	11	5
Gravel (>2mm)	----	1	%	2	10	<1	<1	<1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.56	2.71	2.67	2.88	2.81
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	9850	7450	6100	9580	10000
Iron	7439-89-6	50	mg/kg	47800	22700	24600	30000	43800
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	11.0	10.1	2.13	12.5	20.3
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	22.5	25.0	18.2	37.6	64.1
Copper	7440-50-8	1.0	mg/kg	8.9	3.9	9.7	5.2	7.2
Cobalt	7440-48-4	0.5	mg/kg	9.1	6.4	5.0	5.7	6.4
Lead	7439-92-1	1.0	mg/kg	11.3	4.9	9.1	6.4	6.8
Manganese	7439-96-5	10	mg/kg	422	150	70	137	160
Nickel	7440-02-0	1.0	mg/kg	9.0	8.7	2.9	9.4	9.8
Selenium	7782-49-2	0.1	mg/kg	0.7	0.4	0.2	0.5	0.5
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	48.4	24.7	52.6	41.3	75.5
Zinc	7440-66-6	1.0	mg/kg	15.7	22.7	1.1	20.2	18.0
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EK026SF: Total CN by Segmented Flow Analyser								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH5_B3	CBH5_A	CBH5_C	CBH5_B1	CBH5_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-017	EB1929953-018	EB1929953-019	EB1929953-020	EB1929953-021
				Result	Result	Result	Result	Result
EK026SF: Total CN by Segmented Flow Analyser - Continued								
Total Cyanide	57-12-5	1	mg/kg	----	<1	----	----	----
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	----	430	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	430	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	247	----	----	----
EK255A SD: Ammonia in Sediment								
Ammonia as N	7664-41-7	0.2	mg/kg	----	1.2	----	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	1.98	0.43	0.26	0.42	0.63
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	2.32	4.20	0.87	3.56	2.01
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	0.34	3.77	0.61	3.14	1.38
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.1	mg/kg	----	<0.1	----	----	----
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	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	0.5	mg/kg	----	<0.5	----	----	----
Chloromethane	74-87-3	0.5	mg/kg	----	<0.5	----	----	----
Vinyl chloride	75-01-4	0.5	mg/kg	----	<0.5	----	----	----
Bromomethane	74-83-9	0.5	mg/kg	----	<0.5	----	----	----
Chloroethane	75-00-3	0.5	mg/kg	----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH5_B3	CBH5_A	CBH5_C	CBH5_B1	CBH5_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-017	EB1929953-018	EB1929953-019	EB1929953-020	EB1929953-021
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Trichlorofluoromethane	75-69-4	0.5	mg/kg	----	<0.5	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.05	mg/kg	----	<0.05	----	----	----
1.1-Dichloroethane	75-34-3	0.05	mg/kg	----	<0.05	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.05	mg/kg	----	<0.05	----	----	----
1.1.1-Trichloroethane	71-55-6	0.05	mg/kg	----	<0.05	----	----	----
Carbon Tetrachloride	56-23-5	0.05	mg/kg	----	<0.05	----	----	----
1.2-Dichloroethane	107-06-2	0.05	mg/kg	----	<0.05	----	----	----
Trichloroethene	79-01-6	0.05	mg/kg	----	<0.05	----	----	----
Tetrachloroethene	127-18-4	0.05	mg/kg	----	<0.05	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.05	mg/kg	----	<0.05	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobutadiene	87-68-3	0.05	mg/kg	----	<0.05	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.05	mg/kg	----	<0.05	----	----	----
Bromobenzene	108-86-1	0.05	mg/kg	----	<0.05	----	----	----
2-Chlorotoluene	95-49-8	0.05	mg/kg	----	<0.05	----	----	----
4-Chlorotoluene	106-43-4	0.05	mg/kg	----	<0.05	----	----	----
1.3-Dichlorobenzene	541-73-1	0.05	mg/kg	----	<0.05	----	----	----
1.4-Dichlorobenzene	106-46-7	0.05	mg/kg	----	<0.05	----	----	----
1.2-Dichlorobenzene	95-50-1	0.05	mg/kg	----	<0.05	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.05	mg/kg	----	<0.05	----	----	----
1.2.3-Trichlorobenzene	87-61-6	0.05	mg/kg	----	<0.05	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.05	mg/kg	----	<0.05	----	----	----
Bromodichloromethane	75-27-4	0.05	mg/kg	----	<0.05	----	----	----
Dibromochloromethane	124-48-1	0.05	mg/kg	----	<0.05	----	----	----
Bromoform	75-25-2	0.10	mg/kg	----	<0.10	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	0.10	mg/kg	----	<0.10	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH5_B3	CBH5_A	CBH5_C	CBH5_B1	CBH5_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-017	EB1929953-018	EB1929953-019	EB1929953-020	EB1929953-021
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued								
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	**11**	<3	**6**	<3	<3
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg	**11**	<3	**6**	<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	**7**	<3	<3	<3	<3
C29 - C36 Fraction	----	5	mg/kg	**8**	<5	**8**	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg	**15**	<3	**8**	<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

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH5_B3	CBH5_A	CBH5_C	CBH5_B1	CBH5_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-017	EB1929953-018	EB1929953-019	EB1929953-020	EB1929953-021
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP094A: Synthetic Pyrethroids								
Bioresmethrin	28434-01-07	0.05	mg/kg	----	<0.05	----	----	----
Bifenthrin	82657-04-3	0.05	mg/kg	----	<0.05	----	----	----
Phenothrin	26002-80-2	0.05	mg/kg	----	<0.05	----	----	----
Lambda-cyhalothrin	68085-85-8	0.05	mg/kg	----	<0.05	----	----	----
Permethrin	52645-53-1	0.05	mg/kg	----	<0.05	----	----	----
Cyfluthrin	68359-37-5	0.05	mg/kg	----	<0.05	----	----	----
Cypermethrin	52315-07-8	0.05	mg/kg	----	<0.05	----	----	----
Fenvalerate & Esfenvalerate	51630-58-1/66230-04-	0.05	mg/kg	----	<0.05	----	----	----
Deltamethrin & Tralomethrin	62229-77-0/66841-25-	0.05	mg/kg	----	<0.05	----	----	----
Allethrin	584-79-2	0.05	mg/kg	----	<0.05	----	----	----
Transfluthrin	118712-89-3	0.05	mg/kg	----	<0.05	----	----	----
Tetramethrin	7696-12-0	0.05	mg/kg	----	<0.05	----	----	----
Tau-fluvalinate	102851-06-9	0.05	mg/kg	----	<0.05	----	----	----
EP094B: Synergist								
Piperonyl Butoxide	63993-73-7	0.05	mg/kg	----	<0.05	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH5_B3	CBH5_A	CBH5_C	CBH5_B1	CBH5_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-017	EB1929953-018	EB1929953-019	EB1929953-020	EB1929953-021
				Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
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	72-54-8/72-55-9/50-2	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	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH5_B3	CBH5_A	CBH5_C	CBH5_B1	CBH5_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-017	EB1929953-018	EB1929953-019	EB1929953-020	EB1929953-021
				Result	Result	Result	Result	Result
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	<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
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	----	<4	<4	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	**5**	----	**5**	**5**	**5**
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	**10**	----	**10**	**10**	**10**
EP201: Carbamate Pesticides by LCMS								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH5_B3	CBH5_A	CBH5_C	CBH5_B1	CBH5_B2
			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-017	EB1929953-018	EB1929953-019	EB1929953-020	EB1929953-021
				Result	Result	Result	Result	Result
EP201: Carbamate Pesticides by LCMS - Continued								
Oxamyl	23135-22-0	0.02	mg/kg	----	<0.02	----	----	----
Methomyl	16752-77-5	0.02	mg/kg	----	<0.02	----	----	----
3-Hydroxy Carbofuran	16655-82-6	0.02	mg/kg	----	<0.02	----	----	----
Aldicarb	116-06-3	0.02	mg/kg	----	<0.02	----	----	----
Bendiocarb	22781-23-3	0.02	mg/kg	----	<0.02	----	----	----
Thiodicarb	59669-26-0	0.02	mg/kg	----	<0.02	----	----	----
Carbofuran	1563-66-2	0.02	mg/kg	----	<0.02	----	----	----
Carbaryl	63-25-2	0.02	mg/kg	----	<0.02	----	----	----
Methiocarb	2032-65-7	0.02	mg/kg	----	<0.02	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	----	<0.02	----	----	----
2.4-DB	94-82-6	0.02	mg/kg	----	<0.02	----	----	----
Dicamba	1918-00-9	0.02	mg/kg	----	<0.02	----	----	----
Mecoprop	93-65-2	0.02	mg/kg	----	<0.02	----	----	----
MCPA	94-74-6	0.02	mg/kg	----	<0.02	----	----	----
2.4-DP	120-36-5	0.02	mg/kg	----	<0.02	----	----	----
2.4-D	94-75-7	0.02	mg/kg	----	<0.02	----	----	----
Triclopyr	55335-06-3	0.02	mg/kg	----	<0.02	----	----	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	----	<0.02	----	----	----
2.4.5-T	93-76-5	0.02	mg/kg	----	<0.02	----	----	----
MCPB	94-81-5	0.02	mg/kg	----	<0.02	----	----	----
Picloram	1918-02-1	0.02	mg/kg	----	<0.02	----	----	----
Clopyralid	1702-17-6	0.02	mg/kg	----	<0.02	----	----	----
Fluroxypyr	69377-81-7	0.02	mg/kg	----	<0.02	----	----	----
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.5	%	----	**76.3**	----	----	----
Toluene-D8	2037-26-5	0.5	%	----	**72.9**	----	----	----
4-Bromofluorobenzene	460-00-4	0.5	%	----	**73.4**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**103**	**101**	**103**	**101**	**98.0**
2-Chlorophenol-D4	93951-73-6	0.5	%	**100**	**98.8**	**97.9**	**96.6**	**95.6**
2.4.6-Tribromophenol	118-79-6	0.5	%	**97.0**	**97.4**	**99.4**	**95.1**	**80.4**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**96.1**	**91.5**	**89.0**	**88.9**	**90.2**

Analytical Results

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			Client sampling date / time	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00	07-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929953-017	EB1929953-018	EB1929953-019	EB1929953-020	EB1929953-021
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
Anthracene-d10	1719-06-8	0.5	%	108	103	109	104	101
4-Terphenyl-d14	1718-51-0	0.5	%	130	128	135	130	125
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	68.6	76.2	80.1	73.7	71.2
Toluene-D8	2037-26-5	0.2	%	59.4	68.0	74.3	67.1	64.2
4-Bromofluorobenzene	460-00-4	0.2	%	83.7	88.5	93.2	84.0	85.9
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	74.0	120	121	116	110
EP094S: Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	80.2	----	----	----
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	----	73.3	----	----	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	----	53.7	----	----	----
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.5	%	----	71.4	----	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	99.2	93.8	113	94.5	80.5
Anthracene-d10	1719-06-8	10	%	93.0	103	109	119	112
4-Terphenyl-d14	1718-51-0	10	%	89.6	79.8	85.4	102	94.4
EP201S: Carbamate Surrogate								
4-Bromo-3.5-dimethylphenyl-N-m ethylcarbamate	672-99-1	0.02	%	----	124	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%	----	56.1	----	----	----

Surrogate Control Limits

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	154
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	156
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
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
EP094S: Pesticide Surrogate			
DEF	78-48-8	10	110
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
EP201S: Carbamate Surrogate			
4-Bromo-3.5-dimethylphenyl-N-methylcarbamate	672-99-1	59	137
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	45	139

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1929954**	Page	: 1 of 8
Client	: **FRC ENVIRONMENTAL**	Laboratory	: Environmental Division Brisbane
Contact	: MS DEYA ANGULO	Contact	: Customer Services EB
Address	: PO BOX 2363 WELLINGTON POINT QLD, AUSTRALIA 4160	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Q001969 WG Toondah Sediment	Date Samples Received	: 08-Nov-2019 13:00
Order number	: ----	Date Analysis Commenced	: 12-Nov-2019
C-O-C number	: ----	Issue Date	: 26-Nov-2019 16:46
Sampler	: DEYA ANGULO		
Site	:		
Quote number	: BN/268/19		
No. of samples received	: 5		
No. of samples analysed	: 5		

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*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Sarah Ashworth	Laboratory Manager - Brisbane	Brisbane Organics, Stafford, QLD
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	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.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- **Polynuclear Aromatic Hydrocarbon analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- EP071(TRH): Sample "CBH2_A" shows poor duplicate results due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- ASS: EA033 (CRS Suite): Laboratory determinations of ANC needs to be corroborated by effectiveness of the measured ANC in relation to incubation ANC. Unless corroborated, the results of ANC testing should be discounted when determining Net Acidity for comparison with action criteria, or for the determination of the acidity hazard and required liming amounts.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime ($CaCO_3$) 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'.
- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH2_A	CBH2_B1	CBH2_B2	CBH2_C	CBH2_Clay
			Client sampling date / time	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929954-001	EB1929954-002	EB1929954-003	EB1929954-004	EB1929954-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.3	8.7	8.5	7.5	7.1
pH (Fox)	----	0.1	pH Unit	4.5	6.6	7.4	6.0	6.1
Reaction Rate	----	1	Reaction Unit	4	4	4	4	4
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.6	8.7	8.7	8.4	7.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.969	1.47	1.21	0.651	0.081
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	604	916	758	406	51
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	6.77	13.4	16.3	3.11	0.98
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1350	2680	3260	621	196
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.17	4.29	5.23	1.00	0.31
EA033-E: 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	0.97	1.47	1.21	0.65	0.08
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	604	916	758	406	51
Liming Rate excluding ANC	----	1	kg CaCO3/t	45	69	57	30	4
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	48.1	43.2	35.1	30.0	23.6
EA150: Particle Sizing								
+75µm	----	1	%	16	25	40	20	16
+150µm	----	1	%	14	20	34	17	14
+300µm	----	1	%	9	14	27	13	10
+425µm	----	1	%	7	11	23	12	9
+600µm	----	1	%	6	9	20	10	8
+1180µm	----	1	%	5	6	15	8	7

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH2_A	CBH2_B1	CBH2_B2	CBH2_C	CBH2_Clay
			Client sampling date / time	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929954-001	EB1929954-002	EB1929954-003	EB1929954-004	EB1929954-005
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+2.36mm	----	1	%	4	4	11	7	5
+4.75mm	----	1	%	4	1	7	6	3
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	41	42	34	50	54
Silt (2-60 µm)	----	1	%	37	32	24	29	29
Sand (0.06-2.00 mm)	----	1	%	17	22	30	14	11
Gravel (>2mm)	----	1	%	5	4	12	7	6
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.63	2.92	2.84	2.76	2.74
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	12300	11800	9940	15400	13600
Iron	7439-89-6	50	mg/kg	38900	36200	38500	53900	51200
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	14.9	15.2	15.2	6.31	6.64
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	55.2	49.6	63.0	81.0	88.0
Copper	7440-50-8	1.0	mg/kg	11.3	8.0	6.7	18.8	19.6
Cobalt	7440-48-4	0.5	mg/kg	10.8	9.5	5.8	10.2	18.9
Lead	7439-92-1	1.0	mg/kg	9.4	6.9	5.5	8.7	9.1
Manganese	7439-96-5	10	mg/kg	169	174	131	73	58
Nickel	7440-02-0	1.0	mg/kg	13.7	13.2	9.4	9.5	17.5
Selenium	7782-49-2	0.1	mg/kg	0.6	0.7	0.4	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	67.0	55.0	57.9	105	119
Zinc	7440-66-6	1.0	mg/kg	44.6	30.2	19.0	4.5	4.3
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.03	0.02	<0.01	<0.01	<0.01
EP003: Total Organic Carbon (TOC) in Soil								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH2_A	CBH2_B1	CBH2_B2	CBH2_C	CBH2_Clay
			Client sampling date / time	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929954-001	EB1929954-002	EB1929954-003	EB1929954-004	EB1929954-005
				Result	Result	Result	Result	Result
EP003: Total Organic Carbon (TOC) in Soil - Continued								
Total Organic Carbon	----	0.02	%	1.12	1.02	0.64	0.43	0.27
EP003TC: Total Carbon (TC) in Soil								
Total Carbon	TC	0.02	%	1.95	2.70	2.82	1.15	0.75
EP003TIC: Total inorganic Carbon (TIC) in Soil								
Total Inorganic Carbon	----	0.02	%	0.83	1.68	2.18	0.72	0.48
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
^ Sum of Phenols	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	3	mg/kg	5	<3	<3	<3	<3
>C16 - C34 Fraction	----	3	mg/kg	39	16	13	20	11
>C34 - C40 Fraction	----	5	mg/kg	22	7	6	7	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg	66	23	19	27	11
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg	5	<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	6	<3	<3	<3	<3
C15 - C28 Fraction	----	3	mg/kg	22	8	6	7	4
C29 - C36 Fraction	----	5	mg/kg	30	11	10	17	9
^ C10 - C36 Fraction (sum)	----	3	mg/kg	58	19	16	24	13
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH2_A	CBH2_B1	CBH2_B2	CBH2_C	CBH2_Clay
			Client sampling date / time	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929954-001	EB1929954-002	EB1929954-003	EB1929954-004	EB1929954-005
				Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons - Continued								
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								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	**5**	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg	<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg	**11**	**5**	<4	<4	<4
Pyrene	129-00-0	4	µg/kg	**10**	**5**	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg	**6**	**4**	<4	<4	<4
Chrysene	218-01-9	4	µg/kg	**6**	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	**9**	**6**	<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	**5**	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg	**8**	**5**	<4	<4	<4
Perylene	198-55-0	4	µg/kg	**5**	**5**	<4	<4	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	**9**	**5**	<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	**7**	**4**	<4	<4	<4
Coronene	191-07-1	5	µg/kg	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	CBH2_A	CBH2_B1	CBH2_B2	CBH2_C	CBH2_Clay
			Client sampling date / time	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00	08-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EB1929954-001	EB1929954-002	EB1929954-003	EB1929954-004	EB1929954-005
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Sum of PAHs	----	4	µg/kg	85	39	<4	<4	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	11	6	<4	<4	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	13	9	5	5	5
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	15	11	10	10	10
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	117	115	116	120	115
2-Chlorophenol-D4	93951-73-6	0.5	%	121	117	118	119	117
2.4.6-Tribromophenol	118-79-6	0.5	%	95.0	86.3	85.3	91.6	90.6
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	108	106	105	101	105
Anthracene-d10	1719-06-8	0.5	%	106	110	108	106	107
4-Terphenyl-d14	1718-51-0	0.5	%	128	132	136	131	132
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	66.5	68.4	77.2	79.5	79.9
Toluene-D8	2037-26-5	0.2	%	59.0	59.2	68.5	66.8	74.1
4-Bromofluorobenzene	460-00-4	0.2	%	59.5	62.2	68.0	69.7	70.4
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	100	126	116	120	111
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	83.5	78.9	87.8	79.3	78.7
Anthracene-d10	1719-06-8	10	%	110	105	109	98.6	94.8
4-Terphenyl-d14	1718-51-0	10	%	106	100	111	92.7	97.4

Surrogate Control Limits

Sub-Matrix: **SEDIMENT**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	154
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	156
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
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
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