Port of Gladstone Maintenance Dredging 2022 SAP Implementation Report

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Project	A11637
Deliverable	002
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Document Control

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Synopsis	A report describing the physio-chemical characteristics of sediments to be dredged during the 2022 maintenance dredge program at the Gladstone Marina, Upper Auckland Inlet, Main channel, and Boyne entrance. The assessment was carried out in accordance with the project Sampling and Analysis Plan (SAP) and the National Assessment Guidelines for Dredging (NAGD, 2009).

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Amendment Record

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03	14 March 2023	GPC	Report

Executive Summary

Background

Gladstone Ports Corporation Ltd (GPC) is responsible for maintaining navigable port depths and pilotage. Navigable port depths require a minimum depth of clearance below the keel of vessels calling at the Port of Gladstone to allow for effective shipping access to the port and ensure ship safety. GPC undertakes regular maintenance dredging programs to ensure minimum depths are maintained. Sampling and analysis were undertaken in 2022 to assess the suitability of maintenance dredged material for land-based re-use or offshore placement. The sampling and analysis procedures followed the approved sampling and analysis plan (SAP) design document, which was prepared in accordance with National Assessment Guidelines for Dredging (NAGD). Sampling was carried out at 52 locations in maintenance dredged areas (Gladstone Marina, Upper Auckland Inlet, Boyne River Entrance, Main Channel, Swing Basin, Berth pockets), and six locations in reference areas and the East Banks Sea Disposal Site (EBSDS).

Findings

The physical properties of sediments types varied among dredge locations. Sediments in Gladstone Marina and Upper Auckland Inlet were dominated by clay and silts (<0.075 mm), whereas Boyne Entrance was dominated by sands. Sediment types in the Main Channel varied greatly among locations, from well-sorted muds, to muddy sands, sandy gravels and gravelly sands. This variability reflected differences in geomorphological and hydrodynamic conditions along the 50km length of the channel.

Sediments across all dredged areas were found to be suitable for land-based re-use or offshore placement in accordance with NAGD guidelines. In summary:

- The upper 95% confidence limits (95% UCL) of the mean concentration of all analysed metals and metalloids were less than respective NAGD screening levels and guideline values in the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM).

- While not required under NAGD, Phase III testing was conservatively undertaken on samples where any metals/metalloids exceeded NAGD screening levels. Screening levels exceedances were recorded for arsenic (two samples) and copper (one sample). Phase III dilute acid extraction tests indicated that the bioavailable fraction of these parameters was less than NAGD screening levels (i.e. clean), and therefore unlikely to result in adverse impacts to sediment biota.

- Tested organic parameters, namely Total Petroleum Hydrocarbons; Polycyclic Aromatic Hydrocarbons; Benzene, Toluene, Ethylbenzene and Xylene (BTEX); organotins; organochlorine pesticides and organophosphorus pesticides had concentrations below the laboratory limit of reporting in most samples. When detected, most organic parameters had concentrations below their respective NAGD screening values, except TBT which exceeded the NAGD screening level in one sample. In line with QA/QC procedures, the sample was re-analysed and had a low TBT concentration, which indicates the initial sample was an outlier, most likely a small paint flake. All parameters had concentrations below NEPM guideline values and therefore suitable for land-based re-use. No Phase III testing was required for organic parameters.

- A pilot study was conducted to determine whether to add PFAS, dioxins and furans to the contaminant list. These parameters were tested at all the reference and EBSDS sites, and 20% of samples in dredged areas. Dioxins and furans had concentrations at low levels and would not constrain ocean or land-based disposal options. PFAS was not detected in any sample. It is recommended that PFAS, dioxins and furans be removed from the contaminant list.

- Dredged sediments were characterised as potential acid sulfate soils (PASS). Slab/Chip tray incubation tests were undertaken on all samples to quantify acid neutralising capacity (ANC). This test assess the capacity of sediments to self neutralise acidity, should they be exposed to the atmosphere (i.e. on land placement). These tests found there was sufficient ANC for sediments to neutralise acids upon oxidation (i.e. low environmental threat).

The evaluation of laboratory and field QA/QC procedures and assessments indicated that all sampling, sample handling and storage and laboratory analysis was undertaken to a high standard providing scientific confidence that the presented results are valid to allow an assessment of sediment quality against the NAGD.

Contents

1 Introduction

1.1 Background

Gladstone Ports Corporation Ltd (GPC) is a Government Owned Corporation (GOC) that presently manages four Port precincts – the Port of Gladstone, Port of Rockhampton, Port of Bundaberg and the non-trading Port of Maryborough. The Port of Gladstone is Queensland's largest multi-commodity port.

In addition to other key roles, GPC is responsible for maintaining navigable port depths and pilotage, while port navigation is controlled by Maritime Safety Queensland (MSQ). Navigable port depths require a minimum depth of clearance below the keel of vessels calling at the Port of Gladstone to allow for effective shipping access to the port and ensure ship safety. GPC undertakes regular maintenance dredging programs to ensure minimum depths are maintained. In addition to the primary navigation channels, GPC is responsible for maintaining auxiliary navigable channels and the Gladstone Marina.

Maintenance dredging campaigns generally target areas where material has accumulated beyond the minimum draft designated by the Harbour Master. The Port of Gladstone Main Channel also comprises swing basins and berths, with all dredge material from these areas currently placed in the offshore Materials Relocation Area, also known as the East Banks Sea Disposal Site (EBSDS). Not every navigable channel requires annual dredging. The following areas outside of the main channel included in this document are Gladstone Marina, Upper Auckland Inlet, and Boyne River entrance channel (See Figure 1.1). These areas would be dredged via a different methodology and campaign to the Main Channel.

The approved Sediment Sampling and Analysis Plan Design report (BMT 2022) provides a set of procedures to evaluate the physical and chemical sediment properties of the sediments to be dredged. The Sediment Sampling and Analysis Plan (SAP) was prepared in accordance with the National Assessment Guidelines for Dredging 2009 (NAGD).

This draft Sediment SAP Implementation report presents the methodology and findings of the 2022 sediment characterisation study of areas requiring maintenance dredging. The aim of this SAP is to provide a statistically valid evaluation of the physical and chemical sediment properties of the sediments to be dredged, to determine their suitability for land-based re-use or offshore placement. The specific objectives of the study were to:

- Describe and quantify the physical properties of sediments to be dredged;
- Quantify concentrations of potential contaminants in sediments to be dredged;
- Assess suitability of dredged sediments for ocean disposal by comparing analytical results to relevant guideline and screening levels set out in the NAGD, including bioavailability testing if required;
- Compare concentrations of tested parameters to relevant guideline values to assess suitability of dredged sediments for on-land re-use.

1.2 Proposed Dredging

The proposed maintenance dredging project will re-establish navigable depths in existing channels, marinas and other relevant navigable areas. Table 1.1 shows the estimated volumes of dredged material, the required depth of dredging, and intended placement/reuse option and existing sediment quality data sources for each dredge area. This information was used to determine sampling effort in each dredge area.

Table 1.1 Approximate Dredging Volumes

Component	Anticipated Dredge Volume (m3)	Required Dredge Depth	Past Sediment Quality Data	Intended Placement
Main Channel, Swing, Berth, & EBSDS	340,000 p/a	Variable – to 0.5 m below 'maintained depth' as noted on the Gladstone Harbour Aus charts	BMT (2012, 2014), AMA (2017)	EBSDS and Tide Island DMPA
Upper Auckland Inlet	100,000 (once)	-3.0 m LAT	AMA (2017)	EBSDS and/or Land-based reuse
Gladstone Marina	300,000 over 5 yrs. 40,000 – 60,000 accumulation p/a	-5.0 m LAT	AMA (2015, 2017)	EBSDS and/or Clinton Channel dispersal and/or Land-based reuse
Boyne	40,000 (once)	-1.0 m LAT	BMT (2017)	EBSDS and/or Land-based reuse

1.3 Sampling and Analysis Plan Rationale

Sampling and Analysis Procedures

The methodologies for determining sampling effort, survey design, sampling and analysis set out in NAGD represent best practice for the characterisation of marine sediments. Therefore, the sampling procedures adopted in the present study are based on NAGD for assessing the suitability of dredged sediments for both ocean placement and on-land re-use[1].

Relevant Guideline Values, Screening Levels and Standards

The assessment of the suitability of dredged sediment for land-based re-use was undertaken in accordance with relevant requirements set out in the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM). Dredged material may be used to develop commercial or industrial land, therefore Health Investigation Levels (HILs) and Ecological Screening Levels (ESLs) for commercial and industrial land uses (HIL-D and ESL) were used in the assessment, specifically:

- Upper Auckland Inlet, Gladstone Marina:
  - The Health-based Investigation Levels for commercial and industrial areas (HIL-D)
  - Ecological Screening Levels (ESLs) for commercial and industrial areas.
- Boyne River inlet
  - The Health-based Investigation Levels for residential areas with accessible soils (HIL-A)
  - Ecological Screening Levels (ESLs) for areas of ecological significance.

The assessment of the suitability of dredged sediment for offshore placement at the EBSDS was undertaken in accordance with the tiered, risk-based assessment framework set out in NAGD. Contaminant concentrations were initially compared to screening levels and background sites (i.e. Phase II assessments) to determine the need for further testing. Phase III bioavailability was

[1] NEPM does not provide sampling and analysis procedures for the marine sediments

undertaken on samples that exceeded screening or background levels, and compared to relevant guideline/screening levels to assess suitability for ocean disposal.

Other guidelines set out by the Queensland government's Model Operating Conditions, ERA 16 – Extractive and Screening Activities (DEHP 2016) are referred to, including the Queensland Acid Sulfate Soil Technical Manual (QASSTM, Dear *et al.* 2014) and National Guidelines for the Dredging of Acid Sulfate Soil Sediments and Associated Dredge Spoil (Simpson *et al.* 2018).

The SAP assumes that groundwater will be retained within reclamation sites and managed in accordance with appropriate tail-water and acid sulfate management programs.

Title:

Gladstone dredging locality

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2 Methodology

2.1 Compliance with SAP and Guidelines

All sampling and analysis of sediments was undertaken in accordance with the approved SAP. A copy of the SAP is provided in Annex Annex A.

2.2 Sampling Timing

Sediment sampling was conducted on the 26th of September 2022 to the 1st of October 2022. Sampling was undertaken during daytime hours.

2.3 Sampling Locations and Parameters

Sediment was sampled from 24, 13, 9 and 6 locations from the Main Channel, Gladstone Marina, Upper Auckland Inlet and the Boyne, respectively (Figure 2.1 to Figure 2.4). Furthermore, an additional 6 locations were sampled from the East Banks Sea Disposal Site (EBSDS) and Reference Sites. Sampling rationale, locations and sample numbers are presented in Table 2.1

Table 2.1 Sampling Rationale, Locations and Sample Numbers

Parameter	Value/Description
Main Channel, Swing, Berth and EBSDS	
Sediment classification	Probably Clean (BMT WBM 2012a, 2014) (AMA 2018)
Sediment composition	Sand dominant, with areas of fine material, gravel, and cobble
Total Dredge volume	340,000 m^3
Maximum depth of dredging	0.5 m below ground level (BGL)
Number of locations	24 (half of 48)
Number of field triplicates (QA/QC)	Three locations (i.e. three separate grab samples at three randomly selected location)
Number of triplicate split samples (QA/QC)	Two locations (i.e. split the sample at two locations into three sub-samples)
Number of trip blank samples	One each day of sampling
Gladstone Marina	
Sediment classification	Probably Clean (BMT WBM 2012a, 2014) (AMA 2018)
Sediment composition	Silt and clay dominant, with sand
Total Dredge volume	300,000 m^3 (40,000 – 60,000 m^3 p/a
Maximum depth of dredging	-5.0 m LAT within the Marina
Number of locations	13 (half of 26)
Number of field triplicates (QA/QC)	Two locations (i.e. three separate core samples at two randomly selected location)

Parameter	Value/Description
Number of triplicate split samples (QA/QC)	One location (i.e. split the sample at one location into three sub-samples)
Number of trip blank samples	One each day of sampling
Upper Auckland Inlet	
Sediment classification	Probably clean (AMA 2018)
Sediment composition	Silt and clay dominant, with sand
Total Dredge volume	100,000 m^3
Maximum depth of dredging	-3.0 LAT
Number of locations	9 (half of 18)
Number of field triplicates (QA/QC)	One location (i.e. three separate core samples at one randomly selected location)
Number of triplicate split samples (QA/QC)	One location (i.e. split the sample at one location into three sub-samples)
Number of trip blank samples	One each day of sampling
Boyne	
Sediment classification	Probably clean (BMT WBM 2017)
Sediment composition	Gravel, cobble and sand dominant
Total Dredge volume	40,000 m^3
Maximum depth of dredging	-1.0 m LAT
Number of locations	6 (half of 11)
Number of field triplicates (QA/QC)	One location (i.e. three separate core samples at one randomly selected location)
Number of triplicate split samples (QA/QC)	One location (i.e. split the sample at one location into three sub-samples)
Number of trip blank samples	One each day of sampling

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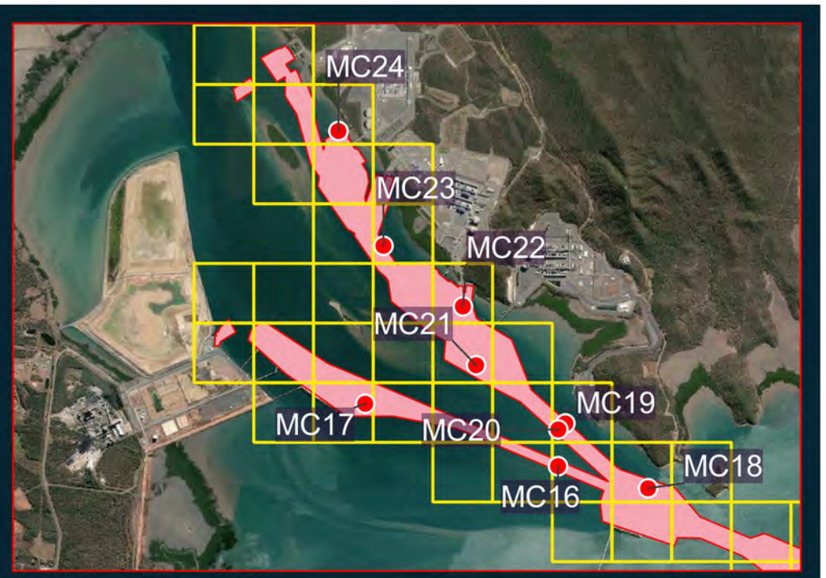

Legend

- Main Channel sampling points
- EBSDS and reference sites
- OSGR grid squares

Title:

Main Channel, EBSDS, & Reference Proposed Sampling Locations

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Marina sample sites
OSGR grid squares
Marina

Bathymetry - 2m BIN

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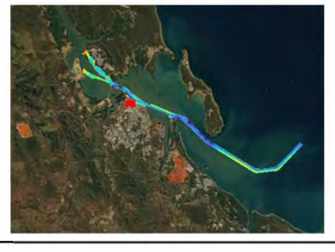

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Gladstone Marina Proposed Sampling Locations

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Legend

- Upper Auckland sampling sites
- OSGR grid squares
- Upper Auckland

Bathymetry - 2m BIN

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Title:

Gladstone Marina Proposed Sampling Locations

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Legend

- Boyne sampling points
- Boyne Channel
- OSGR grid squares

Bathymetry - 2m BIN

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Boyne Entrance Proposed Sampling Locations

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2.3.2 Contaminant List

Table 2.2 provides the list of contaminant parameters that were analysed for this project.

Table 2.2 Contaminant List, Target Practical Quantification Limits (PQLs), Guideline Screening Levels, and Level of Investigation

Parameter	Target PQL	Screening Level	Level of Investigation
Basic Characteristics			
Particle Size Distribution	63 to 0.002 mm	-	All Samples
Moisture Content (%)	0.1	-	
Total Organic Carbon (%)	0.1	-	
Metals and Metalloids (mg/kg)			
Aluminium	200	12,918[1]	All Samples
Antimony	0.5	2[2]	
Arsenic	1	20[2]	
Cadmium	0.1	1.5[2]	
Chromium	1	80[2]	
Copper	1	65[2]	
Iron	100	33,870[2]	
Lead	1	5[2]	
Mercury	0.01	0.15[2]	
Manganese	10	-	
Nickel	1	21[2]	
Silver	0.1	1[2]	
Zinc	1	200[2]	
Cyanide			
Cyanide	0.25	20[4]	All sites in Upper Auckland Inlet, reference sites and EBSDS
Organotin Compounds (µgSn/kg)			
MBT, DBT, and TBT	1 µg/kg[3]	9 µg/kg[2]	All samples
Organics (mg/kg)			
Total Petroleum Hydrocarbons	100	280[3]	All Samples
TPH Fractions	10-100	-	
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)	0.2	10 (Benzene)[5] 65 (Toluene)[5] 40 (Ethylbenzene)[5] 1.6 (Xylenes)[5]	

Parameter	Target PQL	Screening Level	Level of Investigation
Polycyclic Aromatic Hydrocarbons (PAHs)	0.005 (0.1 for sum)	10,000[3]	
Organochlorine Pesticides (DDT DDE DDD, aldrin and dieldrin, chlordane, endosulfan, endrin, heptachlor, HCB, methoxychlor, mirex, toxaphene)	0.5-1	1.2 (DDT)[3] 1.4 (DDE)[3] 3.5 (DDD)[3] 2.8 (Dieldrin)[3] 4.5 (Chlordane)[3] 2.7 (Endrin)[3] TMBC- remainder[1]	All sites in Upper Auckland Inlet and 20% of Gladstone Marina. Reference sites and EBSDS.
Organophosphorus Pesticides (Chloryrifos)	0.5	TMBC[1]	
Herbicides (2,4,5-T, 2,4-D, MCPA, MCPB, Mecoprop, Picloram)	0.02	TMBC[1]	
Dioxins and Furans	0.02 µg/kg	TMBC[1]	All samples in pilot study (20% sites)
PFAS (mg/kg)			
PFAS	0.0005	TWBC	All samples in pilot study (20% sites)
Nutrients			
Total Nitrogen as N	20	-	All samples
Total Kjeldahl Nitrogen as N	20	-	
Total Phosphorus as P	1	-	
Nitrate and Nitrite as N	0.1	-	
Ammonia as N	0.1	4[3]	
Acid Sulfate Potential			
Chromium Suite	2 mole H^+/tonne	Liming rate based on Table 4.2 (Dear *et al.*, 2014)	All sites in Upper Auckland Inlet, Gladstone Marina, and Boyne River Mouth
Slab/Chip Tray Incubation test (for ANC)	0.1 pH unit	As per Slab Incubation Method NLM-8.1/ Chip Tray NLM-8.2	Undertaken on samples if initial net acidity results (less ANC) are greater than action criteria (0.03%S / 8 mol H^+/t)

- No guideline for comparison

[1]TMBC = twice the mean background concentration. For aluminium and iron, 12,918 mg/kg and 33,870 mg/kg, respectively, have been used (URS 2009). Other organics will be compared to TMBC based on data from reference sites sampled in this SAP

[2]National Assessment Guidelines for Dredging NAGD (2009)

[3]Updated screening levels as per Simpson et al., (2013)

[4]Interim Sediment Quality Guideline (ISQG) from ANZECC ARMCANZ (2000)

[5] National Environment Protection (Assessment of Site Contamination) Measure April 2011

2.4 Sampling Collection

2.4.1 Survey Vessel and Positioning

Vibro-coring and sediment grab sampling at the proposed dredge site was conducted from the specialised vibro-coring vessel "*Abyss dive*" which is owned and operated by Abyss Commercial Diving.

All sediment sampling was supervised and managed by a team of qualified marine scientists and technicians with experience in the implementation of sediment sampling and analysis programs.

2.4.2 Sampling Apparatus

Core samples were collected using specialised pneumatic vibro-coring apparatus owned and operated by Abyss Commercial Diving. A 60 mm core barrel was used for penetrating the sediment. The acceptability of each sediment core was determined immediately following collection based on assessment of the core and discussions between the vessel crew and the supervising scientist. The criteria for acceptance of the core included:

- No obvious loss of surficial sediment;
- The core must have entered the profile vertically;
- There must be no gaps in the stratigraphy;
- There must be no disturbance of the sediment stratigraphy; and
- The core must reach the required depth (0.5 m below dredge depth), or core refusal in clay, dense sand or rock.

Sediments in the Main Channel were collected using a large van Veen grab with a gape of 0.1 m^2. The coarse nature of some sediments prevented the effective closure of the grab. Any instances where the grab did not close fully were re-sampled.

2.4.3 Sampling Collection, Handling and Storage

Sediments samples were logged and processed onboard the sampling vessel. For each sample location a site description pro-forma was completed to document sample collection and sediment description (Annex B). The following information was collected:

- Project name and number;
- Sampling date and time;
- General location and field sample number;
- Northing and Easting of sample location (from on-board dGPS);
- Name of sample collector;
- Type of sampler used (aluminium, PVC, stainless steel, etc.);
- Weather conditions and sea state at the time of sampling;
- Date and time of collection;
- Water depth at sample location (derived from onboard depth sounder);
- Depth of core penetration/length of core; and
- Photograph of each sediment sample.

A sediment log of each core samples was recorded, providing a description of the composition of each sample which included the following information (Annex B):

- Sediment colour;
- Odour (e.g. marine, sulphurous);
- Field texture;
- Observed particle size (fine, fine silt, clay, sand, clayey sand, solid clay, loamy clay);
- Plasticity/consistency;
- Moisture content of sample;
- Estimated% stones; and
- Presence of shell/shell grit.

The samples from each sub-sample were carefully homogenized in a clean container prior to the filling of clean sampling jars supplied from the analytical laboratory. Nitrile gloves were worn by all field personnel handling the sediment, and gloves were disposed of after processing of each sample.

In accordance with the guidance for PFAS sampling, personnel washed their hands with plain soap and donned clean, new pair of disposable gloves for each sample. Furthermore, all samples were double bagged and contained in a fridge minimising exposure to light. Personal care product was minimised or not used (sunscreen, insect repellent, moisturiser, etc.) during PFAS sampling.

Sample bottles were labelled with a waterproof marker pen on the bottle label and lid. Sample bottles for organic analyses were filled with zero headspace to minimise volatilisation. A field trip blank sample container filled with clean chromatographic sand was included in the analysis for each day of sampling. All storage containers were chilled on ice immediately following sample collection. Acid Sulfate Soil samples were frozen at the end of each sampling day to minimise potential oxidation of the sediment material.

At the end of the sampling campaign, all samples were submitted to the primary and secondary analytical laboratories. All samples were submitted to the laboratories with Chain of Custody documentation.

2.5 Laboratory Analysis

2.5.1 Analytical tests

All analytical testing was conducted by NATA accredited laboratory facilities.

Primary analysis of sediment samples was conducted by Australian Laboratory Services (ALS). Symbio Laboratories was used as the secondary (reference) laboratory for inter-laboratory quality testing.

2.5.1 Laboratory Quality Control

Laboratories followed laboratory QC procedures in accordance with requirements outlined in Appendix F of NAGD. This includes analysis of laboratory blanks, duplicates, certified surrogate materials and spiked samples, as described below.

2.5.2 Laboratory Blanks

The purpose of this assessment is to monitor for potential laboratory contamination of samples due to cross-contamination during laboratory preparation, extraction or analysis. Blank sample concentrations should be at or near the detection limit of the method used.

2.5.3 Laboratory Duplicates

This assessment refers to a randomly selected intra-laboratory split sample, which provides information regarding the method precision and sample heterogeneity. Results are presented as Relative Percent Difference (RPD) values of two sample concentrations for a specific contaminant.

NAGD recommends that duplicates should agree within a typical RPD of the method of ±35%. This recommended RPD is typically not adopted by analytical laboratories as it does not account for the greater uncertainty for contaminant concentrations close to the method's detection limit. For the primary laboratory ALS the permitted ranges for the Relative Percent Deviation (RPD) of laboratory duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting:

- Result < 10 times LOR: No Limit;
- Result between 10 and 20 times LOR: 0% - 50%; and
- Result > 20 times LOR: 0% - 20%.

2.5.4 Surrogate and Matrix Spikes

Surrogate spikes or Laboratory Control Samples (LCS) are certified reference materials similar in composition to the target analyte but not likely to be present in the environment. The purpose of this measurement is to monitor method precision and accuracy.

Matrix spikes refer to an intra-laboratory split sample spiked with a representative set of target analytes of known concentration. Matrix spikes are assessed to monitor potential sample matrix effects on analyte recoveries.

For both surrogate and matrix spikes, a calculation of the percent recovery of the spiked amount against the returned concentration is performed indicating analytical performance.

NAGD states that recovery limits of 75% - 125% are generally acceptable. Analytical laboratories typically adopt specific surrogate and matrix spike recovery limits for the various contaminant compound groups. It is also noted that ideal recovery ranges may be waived in the event of sample matrix interference.

2.6 Data Analysis

2.6.1 NAGD Phase II - Sediment Contaminants

Concentrations of chemicals measured in sediment samples were compared to screening levels listed in Table 2 of NAGD to determine whether the material is suitable for unconfined placement at sea or if further analyses, such as elutriate, bioavailability or toxicity testing, are required.

Specifically, mean concentrations of chemical parameters at the upper 95% confidence level (95% UCL) were compared against NAGD screening levels and if exceeded, to ambient background levels at reference sites. This involved the following steps.

Data pre-treatment

Analytical values below Limit of Reporting (LOR) were set to one-half of the LOR as per NAGD recommendation to facilitate 95% UCL calculation. This was only undertaken where there was greater than 30% detections within the dredge Zone. Any replacement technique is a source of bias (Croghan and Egeghy 2003). Only parameters with greater than 30% detections were subject to analysis due to the high probability of bias created by the replacement technique.

Organic contaminant results were normalised to 1% TOC where the measured value is within the range of 0.2-10%. If TOC values were outside of this range, the highest (10%) or lowest (0.2%) value was adopted as appropriate. Organic parameters with concentrations below LORs were not normalised to 1% TOC but were included at half their LOR.

One assumption in the calculation of the 95% UCL is that the samples are statistically independent. Therefore, field triplicate samples and laboratory split samples were averaged for each location in the 95% UCL calculation.

Selection of appropriate 95% UCL Calculation Method

ProUCL Version 4.1.00 was used to calculate the 95% UCL (Singh et al. 2010). In accordance with NAGD, for normally distributed data, the arithmetic mean was calculated, and the 95% UCL was calculated using the one-tailed Student's t UCL test. For data that followed a log-normal distribution, the geometric mean was calculated and the 95% UCL was calculated using Chebyshev method. For data that did not follow either a normal or log-normal distribution, the 95% UCL was calculated using non-parametric techniques as per NAGD. Should 95% UCL values for all analysed parameters fall below NAGD screening levels, the sediment were considered chemically acceptable for ocean disposal.

In accordance with NAGD, ambient baseline concentrations of chemicals were determined by sampling of sediment at reference areas near the existing disposal site. The 80th percentile value was calculated from reference site data. The mean of the sediment concentrations at the dredge site was then compared with the 80th percentile of ambient baseline levels. Sediment was chemically acceptable for ocean disposal the mean concentration at the dredge site was less than or at the 80th percentile value.

If chemicals were found to be above ambient baseline levels and the screening level, they were considered a Contaminant of Potential Concern and Phase III testing was required.

Variability in Sediment Properties

Summary statistics, for analytical results, namely minimum, maximum, mean and relative standard deviation (RSD) values are presented and referred to throughout this report. Relative standard deviation (also known as coefficient of variation) indicates the extent of variability in a dataset in relation to the mean value, by expressing the standard deviation as a percentage of the mean. For the purposes of this report, nominal percentage ranges have been selected to aid in interpretation. Therefore, an RSD of less than 30% will be considered low variability, 30% to 70% will be considered moderate variability and more than 70% will be considered high variability.

2.6.2 NAGD Phase III - Elutriate and Bioavailability Testing

Elutriate and bioavailability testing was undertaken as per NAGD for a range of contaminants which have regularly exceeded screening levels in the past.

Elutriate Testing:

The elutriate test is designed to simulate release of contaminants from sediment during dredged material disposal. Testing was carried out using the USEPA's standard seawater elutriate test which involves shaking the sediment samples with four times the volume of seawater at room temperature for 30 minutes. The sample was allowed to settle for one hour and the supernatant was centrifuged or filtered (0.45 µm) within 60 minutes and analysed using analytical methods appropriate for determining ultra-trace levels in seawater.

Results were compared to the respective ANZECC/ARMCANZ (2000) marine water quality trigger value (for 95% protection of species).

Bioavailability Testing:

The Dilute Acid Extraction (DAE) method was used to provide an estimate of the bioavailable fraction of metals/metalloids. The sediment samples were extracted using a weak acid and result compared against the respective NAGD screening levels.

For organic contaminants, analysis of pore water is the recommended bioavailability test as per NAGD. Porewater is assumed to represent the major route of exposure to sediment contaminants by benthic organisms. Porewater results were compared to the respective ANZECC/ARMCANZ (2000) marine water quality trigger value (for 95% protection of species).

Should both elutriate and bioavailability tests result in values less than the respective guideline limits, the material would be considered clean and suitable for ocean disposal.

2.6.3 Acid Sulfate Soils

The results of the chromium-suite acid sulfate analysis were assessed against the Australian framework for Acid Sulfate Soil management in coastal systems (Ahern et al. 1998). The risk of acidification was determined by the acid-base accounting approach (Ahern et al. 2004). Net acidity was calculated from the results as a measure of the acid producing capacity of the sampled sediment upon complete oxidation.

The calculated net acidity was then compared to the QASSIT action criteria of 0.03% S or 18 mol H+/tonne to assess the need for acid sulfate soil management if the dredged sediments were to be placed on land. The liming rate indicates the amount of lime that needs to be added to the soil to manage its acid generating capacity.

2.6.4 NEPM – Comparison to Health Investigation Levels and Ecological Screening Levels

Sediment concentrations in individual samples were compared with HILs and ESLs, and any exceedances were noted.

2.6.5 Assessment of Dioxins and Furans

Dioxins and furans are groups of chemicals that are primarily generated by combustion processes (e.g. bushfires, incinerators etc.) that are ubiquitous in the environment. There is no specific guidance in the NAGD (2009) or NEPM regarding dioxin and furans concentrations. Therefore, to assess dioxin/furans concentrations across the surveyed areas, concentrations were compared to background levels recorded during the survey and to results obtained from a sediment, water and biota survey for dioxins in the Noosa catchment in 2020 (DES 2020). The DES (2020) study was undertaken in a relatively undisturbed catchment with no major industry, and for the purposes of the present assessment are assumed to represent background or near-natural conditions. It has therefore assumed that dioxin and furan concentrations in dredged sediments below levels recorded by DES (2020) pose a low environmental risk. The DES (2020) study concluded that the concentrations recorded in the Noosa sites were of little concern from a bioaccumulation risk perspective (i.e. for human consumers of seafood).

3 Data Validation

This section provides an assessment of data validation including evaluation of QA/QC assessment of laboratory and field replicates and laboratory QA/QC procedures in order to provide confidence that the presented results are valid.

3.1 Laboratory QA/QC

Details of the laboratory QA/QC for the primary and secondary laboratories are provided in Appendix C and D. A summary of this assessment is provided in the following sections. Refer to Section 2.5.1 for a description of laboratory QA/QC procedures.

3.1.1 Limits of Reporting (LORs)

LORs used by the primary laboratory (ALS) were below relevant PQLs for most parameters (as per NAGD).

3.1.2 Sample Holding Times and Storage Conditions

All samples were received by the laboratories in appropriately pre-treated and preserved containers. Samples were chilled with ice whilst in the field and during delivery (ice packs and refrigerated transport). Acid sulfate soil samples were delivered frozen to the laboratory. All analyses were undertaken by the laboratories within recommended holding times, however there were breaches in extraction/preparation and analysis holding times by the laboratory as noted in Annex C for acid sulfate soils and a range of organic parameters.

3.1.3 Laboratory Blanks

The laboratory blank assessment was satisfactory. Measurements of laboratory blanks for the chemical analyses were always below the LOR of the specific analysis method in the primary and secondary laboratories. This indicates that samples were not contaminated during laboratory analysis.

3.1.4 Laboratory Duplicates

Results indicate that the laboratory duplicate assessment was generally within the acceptable criteria. The exceptions were:

- EG020SD (Total Metals in Sediments by ICP-MS): GM5 0.5-1.0, GM7 0-0.5, UA10 0-0.5, LA3 0-0.5, MC8 shows poor duplicate results due to sample heterogeneity. This was confirmed by visual inspection.
- EG005SD (Total Fe and Al in Sediments by ICP-AES): GM5 0.5-1.0 shows poor duplicate results due to sample heterogeneity. This was confirmed by visual inspection.
- EP071-SD-SV (TPH Semivolatiles): Sample 'VA10 0-0.5' shows poor duplicate results due to sample heterogeneity. This was confirmed by visual inspection.
- EG005T (Total Metals by ICP-AES): VA10 0-0.5, MC19, MC8 shows poor duplicate results due to sample heterogeneity. This was confirmed by visual inspection.
- EP231X PFAS: Sample EB2229018_011 shows poor duplicate results due to sample heterogeneity. This was confirmed by visual inspection.

3.1.5 Surrogate and Matrix Spikes

The assessment of surrogate and matrix spike recoveries was satisfactory for most samples. The exceptions were:

- EG020T-Total Metals by ICP-MS: Sample 'GM7 0.5-1.0' (EB2228441-002) shows poor matrix spike recovery due to sample matrix interference. Confirmed by re-extraction and re-analysis.
- EP090-Organotin: Sample LA3 0.5-1.0, LA9 0-0.5, UA7 0.5-1.0, MC25, GM2 0.5-1.0, GM7 0.5-1.0 shows poor MBT matrix spike recovery due to matrix interference.
- EK067G (Total Phosphorus as P): Sample EB2228461_002 (LA3 0.5-1.0) shows poor matrix spike recovery due to sample heterogeneity. This was confirmed by visual inspection.
- EG020-SD (Total Metals in Sediments by ICP-MS): Sample MC7 (EB2229107-024) shows poor matrix spike recovery due to sample heterogeneity. Confirmed by re-extraction and re-analysis.

3.2 Field QA/QC

3.2.1 Field Trip blank

No BTEX compounds or volatile Total Petroleum Hydrocarbons (TPH C6-C9) were detected in the trip blank samples, indicating that samples were not contaminated with volatile organic carbons during field sampling and processing of samples.

3.2.2 Field Triplicates and Laboratory Split

The assessment of field triplicates across all sites indicated that replicate samples were relatively homogenous with the RSD below the 50% NAGD criterion for the majority of parameters, the exception were the parameters outlined in Table 3.1.

Analyses of field triplicate splits were assessed across each sampling location and were generally within the 50% NAGD criterion for RSDs or RPDs for most samples, the exceptions were the parameters outlined in Table 3.1and Table 3.2.

3.3 Summary Data Validation

Results from the present study indicated that the results provide a suitable basis for assessment of sediment quality against the NAGD guidelines.

Table 3.1 Summary of triplicate field core analysis for sediment contaminants. Only analytes which exceeded the acceptable range are presented

Gladstone Marina	GM9 0.5-1.0	GM14 0.5- 1.0	GM15 0.5-1.0	RSD	Acceptable Range
Nitrite + Nitrate as N (Sol.)	1.6	4.4	1.4	68	0-50%
Upper Auckland	**UA2 0-0.5**	**UA10 0-0.5**	**UA11 0-0.5**	**RSD**	**Acceptable Range**
Fluoranthene	58	17	47	52	0-50%
Pyrene	68	19	47	55	0-50%
Sum of PAHs	503	150	382	52	0-50%
Main Channel	**MC1**	**MC29**	**MC30**	**RSD**	**Acceptable Range**
Nitrite + Nitrate as N (Sol.)	0.3	1.5	0.2	109	0-75%

Table 3.2 Summary of triplicate laboratory split field core analysis for sediments. Only analytes which exceeded the acceptable range are presented

Gladstone Marina	GM16 0-0.5	GM4 0-0.5	GM17 0-0.5	RSD	Acceptable Range
Aluminium	10400	10200	23800	53	0-50%
Upper Auckland	UA9 0-0.5	UA12 0-0.5	UA13_0-0.5	RSD	Acceptable Range
Liming Rate	10	14	28	54	0-50%
Aluminium	9000	8150	19200	51	0-50%
Main Channel	MC24	MC25	MC26	RSD	Acceptable Range
Aluminium	8840	6550	17300	52	0-50%
Boyne Entrance	BE4	BE7	BE8	RSD	Acceptable Range
Total Organic Carbon	0.21	0.2	1.7	123	0-50%

4 Results

All laboratory results and QA/QC reports are presented in full in Annex C and Annex D, respectively. The sediment core logs and photographs are included in Annex B.

4.1 Sample Retention

All core samples were collected from 0.5 m below dredge depth in accordance with the SAP. In all instances where the desired core depth was not reached, core refusal was met. Grab samples were acquired at all sampling locations except for MC12. The initial attempt for MC12 yielded no sample, nine subsequent attempts to retrieve a sample at two new locations (within 50 m of original location) all yielded insufficient sample volume. Therefore, MC 12 was abandoned and deemed No sample.

Table 4.1 Targeted and retained core lengths

Site	Depth (m LAT)	Dredge Depth (m LAT)	Desired Core Length (m)	Retained Core length	Sample Acquisition (Y/N)
Main Channel					
MC1	-16.4	<0.5m BGL	NA - grab	NA - grab	Y
MC2	-16.8	<0.5m BGL	NA - grab	NA - grab	Y
MC3	-16.8	<0.5m BGL	NA - grab	NA - grab	Y
MC4	-18	<0.5m BGL	NA - grab	NA - grab	Y
MC5	-16.4	<0.5m BGL	NA - grab	NA - grab	Y
MC6	-16.1	<0.5m BGL	NA - grab	NA - grab	Y
MC7	-16.7	<0.5m BGL	NA - grab	NA - grab	Y
MC8	-16.4	<0.5m BGL	NA - grab	NA - grab	Y
MC9	-15.2	<0.5m BGL	NA - grab	NA - grab	Y
MC10	-16.2	<0.5m BGL	NA - grab	NA - grab	Y
MC11	-16.5	<0.5m BGL	NA - grab	NA - grab	Y
MC12	-16.2	<0.5m BGL	NA - grab	NA - grab	N
MC13	-16.2	<0.5m BGL	NA - grab	NA - grab	Y
MC14	unknown	<0.5m BGL	NA - grab	NA - grab	Y
MC15	-14.9	<0.5m BGL	NA - grab	NA - grab	Y
MC16	-11.3	<0.5m BGL	NA - grab	NA - grab	Y
MC17	-11.3	<0.5m BGL	NA - grab	NA - grab	Y
MC18	-13.4	<0.5m BGL	NA - grab	NA - grab	Y
MC19	-13.5	<0.5m BGL	NA - grab	NA - grab	Y

Site	Depth (m LAT)	Dredge Depth (m LAT)	Desired Core Length (m)	Retained Core length	Sample Acquisition (Y/N)
MC20	-13.8	<0.5m BGL	NA - grab	NA - grab	Y
MC21	-13.3	<0.5m BGL	NA - grab	NA - grab	Y
MC22	-13.4	<0.5m BGL	NA - grab	NA - grab	Y
MC23	-13.5	<0.5m BGL	NA - grab	NA - grab	Y
MC24	-12.1	<0.5m BGL	NA - grab	NA - grab	Y
Gladstone Marina					
GM1	-1	-5.0 m LAT	1.98	1.5	Y
GM2	-3.1	-5.0 m LAT	1.90	3.1	Y
GM3	-4.1	-5.0 m LAT	0.86	2.2	Y
GM4	-3.7	-5.0 m LAT	1.28	1.7	Y
GM5	-4.1	-5.0 m LAT	0.86	1.6	Y
GM6	-4.7	-5.0 m LAT	0.29	1.5	Y
GM7	-1.9	-5.0 m LAT	2.21	1.3	Y
GM8	-4.3	-5.0 m LAT	0.70	1.4	Y
GM9	-4.2	-5.0 m LAT	0.77	1.9	Y
GM10	-4.6	-5.0 m LAT	0.45	1.2	Y
GM11	-4.5	-5.0 m LAT	0.53	1.2	Y
GM12	-4.7	-5.0 m LAT	0.34	1.0	Y
GM13	-4.4	-5.0 m LAT	0.61	2.0	Y
Upper Auckland					
UA1	-2.7	-3.0 LAT	0.3	0.5	Y
UA2	-3.2	-3.0 LAT	-0.2	1.5	Y
UA3	-1.4	-3.0 LAT	3.6	1.5	Y
UA4	-2.4	-3.0 LAT	2.6	1.0	Y
UA5	-2.9	-3.0 LAT	2.1	0.9	Y
UA6	-0.2	-3.0 LAT	4.8	2.0	Y
UA7	-2.2	-3.0 LAT	2.8	1.8	Y
UA8	-2.6	-3.0 LAT	2.4	0.5	Y
UA9	-3.8	-3.0 LAT	1.2	1.8	Y

Site	Depth (m LAT)	Dredge Depth (m LAT)	Desired Core Length (m)	Retained Core length	Sample Acquisition (Y/N)
Boyne					
BE1	-0.8	-1.0 LAT	NA - grab	NA - grab	Y
BE2	-1	-1.0 LAT	NA - grab	NA - grab	Y
BE3	-0.8	-1.0 LAT	NA - grab	NA - grab	Y
BE4	-0.9	-1.0 LAT	NA - grab	NA - grab	Y
BE5	-0.2	-1.0 LAT	NA - grab	NA - grab	Y
BE6	-1.4	-1.0 LAT	NA - grab	NA - grab	Y
East Banks Sea Disposal Site (EBSDS) and Reference Sites					
DMA	-10	NA	NA – grab	NA - grab	Y
DMB	-10	NA	NA – grab	NA - grab	Y
CN	-12	NA	NA – grab	NA - grab	Y
CS	-12	NA	NA – grab	NA - grab	Y
RB1	NA	NA	NA – grab	NA - grab	Y
RB2	NA	NA	NA - grab	NA - grab	Y

4.2 Main Channel and Reference/EBSDS

4.2.1 Physical properties

Figure 4.1 presents the sediment grain particle size distribution (PSD) results for each location across the Main Channel, reference sites and the EBSDS during the current survey.

Sediments across the Main Channel varied widely in PSD. Fines content ranged from 2.5% to 94%, with a mean of 30.2% and high variability (RSD 83%). The sand content ranged from 6 to 84%, with a mean of 52.1% and moderate variability (38%). Gravel content ranged from < 1% to 59%, with a mean of 17.9% and high variability (RSD 99%). Sediments across the Main Channel were very poorly to poorly sorted. Distinct groupings of sediment types were observed across the main channel, they were as follows: MC1 to MC3 (slightly muddy sand), MC4 to MC7 (muddy sand), MC8 to MC13 (gravelly sand), MC16 to MC20 (gravelly sand) and MC21 to MC24 (sandy mud).

EBSDS and Reference sites sediments were dominated by the sand fractions, ranging from 54% to 96%, with a mean of 84% and low variability (RSD 19%). Fines content at the reference sites were low, ranging from 4% to 18%, with a mean of 8% and high variability (RSD 71%).

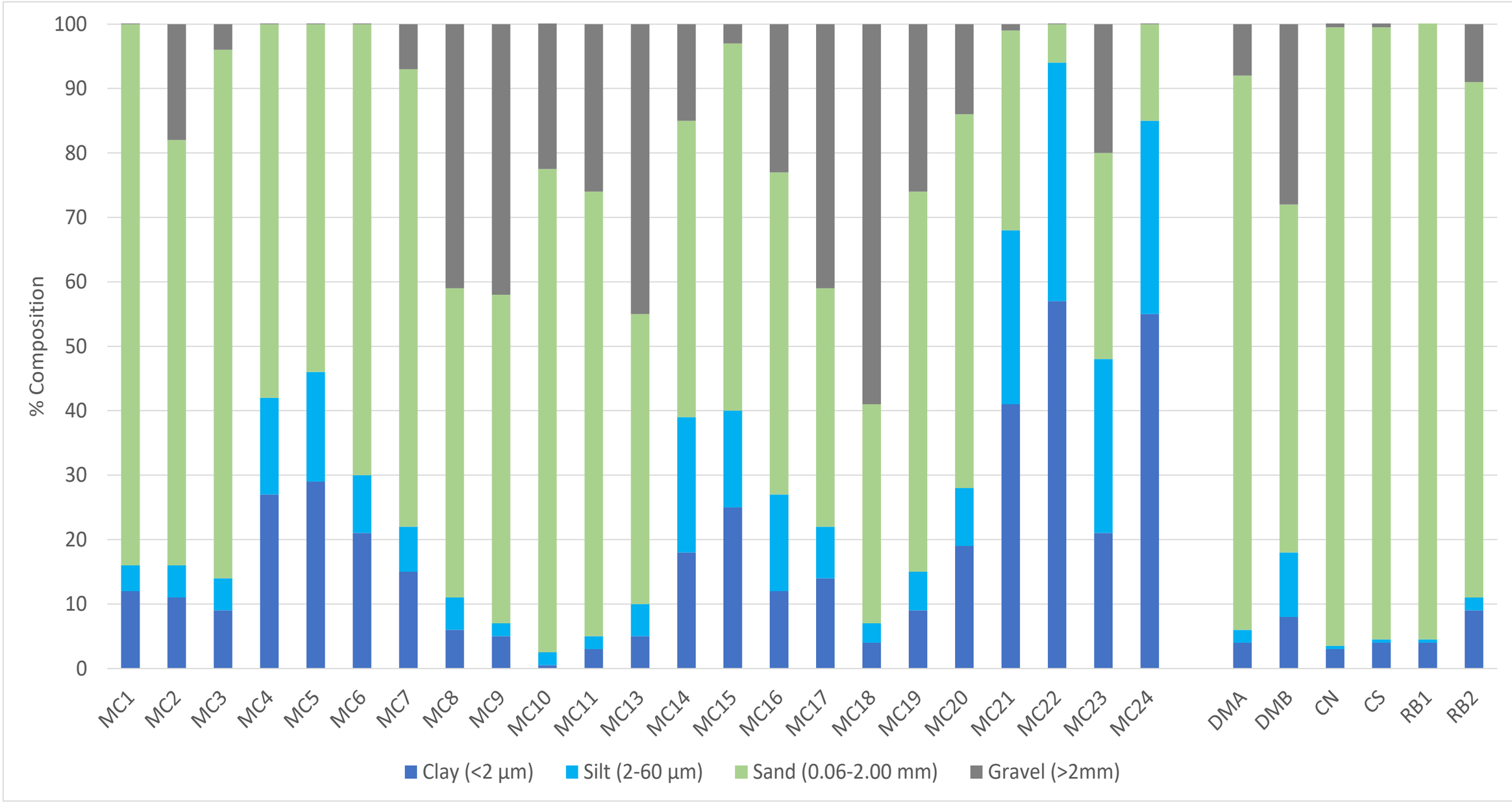

Figure 4.1 Sediment particle size distribution at Main Channel, EBSDS and reference sites

4.2.2 Chemical parameters

Trace Metals and Metalloids

Table 4.2 presents summary statistics for metals and metalloids for the Main Channel, EBSDS and reference sites.

Most metals and metalloids were detected in all main channel samples. Antimony, cadmium, and silver were not detected in any sample across the main channel.

All metals/metalloids except arsenic had concentrations less than NAGD screening levels. All samples also had metals/metalloids concentrations less than the most conservative NEPM investigation levels. Metal and metalloid concentrations at the reference locations were generally similar to the concentrations observed across the main channel.

Arsenic was the only metal/metalloid to exceed the screening level (20 mg/kg) in the Main Channel, but only in one sample (MC3 = 24.9 mg/kg). The 95% UCL of the mean for arsenic was 12.7 mg/kg, well below the NAGD screening level and less than the mean value at reference sites. The arsenic concentration at reference site RB2 was 30.8 mg/kg, which indicates high background concentrations of this parameter.

While not required under NAGD, bioavailability testing was conservatively undertaken on the two samples exceeding the arsenic screening level (MC3 and RB2).

Table 4.2 Summary Statistics and 95% UCLs for trace metals and metalloids – Main Channel, EBSDS and Reference sites (mg/kg)

Sample	Al	Fe	Sb	As	Ca	Cr	Cu	Co	Pb	Mn	Ni	Se	Ag	V	Zn	Hg
MC1	3960	9930	< 0.50	12.6	< 0.1	9.7	3.8	5.0	3.6	269	4.6	0.4	< 0.1	20.2	13.4	< 0.01
MC2	3930	16900	< 0.50	19.2	< 0.1	8.3	7.7	7.4	8.6	624	5.8	1.0	< 0.1	39.4	14.1	< 0.01
MC3	2760	11400	< 0.50	24.9	< 0.1	7.8	2.4	5.8	2.5	848	4.2	0.3	< 0.1	23.8	10.1	< 0.01
MC4	5490	12700	< 0.50	12.7	< 0.1	12.5	6.9	6.2	5	252	6.3	0.6	< 0.1	27.7	19.4	< 0.01
MC5	5230	12400	< 0.50	10.0	< 0.1	11.5	6.8	6	4.7	228	5.8	0.6	< 0.1	26.3	18.3	< 0.01
MC6	6830	14600	< 0.50	15.6	< 0.1	14.5	8.6	7.3	5.7	348	7.5	0.7	< 0.1	31.2	23.8	< 0.01
MC7	4400	13700	< 0.50	8.59	< 0.1	9.8	8.2	5.6	3.9	280	5.5	0.4	< 0.1	31.0	18.6	< 0.01
MC8	2400	11700	< 0.50	7.36	< 0.1	6.6	3.6	4.5	5.8	192	4.2	0.2	< 0.1	27.9	12.1	< 0.01
MC9	2660	13300	< 0.50	12.7	< 0.1	5.9	4.3	8	2.6	396	5.5	0.2	< 0.1	29.8	13.5	< 0.01
MC10	1250	5950	< 0.50	7.25	< 0.1	2.8	3.6	4.7	1.4	220	2.9	0.2	< 0.1	16.4	8.9	< 0.01
MC11	2770	9360	< 0.50	10.7	< 0.1	7.2	5.2	5.6	3.3	269	3.7	0.3	< 0.1	23.6	16.8	< 0.01
MC13	2830	12000	< 0.50	7.76	< 0.1	8.6	6.9	7.2	3.1	381	4	0.3	< 0.1	32.5	19.3	< 0.01
MC14	5130	13100	< 0.50	6.36	< 0.1	9.5	12.9	7.1	4.2	286	5.2	0.5	< 0.1	31.2	22.7	0.01
MC15	4920	16000	< 0.50	9.06	< 0.1	10.1	12	7.5	4.7	473	5.7	0.6	< 0.1	34.4	22.6	0.01
MC16	3430	14000	< 0.50	10.4	< 0.1	8.6	8.4	8.5	4.3	421	4.9	0.5	< 0.1	33.4	18.7	< 0.01
MC17	3230	10400	< 0.50	8.78	< 0.1	6.7	9.8	9.1	2.9	1130	4.5	0.4	< 0.1	29.0	17	< 0.01
MC18	4070	15000	< 0.50	7.57	< 0.1	8.6	8.3	12.3	4.1	496	7.1	0.4	< 0.1	51.9	21.2	< 0.01
MC19	2160	7960	< 0.50	6.28	< 0.1	5.5	4	5.8	2.1	411	2.9	0.3	< 0.1	17.8	11.8	< 0.01
MC20	3800	14000	< 0.50	8.79	< 0.1	10.1	7.8	8.4	3.8	377	5	0.5	< 0.1	33.8	17.8	< 0.01
MC21	9070	23100	< 0.50	12.1	< 0.1	18.2	21.2	11.5	7.6	370	9.8	0.9	< 0.1	49.3	37.8	0.02
MC22	5010	15020	< 0.50	9.1	< 0.1	11.3	11.0	8.6	4.5	386	5.9	0.6	< 0.1	33.6	22.5	0.02
MC23	2680	14100	< 0.50	11.4	< 0.1	3.5	12.7	4.0	7.6	80	3.9	1.2	< 0.1	10.8	35.6	< 0.01
MC24	3845	14560	< 0.50	10.2	< 0.1	7.4	11.8	6.3	6.1	233	4.9	0.9	< 0.1	22.2	29.0	0.02
Min	**1250**	**5950**	**< 0.50**	**6.28**	**< 0.1**	**2.8**	**<1.0**	**4.0**	**<1.0**	**80**	**2.9**	**0.2**	**< 0.1**	**10.8**	**8.9**	**0.01**
Max	**9070**	**23100**	**< 0.50**	**24.9**	**< 0.1**	**18.2**	**21.2**	**12.3**	**8.6**	**1130**	**9.8**	**1.2**	**< 0.1**	**51.9**	**37.8**	**0.02**
Mean	**3990**	**13094.8**	**-**	**10.8**	**-**	**8.9**	**8.2**	**7.1**	**4.4**	**390**	**5.2**	**0.5**	**-**	**29.4**	**19.3**	**0.02**
SD	**1690**	**3390**	**-**	**4.3**	**-**	**3.4**	**4.2**	**2.1**	**1.8**	**226**	**1.5**	**0.3**	**-**	**9.5**	**7.3**	**0.01**
RSD	**42**	**26**	**-**	**40**	**-**	**38**	**52**	**29**	**41**	**58**	**30**	**51**	**-**	**32**	**38**	**34**
95% UCL	**5390**	**14800**		**12.7**		**11.6**	**11.6**	**7.85**	**5.58**	**445**	**6.4**	**0.6**		**33.8**	**23.9**	**5390**
EBSDS and Reference sites																
RB2	3400	25600	< 0.50	30.8	< 0.1	11.5	1.3	8.6	3.9	386	4.0	0.4	< 0.1	38.7	14.3	< 0.01
RB1	1890	6250	< 0.50	11.4	< 0.1	6.5	<1.0	3.7	2.5	210	2.5	0.2	< 0.1	13.3	6.9	< 0.01
CS	2410	11100	< 0.50	16.4	< 0.1	8.8	1.2	5.7	3.1	359	3.3	0.4	< 0.1	17.4	8.8	< 0.01
DMB	1570	7220	< 0.50	9.24	< 0.1	3.3	2.8	3.8	2.3	234	3.1	0.2	< 0.1	15.3	11.6	< 0.01

Sample	Al	Fe	Sb	As	Ca	Cr	Cu	Co	Pb	Mn	Ni	Se	Ag	V	Zn	Hg
DMA	1230	5970	< 0.50	9.08	< 0.1	3.5	3.1	3.2	1.2	346	2.4	0.2	< 0.1	15.2	6.4	< 0.01
CN	2100	10800	< 0.50	20	< 0.1	8	1.4	4.7	2.8	502	3.2	0.2	< 0.1	22.3	7.8	< 0.01
Min	**1230**	**5970**	**< 0.50**	**9.08**	**< 0.1**	**3.3**	**<1.0**	**3.2**	**1.2**	**210**	**2.4**	**0.2**	**< 0.1**	**13.3**	**6.4**	**< 0.01**
Max	**3400**	**25600**	**< 0.50**	**30.8**	**< 0.1**	**11.5**	**3.1**	**8.6**	**3.9**	**502**	**4.0**	**0.4**	**< 0.1**	**38.7**	**14.3**	**< 0.01**
Mean	**2100**	**11200**	**-**	**16.2**	**-**	**6.93**	**2.0**	**5.0**	**2.6**	**340**	**3.1**	**0.3**	**-**	**20.4**	**9.3**	**-**
SD	**757**	**7419**	**-**	**8.36**	**-**	**3.18**	**0.91**	**1.99**	**0.90**	**107**	**0.585**	**0.103**	**-**	**9.50**	**3.06**	**-**
RSD	**36**	**66**	**-**	**52**	**-**	**46**	**47**	**40**	**34**	**31**	**19**	**39**	**-**	**47**	**33**	**-**
NAGD*	**-**	**-**	**2**	**20**	**1.5**	**80**	**65**	**-**	**50**	**-**	**21**	**-**	**1**	**-**	**200**	**0.15**
NEPM**	**-**	**-**	**-**	**3,000**	**900**	**3600**	**240,000**	**4000**	**1500**	**60,000**	**6,000**	**10,000**	**-**	**-**	**400,000**	**730**
Key:	**Above NAGD screening level**								**Above NEPM investigation level**							

Concentrations expressed as mg/kg

* = screening values taken from the National Assessment Guidelines for Dredging (NAGD)

** = investigation values taken from National Environment Protection Measures (NEPM)

Phase III Testing

Phase III dilute acid extraction tests were undertaken to investigate potential bioavailability of arsenic in samples MC3 and RB2 if ingested by sediment biota. The dilute acid extraction results are presented in Table 4.3 and show that the bioavailable fraction of arsenic was well below the NAGD screening level, and was therefore not at a level of concern.

Table 4.3 Summary of Dilute Acid Extraction (DAE) results

Sample	Arsenic
MC3	3.2
RB2	5.0
NAGD Screening value	*20*

Nutrients and Organic Carbon

Nutrients and total organic carbon (TOC) analysis are shown in Table 4.4. Nutrient concentrations were broadly similar across the Main Channel, EBSDS and reference sites. TOC was highly heterogeneous across the Main Channel, ranging from 0.1% to 1.8% (RSD 91%), with a mean of 0.5%. Mean TOC values in the Main Channel were higher than reference sites and EBSDS, reflecting differences in physical properties of sediments (i.e. generally higher fines content in Main Channel sediment).

Table 4.4 Summary statistics for nutrients - Main Channel, EBSDS and reference sites

Sample	Nitrite and Nitrate (mg/kg)	TKN (mg/kg)	TN (mg/kg)	TP (mg/kg)	TOC (%)
MC1	0.7	573	573	317	0.48
MC2	0.2	270	270	547	0.26
MC3	0.3	150	150	244	0.13
MC4	0.1	780	780	318	0.65
MC5	0.1	520	520	264	0.64
MC6	0.2	760	760	312	0.84
MC7	< 0.1	330	330	238	0.55
MC8	0.4	140	140	134	0.14
MC9	0.3	160	160	242	0.06
MC10	< 0.1	40	40	121	0.07
MC11	< 0.1	210	210	216	0.28
MC13	< 0.1	320	320	193	0.41
MC14	< 0.1	330	330	245	0.53
MC15	0.2	410	410	249	0.7
MC16	< 0.1	280	280	412	0.23
MC17	0.2	270	270	197	0.22
MC18	0.1	260	260	208	0.18
MC19	0.2	180	180	209	0.32
MC20	0.1	170	170	232	0.21
MC21	0.2	650	650	275	1.19
MC22	0.2	1073	1073	341	1.58
MC23	< 0.1	380	380	500	0.25
MC24	0.2	1180	1180	369	1.78
Min	**< 0.1**	**40.0**	**40.0**	**121.0**	**0.1**
Max	**0.7**	**1180**	**1180**	**547**	**1.8**
Mean	**0.2**	**410**	**410**	**27**	**0.5**
SD	**0.145**	**300**	**300**	**103**	**0.461**
RSD	**83**	**73**	**73**	**37**	**90**

Sample	Nitrite and Nitrate (mg/kg)	TKN (mg/kg)	TN (mg/kg)	TP (mg/kg)	TOC (%)
EBSDS and Reference sites					
RB2	0.6	360	360	487	0.24
RB1	0.3	170	170	210	0.13
CS	0.2	220	220	224	0.13
DMB	0.1	150	150	174	0.07
DMA	0.1	100	100	157	0.05
CN	< 0.1	110	110	351	0.07
Min	**< 0.1**	**100**	**100**	**157**	**0.05**
Max	**0.6**	**360**	**360**	**487**	**0.24**
Mean	**0.23**	**185**	**185**	**267**	**0.12**
SD	**0.204**	**96.1**	**96.1**	**128**	**0.1**
RSD	**91**	**52**	**52**	**48**	**61**

Total Petroleum Hydrocarbons (TPHs)

Total petroleum hydrocarbon (TPH) concentrations within the C_{10} to C_{14}, C_{15} to C_{28} and C_{29} to C_{36} carbon fractions were recorded at most locations across the Main channel. The TPH carbon fraction C_6 to C_9 was below the LOR in all sediment samples. Detailed concentrations can be found in Annex Annex C. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Benzene, Toluene, Ethylbenzene and Xylene (BTEX)

BTEX concentrations were below the limit of reporting (LOR) in all samples analysed across the Main Channel, the EBSDS, and the reference sites. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Polycyclic Aromatic Hydrocarbons (PAHs)

Low level detections of PAHs were recorded in eight samples across the Main channel. Total PAHs concentrations (corrected to 1% TOC) ranged from 8.3 µg/kg to 28.3 µg/kg across the main channel. PAH concentrations across the Main channel were well below the NAGD screening level of 10,000 µg/kg in all samples. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Organochlorine Pesticides (OCPs), Organophosphorus Pesticides (OPPs) and Herbicides

Concentrations of OCPs, OPPs and herbicides were below the laboratory LOR in all investigated samples across the reference sites and EBSDS. OCPs, OPPs and herbicides were not required to be analysed in Main Channel samples. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Dioxins and Furans
Dioxins and furans were analysed in 20% of all samples across the Main Channel. Dioxins (specifically Octa-Dioxins) were detected in all samples analysed (Annex Annex C). The raw (uncorrected to 1% TOC) dioxin (OCDD) concentrations across the Main Channel (122 – 1080 pg/g) were well below the concentrations at the non-industrialised Noosa River catchment (2210 – 6080 pg/g; DES 2021); and were broadly comparable to the reference site concentrations (42 – 350 pg/g) and average concentrations recorded in other Australian estuaries (520 pg/g; Müeller *et al.* 2004).

Organotins
Concentrations of organotins (monobutyltin, dibutyltin, tributyltin) were below the LOR in all samples across the Main Channel, EBSDS and reference sites.

Per- and Polyfluoroalkyl Substances (PFAS)
PFAS concentrations were below the limit of reporting (LOR) in all samples analysed across the Main Channel, the EBSDS and the reference sites. It is recommended they are removed from the contaminant list.

Acid Sulfate Soils (ASS)
No ASS testing was carried out across the Main Channel, the EBSDS and the reference sites.

4.3 Gladstone Marina

4.3.1 Physical properties

Figure 4.2 presents the sediment grain particle size distribution (PSD) results for each location across the Gladstone Marina during the current survey.

Sediment cores across the Gladstone Marina were dominated by fines fractions (i.e. <0.075 mm), with a mean fines content of 69.6% and low variability (RSD 28%). The sand content ranged from 2% to 72%, with a mean content of 29% and moderate variability (RSD 64%). Gravel ranged from < 1% in 9 samples to 6%, with a mean of 1.6% and high variability (RSD 98%). There was a general trend of decreasing fines content and increasing sand content with core depth. Horizon 1 (0.0-0.5 m) and horizon 2 (0.5-1.0m) generally had a similar composition; high fines content, low sand content, and very little gravel. Horizon 3 (> 1 m) in most cores (where this core depth was reached) had a greater proportion of sand and lower fines content. Horizon 3 sediment at location GM4 exhibited a similar distribution to horizons 1 and 2.

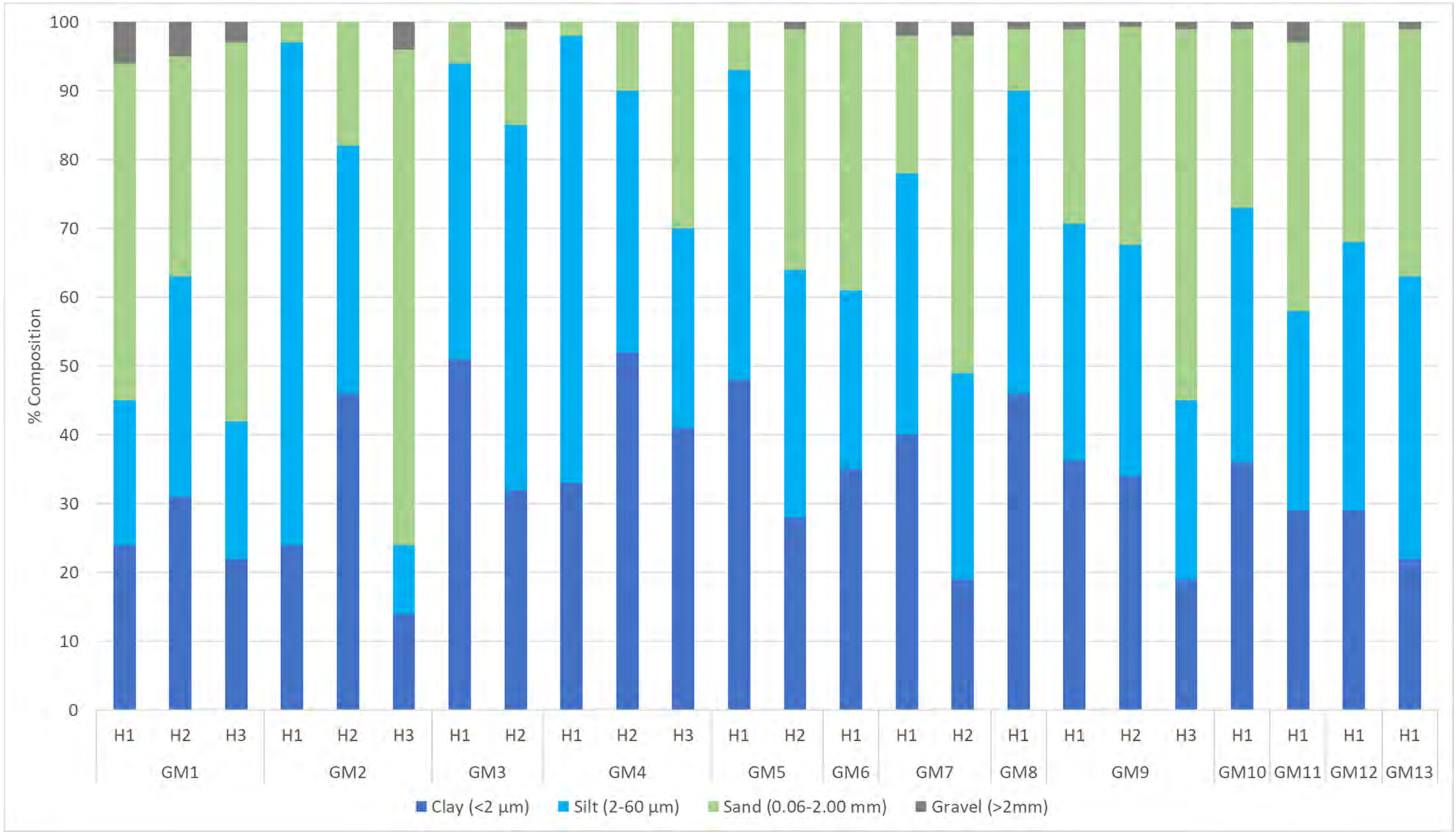

Figure 4.2 Sediment particle size distribution for Gladstone Marina (H1= 0-0.5 m core depth, H2 = 0.5-1.0 m core depth, H3 = 1.0 m to refusal or desired core length)

4.3.2 Chemical parameters

Trace Metals and Metalloids

Table 4.5 presents summary statistics for metals and metalloids across the Gladstone Marina. Mean concentrations of most metals and metalloids generally declined with core depth.

Most metals and metalloids were detected in all samples. The exceptions were: (i) cadmium (Ca) and silver (Ag) which were not detected in any samples; (ii) antimony (Sb), which detected in only one sample (GM9 > 1 m; 0.87 mg/kg), but at a concentration less than the NAGD screening value of 2 mg/kg.

Copper exceeded the NAGD screening value of 65 mg/kg in one sample (GM2 0-0.5 m = 71.7 mg/kg). The 95% UCL for copper was 32.9 mg/kg, which was well below the NAGD screening level and the most conservative NEPM investigation/screening level. On this basis, copper concentrations were not at levels of concern with regard to NAGD or NEPM. While not required under the NAGD framework, bioavailability testing was conservatively undertaken on sample GM2 0-0.5 m to investigate the bioavailable fraction of copper. These results are reported in Table 4.6.

Table 4.5 Summary Statistics and 95% UCLs for trace metals and metalloids - Gladstone Marina (mg/kg)

Sample	Al	Fe	Sb	As	Ca	Cr	Cu	Co	Pb	Mn	Ni	Se	Ag	V	Zn	Hg
GM1 0.0-0.5	4650	12400	<0.50	5.1	<0.1	9.5	15.4	6.7	3.8	106	6.4	0.4	<0.1	31.8	22.2	< 0.01
GM1 0.5-1.0	8260	18400	<0.50	7.71	<0.1	19.7	49.9	9.3	11.8	135	11.1	1	<0.1	51.6	80.6	0.02
GM1 >1	5860	16300	<0.50	3.76	<0.1	11.5	21.6	6.8	3.5	103	7.6	0.5	<0.1	42.3	23.8	< 0.01
GM2 0-0.5	11300	26400	<0.50	10.2	<0.1	23.6	71.7	11.4	11.7	188	13.1	1.2	<0.1	58.4	83.8	0.03
GM2 0.5-1.0	6910	19000	<0.50	9.36	<0.1	13.1	26.9	10.9	6.5	201	9.1	0.8	<0.1	46.1	37.3	0.02
GM2 >1	2980	8880	<0.50	2.22	<0.1	7	7.9	4.2	1.8	69	3.9	0.2	<0.1	25.5	12.8	< 0.01
GM3 0-0.5	9300	21800	<0.50	9.08	<0.1	19.5	37.6	10.3	9	198	11.3	1.1	<0.1	50.8	58.4	0.02
GM3 0.5-1.0	7360	19400	<0.50	8.15	<0.1	15	28.1	10.9	7.4	222	10	0.9	<0.1	47.2	44.4	0.02
GM4 0-0.5	10300	24250	<0.50	9.835	<0.1	21.7	38.35	10.65	9.65	190	12.35	1	<0.1	52.95	62.6	0.02
GM5 0-0.5	7680	19800	<0.50	12.5	<0.1	18.4	23.8	11.3	8.2	307	11.2	1	<0.1	48.2	48.2	0.03
GM5 0.5-1.0	7400	20000	<0.50	6.65	<0.1	11.6	18.4	8.8	6.2	286	7.6	0.6	<0.1	43.3	30.1	0.02
GM6 0-0.5	5570	13500	<0.50	8.12	<0.1	16.3	27.1	11.9	5.7	322	10.2	0.8	<0.1	55.3	41.4	0.02
GM7 0-0.5	8890	20600	<0.50	7.9	<0.1	15.2	28.3	11.4	6.5	226	10.4	0.8	<0.1	47.4	38.7	0.02
GM7 0.5-1.0	5670	12700	<0.50	4.58	<0.1	9.9	22.8	10.5	4	283	7.6	0.5	<0.1	43.5	21.7	< 0.01
GM8 0-0.5	5390	11800	<0.50	7.65	<0.1	14.9	29	11.7	5.7	352	9.5	0.7	<0.1	56.3	37.2	0.02
GM9 0-0-5	5760	16100	<0.50	6.68	<0.1	12.1	24.4	7.3	5.7	159	7.4	0.7	<0.1	34.2	36.8	0.02
GM9 0.5-1.0	4250	12470	<0.50	6.80	<0.1	10.7	17.3	6.0	5.3	107	6.3	0.5	<0.1	29.5	31.1	0.02
GM9 > 1.0	4760	13900	0.87	7.14	<0.1	10.4	14.6	5.8	5.3	101	6.1	0.5	<0.1	29.1	27.9	0.01
GM10 0-0.5	9140	25700	<0.50	7.45	<0.1	15.2	33.2	13.6	6.6	581	9.8	0.8	<0.1	78.8	37.3	0.01
GM11 0-0.5	6840	18100	<0.50	4.89	<0.1	11.9	23.7	12	3.8	440	8.5	0.5	<0.1	49.8	29.9	0.01
GM12 0-0.5	5820	18200	<0.50	8.1	<0.1	11.2	16.2	8.1	5	223	6.5	0.5	<0.1	79.4	20.6	0.01
GM13 0-0.5	7120	20800	<0.50	9.64	<0.1	15.7	25.6	11.9	5.8	240	9.8	0.6	<0.1	54.6	33.2	0.01
Min	**2980**	**8880**	**<0.50**	**2.22**	**<0.1**	**7**	**7.9**	**4.2**	**1.8**	**69**	**3.9**	**0.2**	**<0.1**	**25.5**	**12.8**	**<0.01**
Max	**11300**	**26400**	**0.87**	**12.5**	**<0.1**	**23.6**	**71.7**	**13.6**	**11.8**	**581**	**13.1**	**1.2**	**<0.1**	**79.4**	**83.8**	**0.03**
Mean	**6870**	**17800**	**-**	**7.43**	**-**	**14.3**	**27.4**	**9.6**	**6.3**	**229**	**8.9**	**0.7**	**-**	**48.0**	**39.1**	**0.02**
SD	**2070**	**4690**	**-**	**2.34**	**-**	**4.27**	**13.5**	**2.51**	**2.52**	**122**	**2.31**	**0.25**	**-**	**13.8**	**18.3**	**0.01**
RSD	**30**	**26**	**-**	**31**	**-**	**30**	**49**	**26**	**40**	**53**	**26**	**36**	**-**	**29**	**47**	**49**
95% UCL	**7630**	**19500**	**-**	**8.29**	**-**	**15.8**	**32.9**	**10.5**	**7.24**	**274**	**9.74**	**0.80**	**-**	**53.1**	**45.8**	**0.0183**
NAGD	**-**	**-**	**2**	**20**	**1.5**	**80**	**65**	**-**	**50**	**-**	**21**	**-**	**1**	**-**	**200**	**0.15**
NEPM	**-**	**-**	**-**	**3,000**	**900**	**3600**	**240,000**	**4000**	**1500**	**60,000**	**6,000**	**10,000**	**-**	**-**	**400,000**	**730**
Key:	**Above NAGD screening level**										**Above NEPM investigation level**					

Concentrations expressed as mg/kg
* = screening values taken from the National Assessment Guidelines for Dredging (NAGD)
** = investigation values taken from National Environment Protection Measures (NEPM)

Phase III Testing

Phase III dilute acid extraction tests were undertaken to investigate potential bioavailability of copper in sample GM2 0-0.5 if ingested by sediment biota. The dilute acid extraction results presented in Table 4.6 show that the bioavailable fraction of copper was well below the NAGD screening level, and was therefore not at a level of concern.

Table 4.6 Summary of Dilute Acid Extraction (DAE) results

Sample	Copper
GM2 0-0.5	35.9
NAGD Screening value	*65*

Nutrients and Organic Carbon

Nutrients and total organic carbon (TOC) analysis are shown in Table 4.7. Nutrient concentrations were broadly similar across the Gladstone Marina. TOC content across the Gladstone Marina ranged from 0.15% to 1.36%, with a mean of 0.68% and moderate variability (RSD 48%).

Table 4.7 Summary statistics for nutrients - Gladstone Marina

Sample	Ammonia (mg/kg)	Nitrite and Nitrate (mg/kg)	TKN (mg/kg)	TN (mg/kg)	TP (mg/kg)	TOC (%)
GM1 0-0.5	5	< 0.1	310	310	209	0.42
GM1 0.5-1.0	17	0.3	950	950	321	0.79
GM1 >1	2	0.2	200	200	315	0.16
GM2 0-0.5	24	1.3	1100	1100	358	1.31
GM2 0.5-1.0	25	< 0.1	510	510	252	0.83
GM2 >1	4	1.2	100	100	133	0.15
GM3 0-0.5	16	0.6	890	890	293	1.07
GM3 0.5-1.0	17	0.6	620	620	261	0.51
GM4 0-0.5	19	0.8	1080	1080	316.5	1.365
GM4 0.5-1.0	36	6.2	760	770	253	1.05
GM4 >1	32	0.3	460	460	311	0.54
GM5 0-0.5	23	0.2	900	900	345	1.2
GM5 0.5-1.0	28	< 0.1	410	410	293	0.54
GM6 0-0.5	23	0.1	n/a	n/a	n/a	0.59
GM7 0-0.5	18	0.2	n/a	n/a	n/a	0.89
GM7 0.5-1.0	6	< 0.1	n/a	n/a	n/a	0.28
GM8 0-0.5	15	0.3	n/a	n/a	n/a	0.62

Sample	Ammonia (mg/kg)	Nitrite and Nitrate (mg/kg)	TKN (mg/kg)	TN (mg/kg)	TP (mg/kg)	TOC (%)
GM9 0-0.5	25	3.9	567	573	244	0.70
GM9 0.5-1.0	30	2.5	373	373	198	0.65
GM9 >1.0	24	1.4	470	470	221	0.62
GM10 0-0.5	20	0.3	n/a	n/a	n/a	0.47
GM11 0-0.5	14	0.2	n/a	n/a	n/a	0.4
GM12 0-0.5	4	< 0.1	n/a	n/a	n/a	0.55
GM13 0-0.5	2	< 0.1	n/a	n/a	n/a	0.72
Min	**2**	**0.1**	**100**	**100**	**133**	**0.15**
Max	**36**	**6.2**	**1100**	**1100**	**358**	**1.36**
Mean	**17.9**	**1.1**	**606**	**607**	**270**	**0.68**
SD	**9.85**	**1.59**	**309**	**309**	**60.1**	**0.33**
RSD	**55**	**140**	**51**	**51**	**22**	**48**

n/a – not applicable, samples were not able to be extracted for analysis

Total Petroleum Hydrocarbons (TPHs)

Total petroleum hydrocarbon (TPH) concentrations within the C_{10} to C_{14}, C_{15} to C_{28} and C_{29} to C_{36} carbon fractions were recorded at most locations across the Gladstone Marina. The TPH carbon fraction C_6 to C_9 was below the LOR in all sediment samples. Detailed concentrations can be found in Annex Annex C. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Benzene, Toluene, Ethylbenzene and Xylene (BTEX)

BTEX concentrations were below the limit of reporting (LOR) in all samples analysed across the Gladstone Marina. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Polycyclic Aromatic Hydrocarbons (PAHs)

Low level detections of PAHs were recorded in all samples analysed across Gladstone Marina. Total PAHs concentrations (corrected to 1% TOC) ranged from 9.3 to 437 µg/kg, well below the NAGD screening level of 10,000 µg/kg in all samples. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Organochlorine Pesticides (OCPs), Organophosphorus Pesticides (OPPs) and Herbicides

Concentrations of OCPs and OPPs were below the laboratory LOR in all investigated samples across Gladstone Marina (20% of sites). All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Dioxins and Furans

Dioxins and furans were analysed for in 20% of all samples across the Gladstone Marina. Dioxins (specifically Octa-Dioxins) were detected in all samples analysed (Annex Annex C). The raw (uncorrected to 1% TOC) dioxin (OCDD) concentrations across the Gladstone Marina (174 – 1240 pg/g) were below the concentrations recorded at the non-industrialised Noosa River catchment (2210 – 6080 pg/g; State of Queensland, 2021); and were broadly comparable to the reference site concentrations (42 – 350 pg/g) and average concentrations recorded in other Australian estuaries (520 pg/g; Müeller *et al.* 2004)

Organotins

Concentrations of organotins (monobutyltin, dibutyltin, tributyltin) were below the LOR in the majority of samples across the Gladstone Marina. DBT and TBT were detected in some samples within the Gladstone Marina, however, no samples exceeded the NAGD screening level for TBT (9 µg/kg). All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Per- and Polyfluoroalkyl Substances (PFAS)

PFAS concentrations were below the limit of reporting (LOR) in all samples analysed across the Gladstone Marina.

Acid Sulfate Soils

The acid sulfate soils test results for sediments acquired at all sampling locations across the Gladstone Marina reported initial net acidity results (less ANC) greater than the action criteria (0.03%S / 8 mol H^+/t). As a result, all samples were sent away to undertake the Slab/Chip tray incubation test for ANC. The results corroborated the ANC for each sample across the survey area, meaning the material had an ANC that is sufficient in neutralising acid upon oxidation.

4.4 Boyne Entrance

4.4.1 Physical properties

Figure 4.3 presents the sediment grain particle size distribution (PSD) results for the Boyne entrance. Sediments across the Boyne entrance were dominated by the sand fraction ranging from 72% to 96%, with a mean of 85.6% and low variability (RSD 10%). The fines content ranged from 2.5% to 15%, with a mean of 7.5% and high variability (RSD 73%). Gravel ranged from < 1% to 24%, with a mean of 7.8% and high variability (RSD 139%).

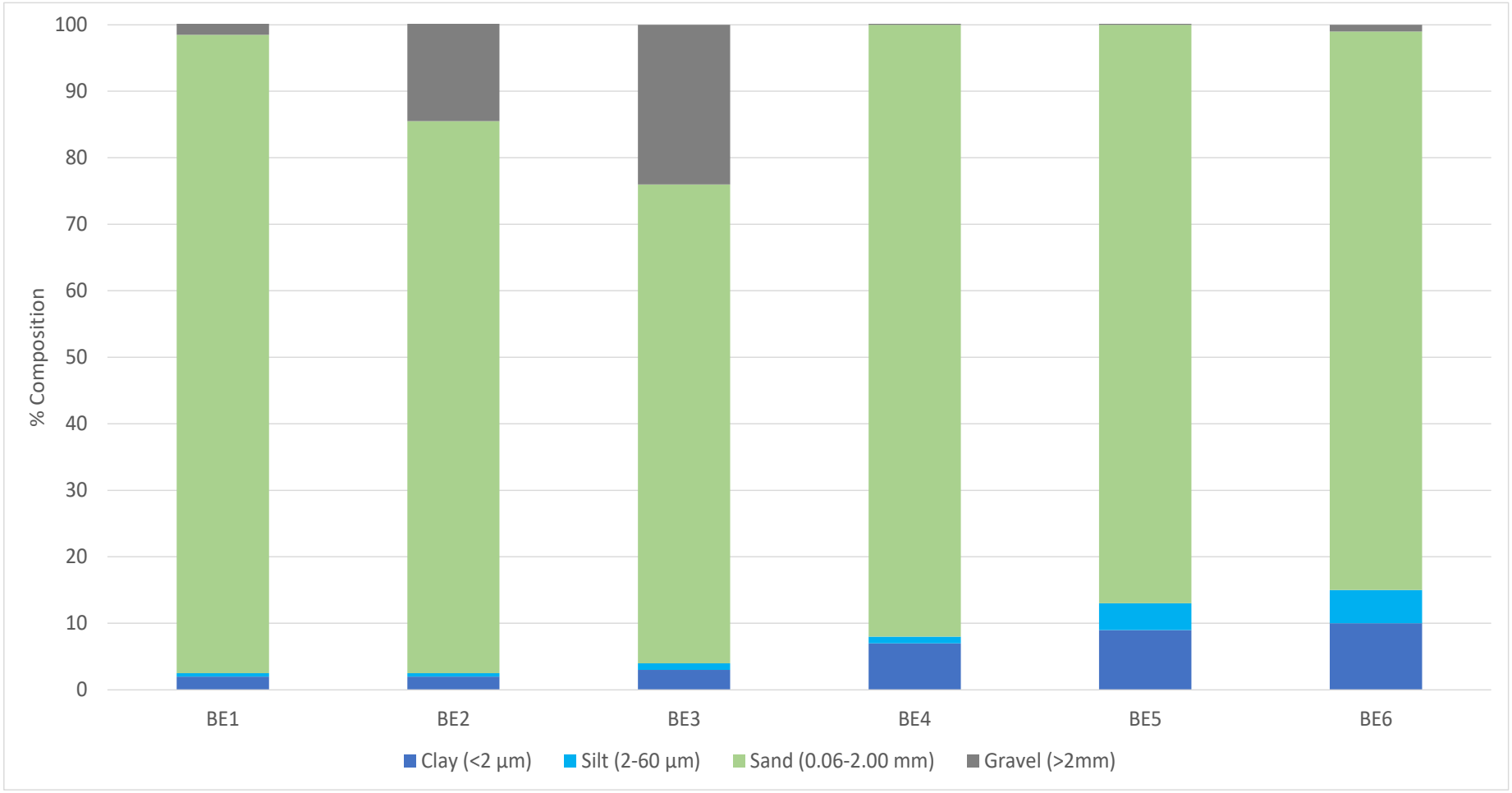

Figure 4.3 Sediment particle size distribution at Boyne Entrance

4.4.2 Chemical parameters

Trace Metals and Metalloids
Table 4.8 presents summary statistics for metals and metalloids for the Boyne entrance.

Most metals and metalloids were detected in all samples across the Boyne entrance. Antimony, cadmium, silver and mercury were not detected in any samples. The concentrations of metals and metalloids across the Boyne Entrance were all below their respective NAGD screening levels and NEPM investigation levels.

Table 4.8 Summary Statistics and 95% UCLs for trace metals and metalloids – Boyne Entrance (mg/kg)

Sample	Al	Fe	Sb	As	Ca	Cr	Cu	Co	Pb	Mn	Ni	Se	Ag	V	Zn	Hg
BE1	1140	4940	<0.50	13.0	<0.1	3.1	<1.0	2.1	1.1	215	1.5	0.1	<0.1	11.1	4.3	<0.01
BE2	930	4310	<0.50	13.3	<0.1	2.9	<1.0	1.8	<1.0	267	1.2	0.2	<0.1	9.9	3.4	<0.01
BE3	1950	7040	<0.50	9.7	<0.1	5.4	1.5	2.8	1.8	150	2.4	0.2	<0.1	13.3	8.2	<0.01
BE4	2660	7965	<0.50	14.0	<0.1	8.2	1.4	4.4	2.4	264	3.2	0.4	<0.1	15.8	9.6	<0.01
BE5	2763	8240	<0.50	13.7	<0.1	8.9	1.5	4.6	2.7	337	3.5	0.4	<0.1	16.7	10.8	<0.01
BE6	2970	8730	<0.50	14.4	<0.1	9.2	1.9	4.6	3	333	3.7	0.4	<0.1	17.4	11.6	<0.01
Min	**930**	**4310**	**<0.50**	**9.68**	**<0.1**	**2.9**	**1.45**	**1.8**	**1.1**	**150**	**1.2**	**0.1**	**<0.1**	**9.9**	**3.4**	**<0.01**
Max	**2970**	**8730**	**<0.50**	**14.4**	**<0.1**	**9.2**	**1.9**	**4.6**	**3**	**337**	**3.7**	**0.4**	**<0.1**	**17.4**	**11.6**	**<0.01**
Mean	**2070**	**6870**	**-**	**13.0**	**-**	**6.3**	**1.6**	**3.4**	**2.2**	**261**	**2.6**	**0.3**	**-**	**14.0**	**8.0**	**-**
SD	**874**	**1840**	**-**	**1.7**	**-**	**2.9**	**0.2**	**1.3**	**0.8**	**71.3**	**1.1**	**0.1**	**-**	**3.1**	**3.4**	**-**
RSD	**42**	**27**	**-**	**13**	**-**	**46**	**13**	**39**	**34**	**27**	**41**	**47**	**-**	**22**	**43**	**-**
95% UCL	**2770**	**8310**	**-**	**14.2**	**-**	**8.7**	**1.7**	**4.5**	**2.8**	**320**	**3.4**	**0.4**	**-**	**16.6**	**10.6**	**-**
NAGD*	**-**	**-**	**2**	**20**	**1.5**	**80**	**65**	**-**	**50**	**-**	**21**	**-**	**1**	**-**	**200**	**0.15**
NEPM**	**-**	**-**	**-**	**3,000**	**900**	**3600**	**240,000**	**4000**	**1500**	**60,000**	**6,000**	**10,000**	**-**	**-**	**400,000**	**730**
Key:	**Above NAGD screening level**											**Above NEPM investigation level**				

Concentrations expressed as mg/kg
* = screening values taken from the National Assessment Guidelines for Dredging (NAGD)
** = investigation values taken from National Environment Protection Measures (NEPM)

Nutrients and Organic Carbon

Nutrients and total organic carbon (TOC) analysis are shown in Table 4.9. Nutrient concentrations were broadly similar across the Boyne entrance. TOC content across the Boyne entrance ranged from 0.1% to 0.26%, with a mean of 0.17% and moderate variability (RSD 39%).

Table 4.9 Summary statistics for nutrients - Boyne entrance

Sample	Nitrite and Nitrate (mg/kg)	TKN (mg/kg)	TN (mg/kg)	TP (mg/kg)	TOC (%)
BE1	< 0.1	120	120	158	0.10
BE2	< 0.1	150	150	158	0.10
BE3	1.8	160	160	189	0.15
BE4	< 0.1	365	365	224	0.20
BE5	< 0.1	340	340	239	0.23
BE6	0.1	440	440	255	0.26
Min	**< 0.1**	**120**	**120**	**158**	**0.10**
Max	**1.8**	**440**	**440**	**255**	**0.26**
Mean	-	**263**	**263**	**204**	**0.17**
SD	-	**135**	**135**	**41.6**	**0.07**
RSD	-	**52**	**52**	**20**	**39**

Total Petroleum Hydrocarbons (TPHs)

Total petroleum hydrocarbon (TPH) concentrations within the C_{10} to C_{14}, C_{15} to C_{28} and C_{29} to C_{36} carbon fractions were recorded at most locations across the Boyne entrance. The TPH carbon fraction C_6 to C_9 was below the LOR in all sediment samples. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Benzene, Toluene, Ethylbenzene and Xylene (BTEX)

BTEX concentrations were below the limit of reporting (LOR) in all samples analysed across the Boyne entrance. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Polycyclic Aromatic Hydrocarbons (PAHs)

Low level detections of PAHs were recorded only one sample across Boyne entrance. A Total PAH concentration of 219 µg/kg (corrected to 1% TOC) was recorded in one of the triplicate samples (BE10) at location BE5. PAH concentrations across Boyne entrance were well below the NAGD screening level of 10,000 µg/kg in all samples. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Dioxins and Furans

Dioxins and furans were analysed for in 20% of all samples across Boyne Entrance. Dioxins (specifically Octa-Dioxins) were detected in all samples analysed (Annex Annex C). The raw (uncorrected to 1% TOC) dioxin (OCDD) concentration recorded at the boyne entrance (120 pg/g) was well below concentrations recorded in the non-industrialised Noosa River catchment (2210 – 6080 pg/g; DES 2021); and was broadly comparable to the reference site concentrations (42 – 350 pg/g) and average concentrations recorded in other Australian estuaries (520 pg/g; Müeller *et al.* 2004).

Organotins

Concentrations of organotins (monobutyltin, dibutyltin, tributyltin) were below the LOR in all samples across the Boyne entrance. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Per- and Polyfluoroalkyl Substances (PFAS)

PFAS concentrations were below the limit of reporting (LOR) in all samples at Boyne entrance.

4.5 Upper Auckland Inlet

4.5.1 Physical properties

Figure 4.4 presents the sediment grain particle size distribution (PSD) results for the Upper Auckland Inlet. Sediments were comprised of muds and sandy muds, with variable proportions of gravel fractions. The mean fines content was 69.1% and had low variability (RSD 28%). The sand content ranged from 5% to 66%, with a mean content of 27.6% and moderate variability (RSD 59%). Gravel ranged from < 1% in 5 samples to 18%, with a mean of 3.6% and high variability (162%). When reviewing the PSD data based on each horizon, a general trend of decreasing fines content and increasing sand content was observed with core depth. Horizon 1 (0.0-0.5 m) and horizon 2 (0.5-1.0m) comprised of similar distributions; high fines content, low sand, and minimal gravel. Horizon 3 (> 1 m) in all cores (where this core depth was reached), comprised of a greater sand fraction and lower fines fraction. Overall, the PSD data suggests a relatively homogenous sediment type along the Upper Auckland inlet.

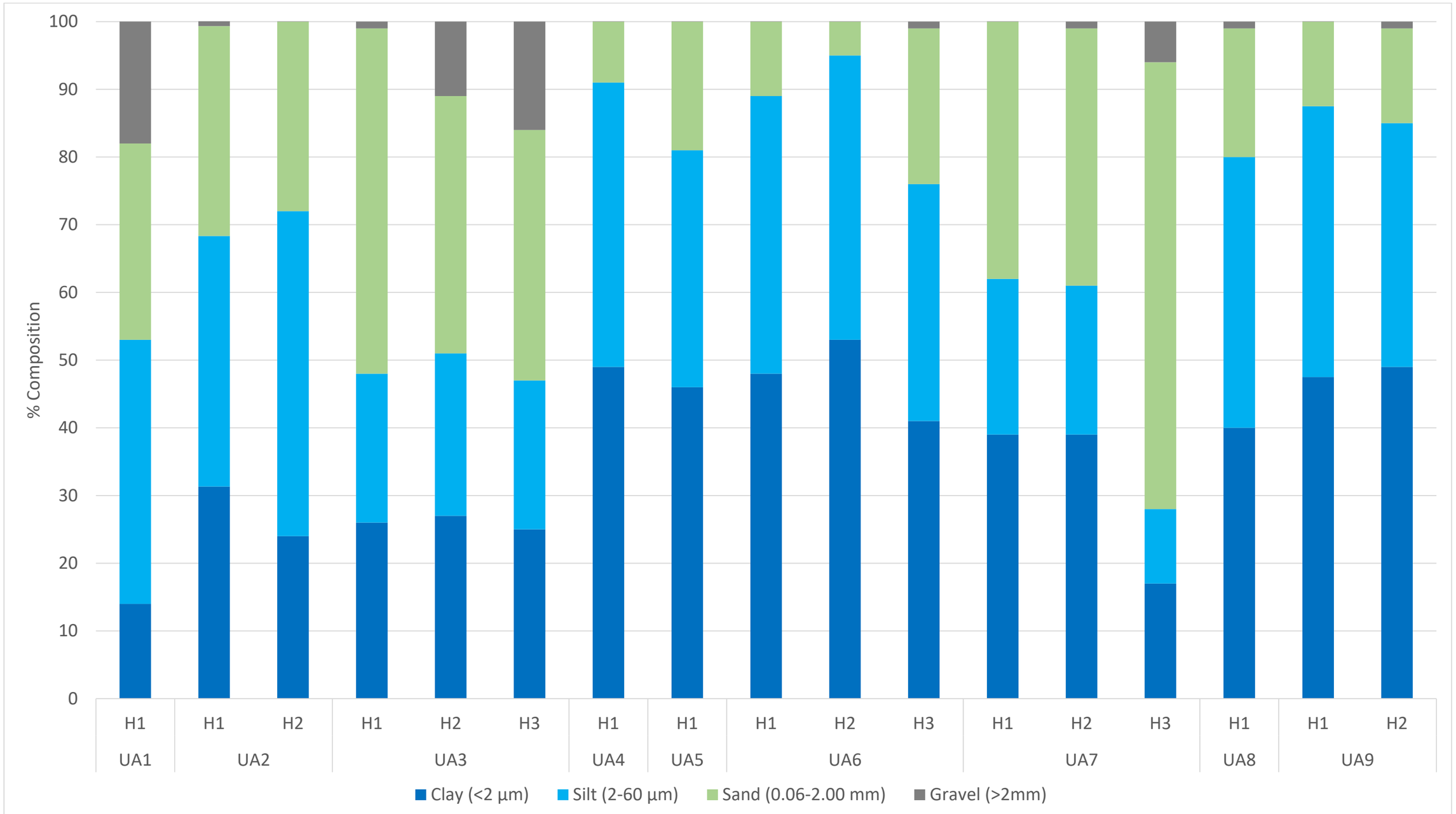

Figure 4.4 Sediment particle size distribution at Upper Auckland (H1= 0-0.5 m core depth, H2 = 0.5-1.0 m core depth, H3 = 1.0 m to refusal or desired core length)

4.5.2 Chemical parameters

Trace Metals and Metalloids

Table 4.10 presents summary statistics for metals and metalloids for the Upper Auckland Inlet. Mean concentrations of detected metals and metalloids generally decreased with core depth.

Most metals and metalloids were detected in all samples, except antimony and silver which were not detected in any samples. Cadmium was detected in two samples (0.5 and 0.2 mg/kg), but at concentrations less than the screening level of 1.5 mg/kg.

Arsenic exceeded the NAGD screening level of 20 mg/kg in two samples: UA3 > 1 m (27.2 mg/kg) and UA7 > 1 m (26.2 mg/kg). However, the 95% UCL arsenic concentration (15.9 mg/kg) was less than both the screening level and the mean background concentration (16.2 mg/kg; see Table 4.2). On this basis, arsenic concentrations were at acceptable levels. While not required under NAGD, bioavailability testing was conservatively undertaken on the samples exceeding the screening level.

All metals and metalloids had concentrations less than NEPM screening levels.

Table 4.10 Summary Statistics and 95% UCLs for trace metals and metalloids – Upper Auckland Inlet (mg/kg)

Sample	Al	Fe	Sb	As	Ca	Cr	Cu	Co	Pb	Mn	Ni	Se	Ag	V	Zn	Hg
UA1 0-0.5	5540	28000	<0.50	12.3	< 0.1	23.0	27.1	11.7	18.9	469	10.4	0.7	< 0.1	67.6	40.3	0.02
UA2 0-0.5	7310	20100	<0.50	12.0	< 0.1	22.7	28.9	11.3	15.5	283	11.9	0.83	< 0.1	56.2	77.4	0.02
UA2 0.5-1.0	6800	17800	<0.50	7.58	0.5	15.1	28.9	12.4	12.3	2210	12.2	0.8	<0.1	60.8	33.1	0.01
UA3 0-0.5	5420	17400	<0.50	11.6	< 0.1	12.3	12.7	7.4	6.6	406	6.4	0.6	<0.1	34.5	32.8	0.01
UA3 0.5-1.0	6300	23500	<0.50	18.1	0.2	15.8	14.6	12.4	8.8	12300	10.5	0.8	<0.1	50.9	31.9	0.02
UA3 >1	5720	30300	<0.50	27.2	< 0.1	13.8	10.7	29.4	10.4	9220	10.4	0.9	<0.1	52.3	25.6	< 0.01
UA4 0-0.5	8580	22200	<0.50	11.7	< 0.1	18.5	24.3	10.6	11	302	10.9	0.9	<0.1	47.1	55.8	0.03
UA5 0-0.5	8460	21600	<0.50	10.6	< 0.1	18.0	22.4	10.7	10.5	244	10.4	0.9	<0.1	46.1	50.8	0.02
UA6 0.0-0.5	7100	16400	<0.50	10.1	< 0.1	14.8	17.5	7.8	6.9	168	8.1	0.8	<0.1	34.1	37.8	0.01
UA6 0.5-1.0	9600	23000	<0.50	10.9	< 0.1	19.4	22.7	10.6	10.5	204	11.2	1.0	<0.1	48.4	50	0.02
UA6 >1	6140	17600	<0.50	9.73	< 0.1	12.3	17.1	11.1	7.6	308	8.4	0.6	<0.1	42	31.9	0.02
UA7 0-0.5	7160	21900	<0.50	12.7	< 0.1	17.1	20.9	10.1	9.2	260	9.9	0.8	<0.1	45.1	55	0.02
UA7 0.5-1.0	6190	21200	<0.50	12.9	< 0.1	16.7	18.0	9.8	10.3	241	9.8	0.8	<0.1	44.2	46.2	0.02
UA7 >1	3280	22200	<0.50	26.2	< 0.1	15.0	10.4	12.4	6.7	256	6.4	0.6	<0.1	49.3	22	0.02
UA8 0-0.5	6830	22300	<0.50	11.4	< 0.1	15.2	18.1	14.7	11.6	536	10.6	0.8	<0.1	46.5	43.5	0.01
UA9 0-0.5	8575	23150	<0.50	12.1	< 0.1	18.75	22.55	10	11	222	10.2	0.95	<0.1	46.05	49.1	0.03
UA9 0.5-1.0	8660	24800	<0.50	15.4	< 0.1	19.4	20.2	11.6	10	264	11.2	1.2	<0.1	48.9	37.2	0.03
Min	**3280**	**16400**	**<0.50**	**7.58**	**< 0.1**	**12.3**	**10.4**	**7.4**	**6.6**	**168**	**6.4**	**0.6**	**<0.1**	**34.1**	**22**	**<0.01**
Max	**9600**	**30300**	**<0.50**	**27.2**	**0.5**	**23**	**28.9**	**29.4**	**18.9**	**12300**	**12.2**	**1.2**	**<0.1**	**67.6**	**77.4**	**0.03**
Mean	**6920**	**22000**	**-**	**13.7**	**-**	**16.9**	**19.8**	**12.0**	**10.5**	**1640**	**9.9**	**0.8**	**-**	**48.2**	**42.4**	**0.0**
SD	**1560**	**3630**	**-**	**5.40**	**-**	**3.15**	**5.76**	**4.80**	**3.13**	**3507**	**1.69**	**0.15**	**-**	**8.25**	**13.5**	**0.01**
RSD	**22**	**17**	**-**	**40**	**-**	**19**	**29**	**40**	**30**	**214**	**17**	**19**	**-**	**17**	**32**	**39**
95% UCL	**7580**	**23500**		**15.9**		**18.3**	**22.3**	**14.0**	**11.8**	**3130**	**10.6**	**0.887**		**51.7**	**48.1**	**0.0215**
NAGD*	**-**	**-**	**2**	**20**	**1.5**	**80**	**65**	**-**	**50**	**-**	**21**	**-**	**1**	**-**	**200**	**0.15**
NEPM**	**-**	**-**	**-**	**3,000**	**900**	**3600**	**240,000**	**4000**	**1500**	**60,000**	**6,000**	**10,000**	**-**	**-**	**400,000**	**730**
Key:	**Above NAGD screening level**															
	Above NEPM investigation level															

Concentrations expressed as mg/kg
* = screening values taken from the National Assessment Guidelines for Dredging (NAGD)
** = investigation values taken from National Environment Protection Measures (NEPM)

Phase III Testing

Phase III dilute acid extraction tests were undertaken to investigate potential bioavailability of arsenic in sample UA3 >1 and UA7 >1 if ingested by sediment biota. The dilute acid extraction results are presented in Table 4.11, and show that concentrations were below the NAGD screening level and therefore pose a low environmental risk.

Table 4.11 Summary of Dilute Acid Extraction (DAE) results

Sample	Arsenic
UA3 >1	1.4
UA7 >1	2.8
NAGD Screening value	*20*

Nutrients and Organic Carbon

Nutrients and total organic carbon (TOC) analysis are shown in Table 4.12. It should be noted that several samples (UA2 0-0.5, UA2 0.5-1.0, UA10 0-0.5, UA11 0-0.5 and UA1 0-0.5) could not be extracted for analysis of several parameters, due to their clay-like nature.

Table 4.12 Summary statistics for nutrients – Upper Auckland Inlet

Sample	Total Cyanide (mg/kg)	Ammonia (mg/kg)	Nitrite and Nitrate (mg/kg)	TKN (mg/kg)	TN (mg/kg)	TP (mg/kg)	TOC (%)
UA1 0-0.5	< 1	2	< 0.1	n/a	n/a	n/a	0.59
UA2 0-0.5	< 1	3	< 0.1	n/a	n/a	n/a	1.27
UA2 0.5-1.0	< 1	1	< 0.1	n/a	n/a	n/a	1.42
UA3 0-0.5	< 1	n/a	0.1	600	600	244	1.39
UA3 0.5-1.0	< 1	n/a	< 0.1	520	520	294	0.76
UA3 >1	< 1	n/a	< 0.1	300	300	582	0.74
UA4 0-0.5	< 2	n/a	< 0.1	860	860	360	1.06
UA5 0-0.5	< 1	n/a	0.1	1100	1100	339	1.14
UA6 0.0-0.5	< 2	n/a	0.1	850	850	302	1.31
UA6 0.5-1.0	< 1	n/a	< 0.1	880	880	398	1.14
UA6 >1	< 1	n/a	< 0.1	680	680	216	0.68
UA7 0-0.5	< 2	n/a	0.1	870	870	300	1.2
UA7 0.5-1.0	< 1	n/a	0.1	650	650	290	1.27
UA7 >1	< 1	n/a	< 0.1	700	700	236	2.45
UA8 0-0.5	< 1	n/a	0.2	660	660	321	0.97
UA9 0-0.5	< 1	n/a	< 0.1	895	895	316.5	1.495

Sample	Total Cyanide (mg/kg)	Ammonia (mg/kg)	Nitrite and Nitrate (mg/kg)	TKN (mg/kg)	TN (mg/kg)	TP (mg/kg)	TOC (%)
UA9 0.5-1.0	< 1	n/a	0.1	990	990	303	1.48
Min	**< 1**	**1**	**< 0.1**	**300**	**300**	**216**	**0.59**
Max	**< 2**	**3**	**0.2**	**1100**	**1100**	**582**	**2.45**
Mean	**-**	**-**	**-**	**754**	**754**	**321**	**1.19**
SD	**-**	**-**	**-**	**207**	**207**	**88.9**	**0.43**
RSD	**-**	**-**	**-**	**27**	**27**	**28**	**40**

n/a – not applicable, samples were not able to be extracted for analysis

Total Petroleum Hydrocarbons (TPHs)

Total petroleum hydrocarbon (TPH) concentrations within the C_{10} to C_{14}, C_{15} to C_{28} and C_{29} to C_{36} carbon fractions were recorded at most locations across the Upper Auckland Inlet. The TPH carbon fraction C_6 to C_9 was below the LOR in all sediment samples. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Benzene, Toluene, Ethylbenzene and Xylene (BTEX)

BTEX concentrations were below the limit of reporting (LOR) in all samples analysed across the Upper Auckland Inlet. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Polycyclic Aromatic Hydrocarbons (PAHs)

Low level detections of PAHs were recorded in most samples analysed across the Upper Auckland Inlet. Total PAHs concentrations (corrected to 1% TOC) ranged from 10.3 µg/kg to 346 µg/kg, well below the NAGD screening level of 10,000 µg/kg in all samples. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Organochlorine Pesticides (OCPs), Organophosphorus Pesticides (OPPs) and Herbicides

Concentrations of OCPs and OPPs were below the laboratory LOR in all investigated samples across the Upper Auckland Inlet. Across the Upper Auckland Inlet, the thiocarbamate herbicide molinate and the triazole fungicides propiconazole and Tebuconazole were detected in sample UA2 0-0.5 m, with concentrations of 0.02 mg/kg, 0.008 mg/kg and 0.002 mg/kg, respectively. All concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Dioxins and Furans

Dioxins and furans were analysed for in 20% of all samples across Gladstone Marina. Dioxins (specifically Octa-Dioxins) were detected in all samples analysed (Annex Annex C). The raw (uncorrected to 1% TOC) dioxin (OCDD) concentrations across the Upper Auckland Inlet (314 – 1480 pg/g) were well below concentrations recorded in the non-industrialised Noosa River catchment (2210 – 6080 pg/g; DES 2021); and were broadly comparable to the reference site concentrations (42 – 350 pg/g) and average concentrations recorded in other Australian estuaries (520 pg/g; Müeller *et al.* 2004).

Organotins

Concentrations of organotins (monobutyltin, dibutyltin, tributyltin) were below the LOR in most samples. DBT and TBT were detected in some samples within the Upper Auckland Inlet, with one sample (UA5 0-0.5 m) exceeding the NAGD screening level for TBT (9µg/kg) with a concentration of 39.5 µg/kg (corrected to 1% TOC). All other concentrations were below NAGD screening levels and relevant NEPM investigation levels.

Per- and Polyfluoroalkyl Substances (PFAS)

PFAS concentrations were below the limit of reporting (LOR) in all samples analysed across the Upper Auckland Inlet.

Acid Sulfate Soils

The acid sulfate soils test results for sediments acquired at all sampling locations across the Upper Auckland Inlet reported initial net acidity results (less ANC) greater than the action criteria (0.03%S / 8 mol H^+/t). Slab/Chip tray incubation tests were therefore undertaken to quantify ANC of all samples. The results indicate that dredged material had sufficient ANC for self-neutralisation of acid upon oxidation, and therefore pose a low environmental risk.

5 Discussion

5.1 Main Channel

The physical properties of sediments in the Main Channel varied greatly among sites, reflecting differences in hydrodynamic and morphological processes along its 50 km length.

Mean concentrations of detected metals and metalloids across the Main channel, EBSDS and reference sites were all below their respective NAGD screening levels and NEPM investigation levels. The 95% UCL for all metals and metalloids in dredged sediments were also below NAGD screening levels. Phase III dilute acid extraction tests for arsenic and copper confirm that the bioavailable fraction of these metals is unlikely to result in adverse impacts to sediment biota. Therefore, both Phase II and III testing indicates that dredged material is considered clean and suitable for ocean disposal. All metals and metalloids were also below NEPM investigation levels, and therefore do not constrain on land dredged material reuse.

Nutrient concentrations were broadly similar across the Main Channel, EBSDS and reference sites. NAGD (2009) guidelines do not provide screening levels for nutrients or TOC in bulk sediments. Similarly, there are no NEPM investigation levels for nutrients or TOC. Concentrations were however similar to other estuarine environments in Queensland (e.g. BMT 2022c). The reference sites had different physical (i.e. high sand content) and chemical (low TOC and nutrients) properties to dredged sediments, and therefore do not provide a suitable base for comparison. Cyanide was analysed for all samples in the reference sites and EBSDS. Cyanide was below the LOR (and respective screening/guideline values) at all locations and is therefore not considered a constraint to ocean or land disposal.

TPH concentrations recorded in samples across the Main Channel, EBSDS and reference sites were well below the NAGD screening value of 550 mg/kg; BTEX concentrations were below the limit of reporting (LOR) in all samples analysed across the Main Channel, the EBSDS and the reference sites; and PAH concentrations were well below the NAGD screening level of 10,000 µg/kg, and well below NEPM investigation levels, in all samples.

Dioxins/furans are a product of combustion and ubiquitous in Australian aquatic sediments (Mueller et al. 2004). Potential sources include bushfires, agricultural burns, and industrial processes. In lieu of NAGD and NEPM guideline values, dioxin/furans concentrations were compared a dioxin assessment in the non-industrialised Noosa River catchment (DES 2020). Concentrations recorded in dredged sediments were less than half the minimum value recorded by DES (2020), and were also well below average levels recorded in other Australian estuaries (520 pg/g; Müeller et al. 2004). Given their low concentrations in dredged sediments, it is proposed that dioxins and furans be removed from the contaminant list.

PFAS concentrations were below the limit of reporting in all samples analysed across the Main Channel, the EBSDS and the reference sites. It is proposed that PFAS be removed from contaminant list.

5.2 Gladstone Marina

Sediment cores across the Gladstone Marina were mostly comprised of fine material (clay and silts) and were homogeneous across dredged area.

The 95% UCL for all metals and metalloids in dredged sediments were also below NAGD screening levels. Phase III dilute acid extraction tests for arsenic and copper confirm that the bioavailable fraction of these metals is unlikely to result in adverse impacts to sediment biota. Therefore, both Phase II and III testing indicates that dredged material is considered clean and suitable for ocean disposal. All metals and metalloids were also below NEPM investigation levels, and therefore do not constrain on land dredged material reuse.

Nutrient concentrations were broadly similar across the Gladstone Marina. NAGD (2009) guidelines do not provide screening levels for nutrients or TOC in bulk sediments. Similarly, there are no NEPM investigation levels for nutrients or TOC. Concentrations were however similar to other estuarine, silty sediments in Queensland (e.g. BMT 2022c).

Hydrocarbons were below levels of concern. TPH concentrations were well below the NAGD screening value of 550 mg/kg; BTEX concentrations were below the limit of reporting in all samples; and PAH concentrations were well below the NAGD screening level of 10,000 µg/kg in all samples. All hydrocarbon parameters also had concentrations below relevant NEPM investigation levels. Therefore, the material can be considered clean and suitable for ocean disposal or re-use with regard to hydrocarbons.

Dioxins/furans are a product of combustion and ubiquitous in Australian aquatic sediments (Mueller et al. 2004). Potential sources include bushfires, agricultural burns, and industrial processes. In lieu of NAGD and NEPM guideline values, dioxin/furans concentrations were compared a dioxin assessment in the non-industrialised Noosa River catchment (DES 2020). Concentrations recorded in dredged sediments were less than half the minimum value recorded by DES (2020), and were also well below average levels recorded in other Australian estuaries (520 pg/g; Müeller et al. 2004). Given their low concentrations in dredged sediments, it is proposed that dioxins and furans be removed from the contaminant list.

Concentrations of organotins (monobutyltin, dibutyltin, tributyltin) were below the LOR in most samples across Gladstone Marina. DBT and TBT were detected in some samples, however none exceeded the NAGD screening level for TBT (9µg/kg) or NEPM investigation levels.

PFAS concentrations were below the limit of reporting in all samples. It is proposed that PFAS be removed from contaminant list.

Land-based disposal is a potential option for Gladstone Marina, Upper Auckland, and Boyne River. Sediment sampling indicates that dredged sediments at these locations contain potential acid sulfate soils (PASS). The Acid Neutralising Capacity (ANC) metric provides a measure of the capacity of sediments to self-neutralise acids upon oxidation, and results for all sites indicate that there was sufficient ANC to neutralise sediments. Department of Environment and Science advises that ANC values should be verified by further testing, therefore slab/chip tray incubation test for ANC was performed on all samples. The slab/chip tray results confirmed that the ANC of all samples was sufficient to neutralise acid upon oxidation, indicating no treatment would be required if the material was placed on land.

5.3 Boyne Inlet Channel

Sediment cores across the Boyne entrance had low spatial variability and high proportions of sand.

The 95% UCL for all metals and metalloids were below NAGD screening levels and NEPM investigation levels. On this basis, sediments were considered suitable for ocean disposal or land-based reuse.

Nutrient concentrations were broadly similar across the Boyne entrance. NAGD (2009) and NEPM do not provide screening or investigation levels for nutrients or TOC in bulk sediments. Concentrations were however similar to other estuarine environments in Queensland (e.g. BMT 2022c).

Hydrocarbons were below levels of concern. TPH concentrations were well below the NAGD screening value of 550 mg/kg; BTEX concentrations were below the limit of reporting in all samples; and PAH concentrations were well below the NAGD screening level of 10,000 µg/kg in all samples. All hydrocarbon parameters also had concentrations below relevant NEPM investigation levels. Therefore, the material can be considered clean and suitable for ocean disposal or re-use with regard to hydrocarbons.

Dioxins/furans are a product of combustion and ubiquitous in Australian aquatic sediments (Mueller et al. 2004). Potential sources include bushfires, agricultural burns, and industrial processes. In lieu of NAGD and NEPM guideline values, dioxin/furans concentrations were compared a dioxin assessment in the non-industrialised Noosa River catchment (DES 2020). Concentrations recorded in dredged sediments were less than half the minimum value recorded by DES (2020), and were also well below average levels recorded in other Australian estuaries (520 pg/g; Müeller et al. 2004). Given their low concentrations in dredged sediments, it is proposed that dioxins and furans be removed from the contaminant list.

PFAS concentrations were below the limit of reporting in all samples. It is proposed that PFAS be removed from contaminant list.

Land-based disposal is a potential option for Gladstone Marina, Upper Auckland, and Boyne River. Sediment sampling indicates that dredged sediments at these locations contain potential acid sulfate soils (PASS). The Acid Neutralising Capacity (ANC) metric provides a measure of the capacity of sediments to self-neutralise acids upon oxidation, and results for all sites indicate that there was sufficient ANC to neutralise sediments. Department of Environment and Science advises that ANC values should be verified by further testing, therefore slab/chip tray incubation test for ANC was performed on all samples. The slab/chip tray results confirmed that the ANC of all samples was sufficient to neutralise acid upon oxidation, indicating no treatment would be required if the material was placed on land.

5.4 Upper Auckland

Sediment cores across the Upper Auckland Inlet had low spatial variability with high proportions of fines (clay and silts), alluding to a relatively homogenous sediment type across the survey area.

Mean concentrations of detected metals and metalloids across the Upper Auckland Inlet were all below respective NAGD screening levels and NEPM investigation levels. The 95% UCL for all metals and metalloids were also below NAGD screening levels. Therefore, the material is considered clean and suitable for ocean disposal.

Nutrient concentrations were broadly similar across the Upper Auckland Inlet. NAGD (2009) guidelines do not provide screening levels for nutrients or TOC in bulk sediments. Similarly, there are no NEPM

investigation levels for nutrients or TOC. Concentrations were however similar to other estuarine environments in Queensland (e.g. BMT 2022c). Cyanide was analysed for all samples in the Upper Auckland Inlet. Cyanide was below the LOR (and respective screening/guideline values) at all locations and is therefore not considered a constraint to ocean or land disposal.

Hydrocarbons were below levels of concern. TPH concentrations were well below the NAGD screening value of 550 mg/kg; BTEX concentrations were below the limit of reporting in all samples; and PAH concentrations were well below the NAGD screening level of 10,000 µg/kg in all samples. All hydrocarbon parameters also had concentrations below relevant NEPM investigation levels. Therefore, the material can be considered clean and suitable for ocean disposal or re-use with regard to hydrocarbons.

Dioxins/furans are a product of combustion and ubiquitous in Australian aquatic sediments (Mueller et al. 2004). Potential sources include bushfires, agricultural burns, and industrial processes. In lieu of NAGD and NEPM guideline values, dioxin/furans concentrations were compared a dioxin assessment in the non-industrialised Noosa River catchment (DES 2020). Concentrations recorded in dredged sediments were less than half the minimum value recorded by DES (2020), and were also well below average levels recorded in other Australian estuaries (520 pg/g; Müeller et al. 2004). Given their low concentrations in dredged sediments, it is proposed that dioxins and furans be removed from the contaminant list.

Organotins (DDT and TBT) were recorded in some samples within the Upper Auckland Inlet. One sample (UA5 0-0.5 m) exceeded the NAGD screening level for TBT (9µg/kg) recording a concentration of 39.5 µg/kg. However, when sample UA5 0-0.5 m was re-run to ensure the sample consistency of the result; duplicate analysis reported concentrations of 1.1 µg/kg and 0.9 µg/kg. Therefore, the initial concentration of 39.5 µg/kg was likely an outlier of infrequent paint flakes as per Phase II testing in the NAGD (2009) and Decision tree for assessment of TBT (2021). Note that no NEPM guideline values are provided.

PFAS concentrations were below the limit of reporting (LOR) in all samples analysed across the Upper Auckland Inlet. It is proposed that PFAS be removed from the contaminant list for future analysis.

Land-based disposal is a potential option for Gladstone Marina, Upper Auckland, and Boyne River. Sediment sampling indicates that dredged sediments at these locations contain potential acid sulfate soils (PASS). The Acid Neutralising Capacity (ANC) metric provides a measure of the capacity of sediments to self-neutralise acids upon oxidation, and results for all sites indicate that there was sufficient ANC to neutralise sediments. Department of Environment and Science advises that ANC values should be verified by further testing, therefore slab/chip tray incubation test for ANC was performed on all samples. The slab/chip tray results confirmed that the ANC of all samples was sufficient to neutralise acid upon oxidation, indicating no treatment would be required if the material was placed on land.

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Annex A Sampling and Analysis plan

Port of Gladstone Maintenance Dredging 2022 SAP Design Document

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Project	A11637
Deliverable	001
Version	02
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The Amendment Record below records the history and issue status of this document.

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01	01 July 2022	GPC	Draft Final
02	20 July 2022	GPC	Final

Contents

Tables

Figures

1 Introduction

1.1 Background

Gladstone Ports Corporation Ltd (GPC) was formed in 1914 and is a Government Owned Corporation (GOC) that presently manages three Port precincts – the Port of Gladstone, Port of Rockhampton and Port of Bundaberg. The Port of Gladstone is Queensland's largest multi-commodity port.

In addition to other key roles, GPC is responsible for maintaining navigable port depths and pilotage, while port navigation is controlled by Maritime Safety Queensland (MSQ). Navigable port depths require a minimum depth of clearance below the keel of vessels calling at the Port of Gladstone to allow for effective shipping access to the port and ensure ship safety. GPC undertakes regular maintenance dredging programs to ensure minimum depths are maintained. In addition to the primary navigation channels, GPC is responsible for maintaining auxiliary navigable channels and the Gladstone Marina.

Maintenance dredging campaigns generally target areas where material has accumulated beyond the minimum draft designated by the Harbour Master. The Port of Gladstone Main Channel also comprises of swing basins and berths with all dredge material from these areas is currently placed in the East Banks Sea Disposal Site (EBSDS).

Whilst not every navigable channel requires dredging yearly, the following areas outside of the main channel included in this document are Gladstone Marina, Upper Auckland Inlet, and Boyne River entrance channel (See Figure 1.1).

This draft Sediment Sampling Analysis Plan (SAP) design document provides the proposed plan for the sampling and analysis of sediments from each of the areas requiring maintenance dredging. The SAP will be implemented every five (5) years to support the maintenance dredging approval process at the Port of Gladstone.

Title:

Gladstone dredging locality

Figure: 1-1

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1.2 Sediment Sampling and Analysis Plan (SAP) Objectives

The aim of this SAP is to provide a set of procedures that will allow a statistically valid evaluation of the physical and chemical sediment properties of the sediments to be dredged. The results of this assessment will assist in determining the suitability of sediment for land-based re-use or offshore placement.

The assessment of physio-chemical sediment properties for land-based reuse will be undertaken in accordance with the National Environment Protection (Assessment of Site Contamination) Amendment Measure 1999 (NEPM), with sampling intensity and methodology defined in accordance with the National Assessment Guidelines for Dredging (NAGD 2009). The assessment of the risk of acid sulfate generating potential for land-based placement utilises action criteria defined in Queensland Acid Sulfate Soil Technical Manual (QASSTM, Dear *et al.* 2014) and the National Guidelines for the dredging of acid sulfate soil sediments and associated dredge spoil (Simpson *et al*. 2018). The suitability of sediment for offshore placement will be assessed against the NAGD (2009).

This SAP provides a tier 1 preliminary investigation into potential levels of contamination in sediments destined for land-based reclamation. It follows the recommended process for the assessment of site contamination in the NEPM, using a potential contaminant list derived from very large prior datasets covering most of Gladstone Harbour. This SAP provides guidance for a phase II assessment of sediments for offshore placement as per the NAGD (2009).

The specific SAP objectives are to:

- Provide a summary of proposed dredging and disposal operations for the project
- Identify a list of contaminants based on a review of existing data and potential contaminant sources
- Determine the number of samples required to provide an adequate characterisation of the physical and chemical sediment properties in the entire area to be dredged
- Collect sufficient sediment samples to fully characterise the sediment layer to be dredged
- Maintain rigorous sample handling, transport and storage processes to ensure sample integrity and high-quality data
- Establish Data Quality Objectives relating to quality assurance and quality control (QA/QC) standards and requirements (see Section 3.10)
- Outline adequate QA/QC procedures for field sampling and laboratory analysis
- Provide a description of statistical procedures used to determine the contaminant status of the dredged material
- Describe procedures for validating the analytical data to assess whether the sample collection, handling and laboratory analysis was undertaken to a standard allowing assessment of sediment quality against the appropriate NEPM and NAGD screening levels
- Outline the proposed reporting framework for the sediment quality results that will address the requirements of the Determining Authorities.

1.3 Description of the Proposed Dredging

The proposed maintenance dredging project will re-establish navigable depths in existing channels, marinas, and inlets. Table 1.1 shows the estimated volumes of dredged material, the required depth of dredging, and the presence of appropriate quality existing data for determining the required sampling effort and intended placement.

Maintenance across the main shipping channel will remove up to 0.5 m of surface material. Dredging in Auckland Inlet will reduce the bed sediment level to -3.0 m LAT. Maintenance dredging in Gladstone Marina will go to -5 m LAT (-4.5 m with 0.5 m over-dredging) in the channels, and -3 m LAT near the piles, while maintenance of the Boyne River inlet will be to -1.0 m LAT.

Table 1.1 Approximate Dredging Volumes

Component	Anticipated Dredge Volume (m3)	Required Dredge Depth	Past Sediment Quality Data	Intended Placement
Main Channel, Swing, Berth, & EBSDS	340,000 p/a	Variable – to 0.5 m below 'maintained depth' as noted on the Gladstone Harbour Aus charts	BMT (2012, 2014), AMA (2017)	EBSDS and Tide Island DMPA
Upper Auckland Inlet	100,000 (once)	-5.0 m LAT	AMA (2017)	EBSDS and/or Land-based reuse
Gladstone Marina	300,000 over 5 yrs. 40,000 – 60,000 accumulation p/a	-5.0 m LAT	AMA (2015, 2017)	EBSDS and/or Clinton Channel dispersal and/or Land-based reuse
Boyne	40,000 (once)	-1.0 m LAT	BMT (2017)	EBSDS and/or Land-based reuse

1.4 Description of Proposed Disposal

As discussed further below the intended disposal methodology for each area is as follows:

- **Main Channel** – all material dredged from these channels will be placed at the EBSDS, or the Tide Island Dredge Material Placement Area (DMPA).
- **Gladstone Marina and Upper Auckland Inlet** – will be placed at EBSDS, Clinton Channel DMPA, or the nearby reclamation areas where appropriate and suitable.
- **Boyne Entrance Channel** – will be placed on land where possible for an engineering beneficial reuse, otherwise EBSDS.

To reduce the quantity of dredge spoil in Gladstone Port reclamation areas, applications have been prepared are currently being reviewed for two new proposed DMPAs in Gladstone Harbour:

- Clinton Channel DMPA (BMT, 2022a) – which would involve relocation of dredged sediment from onshore areas to nearby channels. The Gladstone Marina dredge slurry is proposed to be discharged on the edge of the Clinton Channel for in-water dispersal.
- Tide Island DMPA (BMT, 2022b) – which would involve relocation of dredged sediment from the inner harbour channels and LNG terminals to the Tide Island DMPA. The area is naturally dispersive with high tidal currents and deep channels below required dredge depths.

Material from the Main Channel and any other material from surrounding footprints that conforms to the sediment quality requirements of the NAGD (2009) will be placed at the EBSDS and or the new Tide Island DMPA. For the Upper Auckland Inlet and Marina, GPC proposes the Clinton Channel DMPA if the sediment meets the NAGD requirements for disposal at sea. Subsequently, sediment from the Marina and Upper Auckland Inlet that cannot be disposed at sea and meet the requirements of the NEPM will be used as beneficially reuse materials in any of the existing onshore reclamations at

Western Basin Reclamation Area (WBRA), Wiggins Island Coal Terminal reclamation areas B & C or the RG Tanna Coal Terminal Reclamation Area.

Boyne River Inlet dredge spoil location has not been specified at this point but with a preference for engineering beneficial reuse. Previous sediment analysis was found to be suitable for land-based re-use based on the most stringent NEPM screening levels. Analysis will retain HIL-A screening levels for the maximum amount of flexibility in placement locations.

The EBSDS will be made available to all suitable dredge material should it be required.

1.5 Sampling and Analysis Plan Rationale

The NAGD (2009) provides a framework for the assessment of suitability of dredged sediments for offshore material placement, but it does not address land-based re-use. However, the methodologies for determining sampling effort and contaminated strata delineation represent best practice for sampling and assessment of marine sediments. Therefore, the procedures for site selection and sampling effort for sediments intended for land-based re-use are based around the NAGD.

The assessment of sediment contamination for land-based re-use will be undertaken in accordance with relevant requirements set out in the NEPM. Material will eventually be used as commercial and industrial land, so screening levels should be based on HILs and ESLs for commercial and industrial land uses (HIL-D and ESL). Although each of the reclamation sites border areas of ecological significance, this SAP assumes that groundwater will be retained within each reclamation site and managed within separate tail-water and acid sulfate management programs. Therefore, screening levels are based on:

- Upper Auckland Inlet, Gladstone Marina:
  - The Health-based Investigation Levels for commercial and industrial areas (HIL-D)
  - Ecological Screening Levels (ESLs) for commercial and industrial areas.
- Boyne River inlet
  - The Health-based Investigation Levels for residential areas with accessible soils (HIL-A)
  - Ecological Screening Levels (ESLs) for areas of ecological significance.

To determine if sediments are suitable for offshore placement at the EBSDS, contaminant concentrations will be assessed against the NAGD (2009) screening levels.

Other guidelines set out by the Queensland government's Model Operating Conditions, ERA 16 – Extractive and Screening Activities (DEHP 2016) are referred to, including the Queensland Acid Sulfate Soil Technical Manual (QASSTM, Dear *et al.* 2014) and National Guidelines for the Dredging of Acid Sulfate Soil Sediments and Associated Dredge Spoil (Simpson *et al.* 2018).

2 Review of Existing Information

2.1 Environmental Factors

Seabed Geology

Hydrodynamic processes (waves, tidal currents, fluvial input) control patterns in sediment deposition, erosion and re-suspension, and therefore, the sediment types found at loading sites. Most mobile sediment is already present, with the majority of new sediment entering the port from the southern entrance. The natural littoral transport system of fine-grained sediment along the Queensland coastline inputs travels in a north-westerly direction. 15-20% of this sediment has a net transport into the Inner Harbour region of the PoG through the South Entrance (Ports & Coastal, 2019). New fluvial sediment enters Port Curtis primarily through the Calliope and Boyne rivers, with some input from the Fitzroy River (via the Narrows). However, an investigation into the Fitzroy River discharge in the aftermath of the April 2017 flooding found insignificant sediment flow through the narrows into the Gladstone Harbour system (Larcombe *et al.*, 2019). Under most flow conditions, the Calliope River is the main contributor, due to the Awoonga Dam on the Boyne River acting as a sediment trap. Under very large flow conditions such as the 2013 floods, the Boyne River can exceed the Calliope River as accumulated sediments are mobilised over the spillway.

The downstream estuaries of the Calliope and Boyne rivers are dominated by large areas of tidal flats and mangrove forest, which act as depositional areas for sediment due to reduced flows around convergent currents and entrapment. The large spring tidal range and tidal storage areas within the estuary create strong tidal velocities in the Main Channels of Port Curtis. Strong tidal currents in the channels re-suspend sediment during peak tidal flows (Figure 2.1) and much of this tidally mobilised sediment is deposited back into the channels during slack tide. The peak flow also creates ripples or migrating sand ridges that could be mistaken as depositionary. Some is resuspended sediment deposited onto the shallow shoals and intertidal flats, resulting in continuous cycles of resuspension and deposition, and an overall pattern of finer sediments along tidal flats and coarser sediments within the main channels Figure 2.2 (Dunn *et al*., 2015)(BMT WBM, 2018).

Using time series analysis of bathymetry data, the highest rates of sedimentation were found to occur in the upstream (Jacobs and Targinnie Channel areas) and outer harbour (Golding, Boyne and Wild Cattle Cuttings) regions of the PoG (Ports & Coastal, 2018a). With the differing conditions at each location, the upstream is predominantly fine-grained silt and clay with the Outer Harbour seeing a variable deposition of sand and silt/clay. A gap analysis (Port & Coastal, 2018b) identified that sufficient evidence was found to inform the sources of sediment to the PoG, however, there is insufficient data to confirm the sources of sediment deposited into maintained channels and berths.

Tidally driven resuspension is generally more influential than wave-driven resuspension inside of the harbour, while wave energy and longshore currents drive resuspension and bed movement outside of the harbour. Longshore drift outside of the harbour moves sediments in a northerly direction, driven by south-easterly winds. The areas with the highest currents and most wave exposure tend to have the coarsest sediments, while more sheltered, low tidal energy environments inside the harbour and in berthing pockets tend to have finer sediments and be depositional (Figure 2.2).

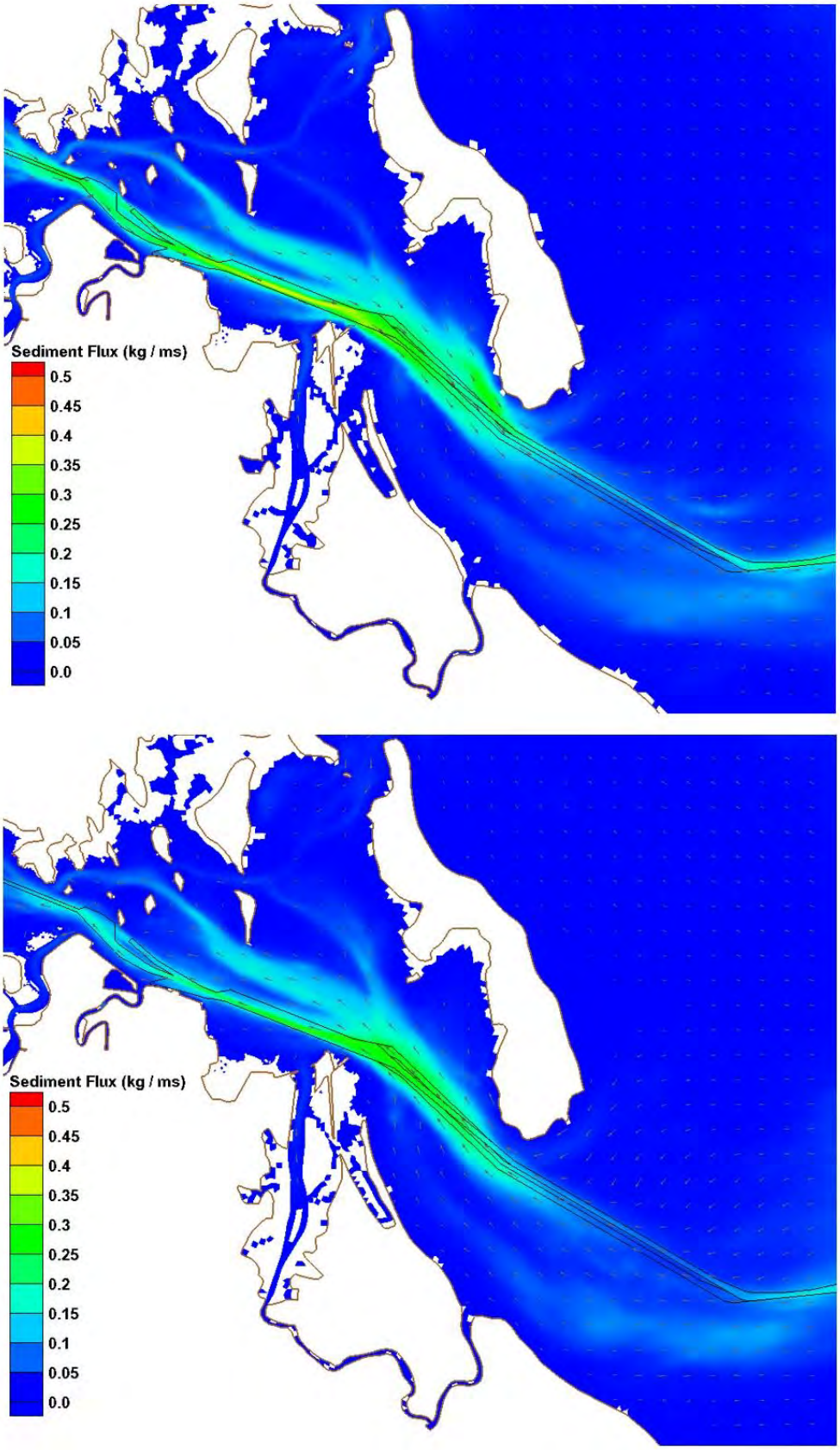

Figure 2.1 Example Total Sediment Fluxes (kg/s per metre) for Ebb Spring Tide (Top) and Flood Spring Tide (Bottom) (BMT WBM, 2018)

Legend

- AMA 2018
- Aurecon 2012
- BMT WBM 2012
- BMT WBM 2014

Percentage of fines (%) in samples

0 — 100

Title:

Interpolated Fine Content within the Main Channel (Data from Aurecon 2012; BMTWBM 2012, 2014; AMA 2018)

Figure: 2-2

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The coarse sediments in sections of the Main Channel generally consist of back-stepping channel sands (landward accumulation). In the Golding and Gatcombe sections of the Main Channel these coarse sands become dominated by gravels with increasing depth below the ground level. The coarsest sediments tend to have more marine material (calcium carbonates) while the finer fractions contain more terrigenous material and organics and have more potential to contain anthropogenic contamination.

Factors Influencing Contaminants in Sediments and Potential Pollutant Sources

The catchment of Port Curtis includes the City of Gladstone and a variety of coastal and hinterland townships. Industries in the catchment include pastoral, agricultural, processing and manufacturing. Potential pollutant sources in the Port of Gladstone are highlighted in Table 2-1.

Based on previous studies undertaken in the Port of Gladstone, potential contaminant types include:

- Metals and metalloids
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Organotin compounds including tributyl tin, dibutyl tin, monobutyl tin (TBT, DBT, MBT).

In addition to historical contaminants, emerging contaminants (ECs) will be sampled to inform the contaminant list. Insufficient data exists to determine the status ECs in the Port of Gladstone, and in accordance with NAGD, a pilot study will be used to inform the contaminants list. The pilot study will propose to sample 20% of the locations specified in NAGD. Refer to Section 3.7 for the contaminant list, including ECs.

Contaminant concentrations found in estuarine sediments are controlled by a range of processes. Sediments near contaminant sources, such as those shown in Table 2-1, can have concentrations of metals and organic pollutants that are elevated in comparison to natural background levels. Sediment grain size, which itself is a function of hydrodynamic processes (currents, waves) is also a primary determinant of contaminant concentrations and potential ecotoxicity. Due to their physical and chemical characteristics, fine-grained sediments tend to adsorb contaminants, and areas containing a high proportion of sediments in this size range can have higher contaminant concentrations (particularly metals/metalloids) than areas dominated by coarser grain sediments. Fine sediments such as clay can also chelate contaminants, making them less biologically available.

A wide range of physico-chemical sediment properties and biological processes (e.g. bioturbation by burrowing organisms) also strongly influence contaminant concentrations. The natural geology occasionally has high concentrations of nickel, arsenic, and manganese, which have been found in reference sediments in several studies (Section 2.2).

Table 2.1 Potential Pollutant Sources in the Port of Gladstone

Potential source	Metals/ Metalloids	PAHs	Hydrocarbons (TPHs, BTEX)	Organotins (TBT)	Herbicides Pesticides	Nutrients	Cyanide	Bauxite, coal, clinker, alumina
Natural geology	✓	✓	✓			✓		✓
Shipping and portside operations	✓	✓	✓	✓		✓		✓
Industrial discharges and site runoff	✓	✓	✓			✓	✓	✓
Landfills	✓	✓	✓			✓		
Agriculture and horticulture					✓	✓		

Potential source	Metals/ Metalloids	PAHs	Hydrocarbons (TPHs, BTEX)	Organotins (TBT)	Herbicides Pesticides	Nutrients	Cyanide	Bauxite, coal, clinker, alumina
Urban stormwater runoff	✓	✓	✓		✓	✓		

In the wider Port of Gladstone, maintenance dredging sediments have consistently been found to be uncontaminated except for TBT in lower Auckland Inlet (see Section 2.2). Based the review of existing sediment data (see Section 2.2), and taking into consideration the above factors, it is expected that the proposed loading sites will have a similar contamination status. Therefore, the sampling design adopted in this SAP has been randomised to ensure that a representative sample of all sediments is measured. Additionally, the main channel and associated areas have been weighted prior to randomization to accurately represent the material dredged (see 3.1).

Sampling Considerations

The following environmental factors are relevant in the context of undertaking sampling:

- The area is affected by strong currents and moderate local wind-waves which can affect the ability to deploy a core sampler.
- The depth of unconsolidated material can vary throughout the dredge area. Where there is insufficient unconsolidated material in the sample a second sample may be required.
- Sharks, crocodiles and stingers although present are not considered a major consideration in the context of a sediment sampling program undertaken from a vessel using coring or grab sampling equipment.

The sampling procedures outlined in Section 3, including the Contingency Plan (Section 3.4), take into account these environmental influences.

2.2 Recent Sediment Quality Investigations

Given that the proposed dredged material is expected to comprise of material from the deposition of fine sediments, gravel, and cobble, the review of existing data includes relevant reports on sediment quality from capital and maintenance dredge material in the study area. This will allow an adequate assessment of the likely contaminant status of both native and anthropogenic material to be dredged from the proposed dredge areas.

Existing sediment quality information from the study area includes the following:

- AMA (2017) Implementation Report - Sediment Sampling and Analysis Plan for the Port of Gladstone Maintenance Dredging
- BMT WBM (2017) Sediment Quality Report – Boyne River Mouth Maintenance Dredging
- AMA (2015a) Sediment Sampling and Analysis Plan: Implementation Report, Auckland Inlet
- AMA (2015b) Sediment Sampling and Analysis Plan, Gladstone Marina
- BMT WBM (2014) Maintenance Dredging of the Western Basin Dredging and Disposal Project Footprint – Sediment Quality Report
- Aurecon (2012) Additional Sediment Sampling Implementation Report
- BMT WBM (2012) Port of Gladstone Maintenance Dredging – SAP Implementation Report
- Butler Partners (2012) Environmental and Acid Sulfate Soils Investigation – Tug Base Development Bryan Jordan Drive Gladstone

- GHD (2009b) Report for Western Basin Dredging and Disposal Project – Sediment Quality Assessment
- DEHP (2012) Update on the Quality of Sediment from Port Curtis and Tributaries.

Main Channel, Gatcombe Head Harbour, Gladstone Marina and Lower Auckland Inlet, Upper Auckland Inlet (AMA, 2017)

Twenty-four sites in the Main Channels, six sites in the Gatcombe Head Harbour, 13 sites in the Gladstone Marina and Lower Auckland Inlet, and 18 sites in Upper Auckland Inlet were sampled in 2017 to assess sediment quality for the purposes of maintenance dredging. The analytical results are summarised in the following sections.

Metals and Metalloids

The 95% upper confidence limits (UCL) of the mean concentrations were below their respective NAGD and NEPM screening levels for all investigated metals and metalloids. 95% UCL concentrations of aluminium and iron exceeded the twice the measured background concentration (TMBC) levels, manganese exceeded the Simpson et al. (2005) screening level, and tributyltin exceeded the NAGD screening level of Gladstone Marine and Lower Auckland. Concentrations of iron and manganese exceeded the relevant screening levels at Upper Auckland Inlet. The maximum 95% UCL concentrations of manganese of 1200 mg/kg was far below the 60,000 mg/kg NEPM HIL-D screening level.

Organic Compounds

Concentrations of benzene, toluene, ethylbenzene and xylene (BTEX) were below limits of reporting (LORs) in all samples. Total petroleum hydrocarbons (TPH) and PAH concentrations were either below laboratory detection limits, or well below the NAGD screening levels.

TBT marginally exceeded screening levels which was adjacent to a former slipway in lower Auckland inlet. Elutriate testing indicated that TBT concentrations in the water column would be less than the water quality guideline value assuming a 1:100 dilution factor (using seawater from the EBSDS). On this basis, dredged material was considered suitable for ocean disposal.

Acid Sulfate Potential

The potential for acid generation from potential acid sulfate soils (PASS) was considered to be low in Gatcombe Head Harbour, Gladstone Marina and Lower Auckland Inlet. Most sediments did not contain net acidity (i.e. only one sample had net acidity > 0.02). The natural buffering capacity of the sediments at this location was considered sufficient to neutralise acids generated. However, PASS have been identified in the upper reaches of Upper Auckland Inlet above net acidity of 0.02 and further investigation would be required.

Boyne River Mouth (BMT WBM (2017)

Due to heavy rainfall in the 2010-2011 and 2013 wet seasons, additional sediment deposition in the Boyne River entrance presented a risk to small vessel movements. Of the nine sites chosen for sampling, only three were analysed for contaminants due to the coarse sediment size and lack of fine material. The results are summarised in the below sections.

Metals and Metalloids

The 95% UCL of the mean concentrations of all analysed metals and metalloids were well below their respective NEPM and NAGD screening levels with antimony, cadmium, selenium, mercury, and silver not detected in any sample.

Organics
Concentrations of BTEXN were below their respective LORs in all samples. While petroleum hydrocarbons longer than C15 were detected above LOR, none of these fractions or TPHs were above NEPM and NAGD screening levels.

Individual PAHs and Organotins (including tribulytin, TBT) were not detected above LOR in any of the samples.

No samples were above their respective LORs for organochlorine pesticides, organophosphorus pesticides, or phenoxyacetic acid herbicides.

Cyanide
Concentrations of cyanide were below the LOR for all samples. While the LOR was above the NAGD requirement, it was well below the NEPM screening level of 250 mg/kg.

Acid Sulfate Potential
Potential sulfidic acidity was detected in 16 out of 19 samples indicating that most of the tested sediments have the potential to generate sulfidic acidity and are classified as potential acid sulfate soils (PASS). However, all samples had sufficient capacity for neutralising acids upon oxidation. The coarse nature of the material, low actual acidity and large degree of self-naturalising capacity suggest there is little risk of acid formation during stockpiling or placement on land.

Gladstone Marina and Lower Auckland Inlet Sediment Quality (AMA, 2015a, 2015b)
Twelve sites in the Gladstone Marina, and nine sites in lower Auckland Inlet, were sampled in 2015 to assess sediment quality for the purposes of maintenance dredging. The analytical results are summarised in the following sections.

Metals and Metalloids
The 95% upper confidence limits (UCL) of the mean concentrations were below their respective NAGD and NEPM screening levels for all investigated metals and metalloids. Cadmium was the only metal not detected.

Organic Compounds
Concentrations of benzene, toluene, ethylbenzene and xylene (BTEX) were below limits of reporting (LORs) in all samples. Total petroleum hydrocarbons (TPH) and PAH concentrations were either below laboratory detection limits, or well below the NADG screening levels.

TBT was detected at three sites adjacent to a former slipway in lower Auckland inlet. Elutriate testing indicated that TBT concentrations in the water column would be less than the water quality guideline value assuming a 1:100 dilution factor (using seawater from the EBSDS). On this basis, dredged material was considered suitable for ocean disposal.

Acid Sulfate Potential
The potential for acid generation from potential acid sulfate soils (PASS) was considered to be low. Most of sediments did not contain net acidity (i.e. only one sample had net acidity > 0.02). The natural buffering capacity of the sediments at this location was considered sufficient to neutralise acids generated. Actual acidity was above pH 8.7 in all locations.

Western Basin Maintenance Dredging Sediment Quality (BMT WBM 2014)

Seventeen sites from the Western Basin channel network[1] were sampled in 2014 to characterise sediments. The results are summarised below.

Metals and Metalloids

The 95% UCL of the mean concentrations were below their respective NAGD and NEPM screening levels for all investigated metals and metalloids. Antimony, cadmium and silver were not detected in samples.

Organics

Concentrations of BTEX and TPHs were below their respective LORs in all samples. PAHs detected in very low concentrations (close to the LOR) in seven out of 17 samples. Concentrations of individual PAHs were below the benzo(a)pyrene toxicity equivalency in the NEPM and total PAH concentrations were below the LOR in all samples, below the NEPM (HIL-D) of 4,000 µg/kg, and below the NAGD screening level of 10,000 µg/kg.

Concentrations of all other investigated organic contaminants were below their respective laboratory LORs including organotins (TBT, DBT and MBT).

Cyanide

Cyanide concentrations were below the laboratory LOR in all samples.

Acid Sulfate Potential

The acid sulfate test results for the Western Basin sediments indicated that management would be required at three out of 17 tested locations should the material be placed on land or exposed to air. The locations requiring potential management were located in the Passage Islands Channel and in the channel in front of the Wiggins Island Coal Terminal. Liming rates ranging between 0.77 kg CaCO3/t and 17 kg CaCO3/t were calculated for these samples corresponding to a net acidity ranging between 10 moles H+/t and 230 moles H+/t.

Potential sulfidic acidity was detected in 12 out of 17 samples indicating that most of the tested sediments had the potential to generate sulfidic acidity and were classified as PASS. However, most samples had sufficient capacity for neutralising acids upon oxidation.

Actual acidity was below the LOR in all samples indicating that the samples are not actual acid sulfate soils (AASS).

Additional Sediment Sampling in the Clinton and Bypass Channel (Aurecon 2012; 2016)

Eleven sites in the Clinton Bypass Channel were sampled in 2012, with another different 11 sites sampled in the Clinton Channel widening footprint in 2016. Core samples were taken to the point of refusal with core depths of between 0.3 and 2.2 m below ground being achieved. The analytical results are summarised in the following sections.

Acid sulfate material was not tested for in 2012, and although there were discrete locations where acidity was detected in 2016, the presence of shell material throughout the dredging footprint was sufficient for self-neutralising.

[1] From the Clinton Bypass Channel to the Passage Islands Channel (including Fisherman's Landing and the Tug Base at RG Tanna)

Metals and Metalloids
The 95% UCL of the mean concentrations were below their respective NAGD screening levels and NEPM HIL-D for all investigated metals and metalloids.

Organics
Individual TPH fractions were above laboratory LORs, but all fractions were below Environmental Investigation Levels (EILs) specified by DEHP (formerly DERM) and below the NEPM ESL-D screening levels. Concentrations of all other investigated organic contaminants were below their respective laboratory LORs including:

- BTEX
- TPHs
- Organochlorine and Organophosphate Pesticides (OC/OP pesticides);
- Organotins (including TBT, DBT and MBT)
- Polychlorinated Biphenyls (PCBs).

Port Curtis Maintenance Sediment Quality (BMT WBM 2012)

A total of 41 sites within the Port of Gladstone channel (from the Wild Cattle Cutting to Fisherman's Landing) and six wharf sites (Boyne, South Trees, Barney Point, Auckland Point, Clinton Channel and Fisherman's Landing) were sampled in 2012 to assess maintenance dredge sediment quality. The analytical results are summarised in the following sections.

Acid sulfate potential of the sediments was not assessed in this program given the proposed placement of the dredged material at sea, which is unlikely to result in oxidation of the material under standard operating procedures during dredging and placement.

Metals and Metalloids
The 95% UCL of the mean concentrations were below their respective NAGD screening levels (and NEPM HIL-D) for all investigated metals and metalloids. Arsenic concentrations exceeded the NAGD screening level at four sampling locations within Wild Cattle Cutting. However, the 95% UCL concentration for arsenic (13.7 mg/kg) was below the NAGD screening level of 20 mg/kg. These concentrations were also well below the NEPM HIL-D of 3,000 mg/kg.

Organics
Concentrations of PAHs were generally very low within the channel and highest at the wharf locations; total PAH concentrations were below the LOR in 43 or 47 samples. The four sites where total PAHs were detected included three berthing sites and one channel site. The highest normalised total PAH concentration was measured at Clinton wharf with 607 µg/kg. This concentration and the normalised 95% UCL of the mean concentration across the whole dredge area (96 µg/kg) were well below the NAGD screening level of 10,000 µg/kg and the NEPM HIL-D of 4,000 µg/kg.

Concentrations of individual carcinogenic PAHs were below the benzo(a)pyrene toxicity equivalency in the NEPM HIL-D, although one site at Clinton Wharf was just below (39.6 µg/kg) the limit of 40 µg/kg.

Concentrations of all other investigated organic contaminants were below their respective laboratory LORs including:

- Benzene, Toluene, Ethylbenzene and Xylene (BTEX)
- Total Petroleum Hydrocarbons (TPHs)

- Organochlorine and Organophosphate Pesticides (OC/OP pesticides)
- Organotins (including TBT, DBT and MBT)
- PCBs.

Cyanide
Cyanide concentrations were below the laboratory LOR in all samples.

Western Basin Capital Sediment Quality (GHD 2009b)

GHD (2009b) investigated marine sediment quality for the Western Basin Dredging and Disposal Project. A total of 145 locations were sampled within the Western Basin area. Stage 1A of the project included part of the Main Channel and consisted of up to 396 samples from 76 locations. Stage 1B sampling in the Targinnie reach of the Main Channel also included up to 208 samples from 41 locations. Analytical results are summarised below.

Metals and Metalloids
The 95% UCL of mean concentrations were below their respective NAGD screening levels (and NEPM HIL-D) for all investigated metals. A few individual exceedances of the NAGD screening level for arsenic, and nickel were recorded, most likely due to natural geological conditions. The maximum concentrations of arsenic (32.4 mg/kg [Stage 1B]), nickel (40 mg/kg [Stage 1B]) were much lower than the NEPM HIL-D of 3,000 and, 6,000 mg/kg respectively. Manganese was also detected above Queensland EPA draft EILs on 127 instances in Stage 1A; 39 instance in Stage 1B, with a maximum concentration of 7,680 mg/kg detected, which was far below the 60,000 mg/kg NEPM HIL-D screening level.

Organics
TBT was detected above LOR in one individual sample from each area. The normalised concentrations were below the NAGD screening level.

Low concentrations BTEX and TPH compounds were detected in the Western Basin dredging areas, with no BTEX above LOR detected in the Stage 1A or 1B areas. The 95% UCL of the mean TPH concentration was below the NAGD screening level for all dredge areas.

Low concentrations of individual PAHs compounds were present in a number of samples within the dredge areas. The 95% UCL for Total PAHs was below the NAGD screening level for all dredge areas and below the NEPM HIL-D of 4,000 µg/kg.

Concentrations of PCBs, OC/OP pesticides, herbicides and insecticides and chlorinated hydrocarbons were below their respective laboratory LORs in all samples from Stage 1A. However, 11 of 194 samples from Stage 1B had LORs which were higher than the screening level, and the presence of PCBs could not be deduced.

Radionuclides
Concentrations for gross alpha and beta ranged between 356 mBq/g and 603 mBq/g and therefore, were well below the NAGD screening level of 35,000 mBq/g or less than 2% of the screening level.

Whilst all samples recorded beta radiation at low concentrations above the laboratory LOR, only three samples recorded alpha radiation above the LOR at low concentration.

Acid Sulfate Potential
Between 3% and 30% of samples within the individual dredge areas were classed as PASS containing elevated amounts of Net Acidity (i.e. have the potential to generate excess acidity of ≥18 moles H+/tonne if they become oxidised).

Sufficient acid neutralising capacity was present in most of the samples in the form of calcium carbonate (e.g. shell fragments). Actual acidity of the samples showed that pH was generally above 8 with very few samples falling below pH 6.

Tug Base Capital Sediment Quality (Butler Partners 2012)
A total of five locations were sampled in 2012 from the tug base development adjacent to Clinton Wharf using a grab sampler.

Metals and Metalloids
The concentrations of all tested metals and metalloids were below their respective NAGD screening levels (and NEPM HIL-D).

Organics
Individual PAHs compounds were detected at low concentrations and normalised total PAHs concentrations (maximum of 410 µg/kg) were well below the NAGD screening level of 10,000 µg/kg at all locations.

Concentrations of BTEX compounds were below the laboratory LOR in all samples. Concentrations of total TPH were well below the NAGD screening level of 550 mg/kg with a maximum normalised concentration of 124 mg/kg.

Concentrations of organotins, OC/OP pesticides and PCBs were below the laboratory LOR in all samples.

Acid Sulfate Potential
The sediments at two locations were classified as PASS. However, net acidity was below detection given that sufficient acid neutralising capacity was present in all samples in the form of shell fragments.

Port Curtis Sediment Quality (DEHP 2012)
Sediment sampling was undertaken in 2012 using grab sampling at 31 sites throughout Port Curtis. Results were compared to the Australian Interim Sediment Quality Guidelines (ISQG), historical Gladstone data and national dioxin data. Summaries of the findings are provided in the following sections.

Metals and Metalloids
Most metals and metalloids had concentrations below the ISQG-low values (below the NEPM HIL-D). The only exception was arsenic, which exceeded the ISQG-low value at four of 31 sites. One sample had mercury concentration exceeding the ISQG-low value. Repeated sampling at this location could not confirm elevated mercury levels at this site, suggesting that this sample was atypical and represented an outlier.

Organics
Organotins were detected in only a small number of samples at levels below the ISQG-low value.

Concentrations of TPH were generally low and well below the NAGD screening level.

Dioxins were detected in Port Curtis sediments. However, a comparison to national dioxin data indicated that concentrations were in the typical range for Australian sediments adjacent to urban/industrial environments. Compared to background concentrations given in the National Dioxin Program (Müeller et al. 2004) the Port Curtis sediments are typical of estuaries in Australia.

The concentrations of BTEX, OC/OP pesticides and PCBs were below their respective laboratory LORs in all samples.

2.3 Conceptual Site Model

Existing contamination sources, measured levels of contamination, the natural geology, environmental and physical processes were examined to create a simple conceptual site model shown in Figure 2-3.

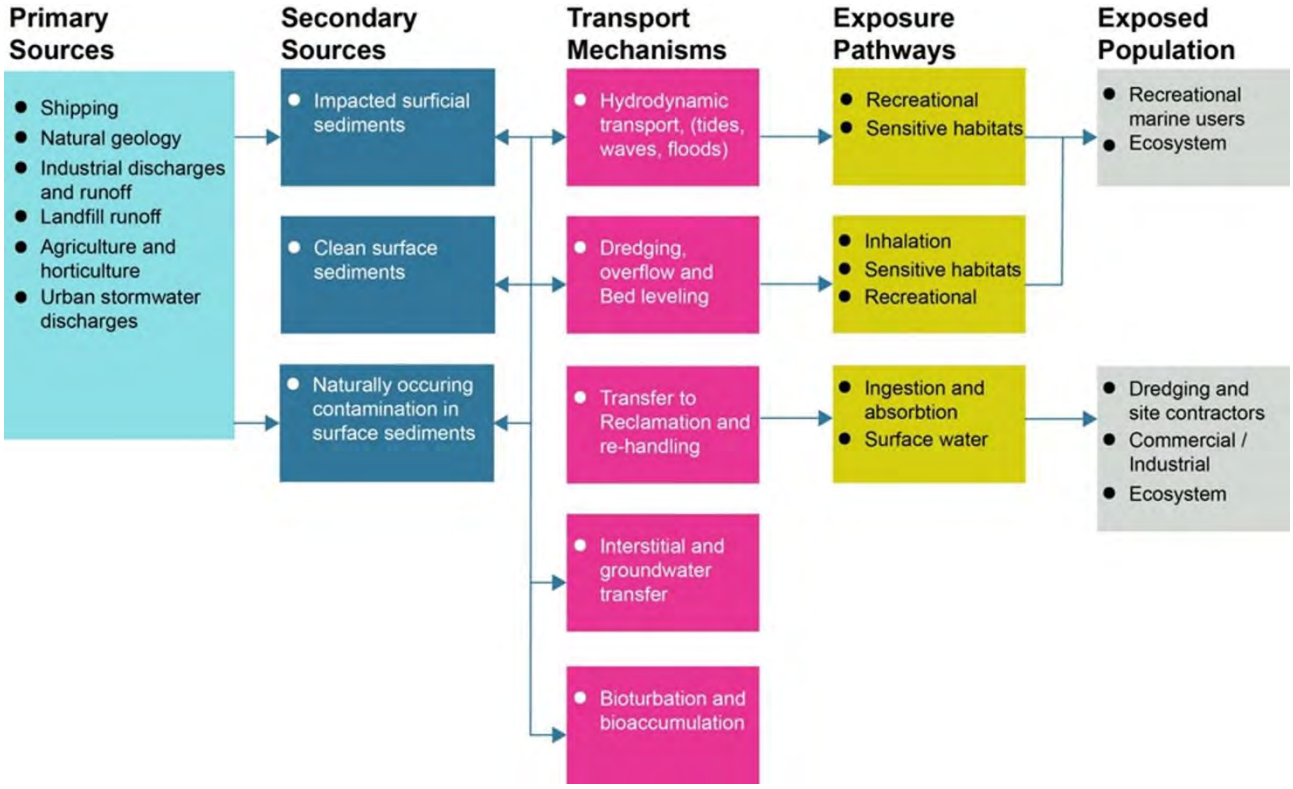

Figure 2.3 Conceptual site model flow diagram for contamination sources in Port Curtis.

3 Sampling and Analysis

3.1 Sampling Rational, Locations and Sample Numbers

NEPM does not provide guidance regarding number of samples to be collected and sampling methods for the assessment of marine sediments. On this basis, the NAGD, which is considered best practice for assessment of marine sediments, was followed. Appendix D of the NAGD sets out the minimum number of sampling locations based on the volume of potentially contaminated material to be dredged. The sampling and analysis approach outlined below aims to characterise the full thickness of potentially contaminated sediment to be dredged, i.e. the entire maintenance material layer.

Number of Sampling Locations

The volumes of potentially contaminated sediment for each dredge area are shown in Table 3-1. If good quality, current data are available within the dredge footprint, the number of required sites can be halved, according to the NAGD. For the main shipping channel, Gladstone Marina, Upper Auckland Inlet and Boyne, good quality data exist, bringing the number of required sites in these areas down from 48, 26, 18 and 11 sites, to 24, 13, 9 and 6 sites, respectively (Table 3.2).

Long-term sites on the EBSDS and surrounding reference sites have also been included and are shown in Figure 3.1. These sites allow potential investigation of the existing levels of contamination on the EBSDS and surrounding area, including Rodd's Bay, particularly in cases where screening levels of parameters are unknown (see Section 3.7) . These sites do not form part of the required site numbers for any dredge footprint.

Sampling Design

As per the NAGD requirements, sample locations were selected by laying a square grid over the dredge area with at least five times the number of grid squares as the required number of sampling locations. Sample locations were chosen using a random number generator and applied to cell numbers. Cells that fell outside the footprint were moved into the footprint's nearest point. Maps of the proposed sampling locations are shown in Figure 3-1 to Figure 3-4.

For the Main Channel and associated areas, a weighted system was applied to individual channel areas. Nine areas were identified as distinct locations as per the NAGD (2008) sample location selection guidance. These were given a weighted percentage of the allocated 24 sites according to their 2021 dredged volume (see Table 3.1). This is seen to give the sediment collected a more representative sampling of actual dredged material while still retaining the random site selection in each region.

Table 3.1 Main Channel and Associated Areas Weighted Site Selection

Channel or Area	2021 dredged material (m^3)	% of total dredge volume	Allocation of 24 sites
Wild Cattle Cutting	23,456	9.80%	2
Boyne Cutting	13,372	5.59%	1
Golding Cutting	61,305	25.63%	6
Gatcombe Channel	5,690	2.38%	1
Auckland Channel	16,156	6.75%	2

Channel or Area	2021 dredged material (m^3)	% of total dredge volume	Allocation of 24 sites
Clinton Channel	25,911	10.83%	2
Clinton Bypass Channel	7,247	3.03%	1
Targinnie	17,400	7.27%	2
Jacobs Channel	68,691	28.71%	7
Total Volume	**239,228**	**100%**	**24**

Table 3.2 Sampling Rationale, Locations and Sample Numbers

Parameter	Value/Description
Main Channel, Swing, Berth and EBSDS	
Sediment classification	Probably Clean (BMT WBM 2012a, 2014) (AMA 2018)
Sediment composition	Sand dominant, with areas of fine material, gravel, and cobble
Total Dredge volume	340,000 m^3
Maximum depth of dredging	0.5 m below ground level (BGL)
Number of locations	24 (half of 48)
Number of field triplicates (QA/QC)	Two locations (i.e. three separate core samples at two randomly selected location)
Number of triplicate split samples (QA/QC)	One location (i.e. split the sample at one location into three sub-samples)
Number of trip blank samples	One each day of sampling
Gladstone Marina	
Sediment classification	Probably Clean (BMT WBM 2012a, 2014) (AMA 2018)
Sediment composition	Silt and clay dominant, with sand
Total Dredge volume	300,000 m^3 (40,000 – 60,000 m^3 p/a
Maximum depth of dredging	1.0 m below seabed in Auckland Inlet, -5.0 m AHD within the marina
Number of locations	13 (half of 26)
Number of field triplicates (QA/QC)	Two locations (i.e. three separate core samples at two randomly selected location)
Number of triplicate split samples (QA/QC)	One location (i.e. split the sample at one location into three sub-samples)
Number of trip blank samples	One each day of sampling
Upper Auckland Inlet	
Sediment classification	Probably clean (AMA 2018)
Sediment composition	Silt and clay dominant, with sand

Parameter	Value/Description
Total Dredge volume	100,000 m^3
Maximum depth of dredging	-5.0 LAT
Number of locations	9 (half of 18)
Number of field triplicates (QA/QC)	One location (i.e. three separate core samples at one randomly selected location)
Number of triplicate split samples (QA/QC)	One location (i.e. split the sample at one location into three sub-samples)
Number of trip blank samples	One each day of sampling
Boyne	
Sediment classification	Probably clean (BMT WBM 2017)
Sediment composition	Gravel, cobble and sand dominant
Total Dredge volume	40,000 m^3
Maximum depth of dredging	-1.3 m LAT
Number of locations	6 (half of 11)
Number of field triplicates (QA/QC)	One location (i.e. three separate core samples at one randomly selected location)
Number of triplicate split samples (QA/QC)	One location (i.e. split the sample at one location into three sub-samples)
Number of trip blank samples	One each day of sampling

MC11
MC10
MC12
MC9
MC8
MC7
MC6
MC4
MC5
MC3
MC2
MC1
CN
DMA
DMB
CS
RB1
RB2

Legend

- Main Channel sampling points
- EBSDS and reference sites
- OSGR grid squares

Bathymetry - 2m BIN

3 -20

Title:

Main Channel, EBSDS, & Reference Proposed Sampling Locations

Figure: 3-1

Rev: A

N

0 2.5 5 km

BMT
www.bmt.org

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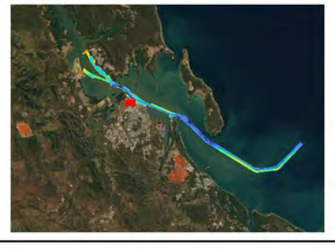
GM1
GM2
GM3
GM4
GM5
GM6
GM7
GM8
GM9
GM10
GM11
GM12
GM13

Legend

Marina sample sites
OSGR grid squares
Marina

Bathymetry - 2m BIN

3 -20



Title:
Gladstone Marina Proposed Sampling Locations

Figure: **3-2**
Rev: **A**

N
0 100 200 m

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UA1
UA2
UA3
UA4
UA5
UA6
UA7
UA8
UA9

Legend

- Upper Auckland sampling sites
- OSGR grid squares
- Upper Auckland

Bathymetry - 2m BIN

3 -20

Title:

Gladstone Marina Proposed Sampling Locations

Figure: 3-3

Rev: A

N

0 100 200 m

BMT
www.bmt.org

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BE1
BE2
BE3
BE4
BE5
BE6

Legend

- Boyne sampling points
- Boyne Channel
- OSGR grid squares

Bathymetry - 2m BIN

3 -20

Title:

Boyne Entrance Proposed Sampling Locations

Figure: 3-4

Rev: A

N

0 100 200 m

BMT
www.bmt.org

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Table 3.3 Sampling Sites, Required Core Depth, Subsample Detail (Excluding QA/QC)

Site	Depth (m LAT)	Dredge Depth LAT (m)	Desired Core Length (m)	Contaminant sub-samples	# of ASS Sample	Easting GDA 94 Zone 56	Northing GDA 94 Zone 56
Main Channel							
MC1	-16.4	<0.5m BGL	NA - grab	1	0	347622.9	7355457
MC2	-16.8	<0.5m BGL	NA - grab	1	0	346933.6	7354829
MC3	-16.8	<0.5m BGL	NA - grab	1	0	342983.5	7352641
MC4	-18	<0.5m BGL	NA - grab	1	0	341675.4	7352620
MC5	-16.4	<0.5m BGL	NA - grab	1	0	341162.5	7352930
MC6	-16.1	<0.5m BGL	NA - grab	1	0	340570.3	7353290
MC7	-16.7	<0.5m BGL	NA - grab	1	0	338388.7	7354626
MC8	-16.4	<0.5m BGL	NA - grab	1	0	336735.5	7355589
MC9	-15.2	<0.5m BGL	NA - grab	1	0	335230.8	7356318
MC10	-16.2	<0.5m BGL	NA - grab	1	0	331251.5	7359382
MC11	-16.5	<0.5m BGL	NA - grab	1	0	328054.4	7361518
MC12	-16.2	<0.5m BGL	NA - grab	1	0	324388.3	7363040
MC13	-16.2	<0.5m BGL	NA - grab	1	0	322381.4	7363725
MC14	unknown	<0.5m BGL	NA - grab	1	0	321303.9	7364007
MC15	-14.9	<0.5m BGL	NA - grab	1	0	321741.1	7364806
MC16	-11.3	<0.5m BGL	NA - grab	1	0	317620.6	7366868
MC17	-11.3	<0.5m BGL	NA - grab	1	0	315262.6	7367632
MC18	-13.4	<0.5m BGL	NA - grab	1	0	318722.2	7366598
MC19	-13.5	<0.5m BGL	NA - grab	1	0	317710.1	7367391
MC20	-13.8	<0.5m BGL	NA - grab	1	0	317624.1	7367317
MC21	-13.3	<0.5m BGL	NA - grab	1	0	316618.9	7368104
MC22	-13.4	<0.5m BGL	NA - grab	1	0	316457.1	7368823
MC23	-13.5	<0.5m BGL	NA - grab	1	0	315485.4	7369565
MC24	-12.1	<0.5m BGL	NA - grab	1	0	314935.4	7370970
Gladstone Marina							
GM1	-1	-3.0 @ piles	1.98	3	4	321183.9	7363812
GM2	-3.1	-5.0 in channels	1.90	3	4	320986.0	7363683
GM3	-4.1	-5.0 in channels	0.86	2	2	321265.2	7363615
GM4	-3.7	-3.0 @ piles	-0.68	1	1	320914.7	7363406
GM5	-4.1	-5.0 in channels	0.86	2	2	321475.8	7363403
GM6	-4.7	-5.0 in channels	0.29	1	1	321266.7	7363334
GM7	-1.9	-3.0 @ piles	2.21	3	4	320777.2	7363259
GM8	-4.3	-5.0 in channels	0.70	2	2	320984.8	7363265
GM9	-4.2	-3.0 @ piles	-1.17	1	2	320845.2	7363206
GM10	-4.6	-5.0 in channels	0.45	1	1	321193.0	7363195
GM11	-4.5	-5.0 in channels	0.53	1	1	321334.1	7363194
GM12	-4.7	-5.0 in channels	0.34	1	1	321614.6	7363195
GM13	-4.4	-5.0 in channels	0.61	1	1	321546.3	7363124

Site	Depth (m LAT)	Dredge Depth LAT (m)	Desired Core Length (m)	Contaminant sub-samples	# of ASS Sample	Easting GDA 94 Zone 56	Northing GDA 94 Zone 56
Upper Auckland Inlet							
UA1	-9.4	-5.0 LAT	-4.4	1	1	321857.5	7362584
UA2	-3.2	-5.0 LAT	1.8	3	3	321606.1	7362598
UA3	-1.4	-5.0 LAT	3.6	3	7	320743.6	7362585
UA4	-2.4	-5.0 LAT	2.6	3	5	320639.1	7362429
UA5	-2.9	-5.0 LAT	2.1	3	4	320311.5	7362331
UA6	-0.2	-5.0 LAT	4.8	3	9	320229.3	7362318
UA7	-2.2	-5.0 LAT	2.8	3	6	320113.3	7362181
UA8	-2.6	-5.0 LAT	2.4	3	5	319967	7361988
UA9	-3.8	-5.0 LAT	1.2	2	2	319892.1	7361643
Boyne							
BE1	-0.8	-1.0 LAT	NA - grab	1	1	333739.8	7352835
BE2	-1	-1.0 LAT	NA - grab	1	1	333048.5	7352473
BE3	-0.8	-1.0 LAT	NA - grab	1	1	332919	7352408
BE4	-0.9	-1.0 LAT	NA - grab	1	1	332824.7	7352359
BE5	-0.2	-1.0 LAT	NA - grab	1	1	332736.8	7352304
BE6	-1.4	-1.0 LAT	NA - grab	1	1	333488.8	7352701
East Banks Sea Disposal Site (EBSDS) and Reference Sites							
DMA	-10	NA	NA – grab	1	0	344067	7359493
DMB	-10	NA	NA – grab	1	0	345249	7357295
CN	-12	NA	NA – grab	1	0	339384	7362614
CS	-12	NA	NA – grab	1	0	350261	7353681
RB1	NA	NA	NA – grab	1	0	353862	7346440
RB2	NA	NA	NA - grab	1	0	358107	7342115
		Total					

3.2 Grab Sampling

Grab sampling will be performed at sites in the Main Channel where sediments are well mixed, tidal currents are strong, and shipping movements limit the time available for sample collection.

Grab sampling will also be used for the Boyne River inlet. Previous results indicated that metals and metalloids were either below NEPM/NAGD or not detected, organics had a similar result and cyanide below NEPM screening levels. This is in addition to the average depth of sediment to be sampled is 0.14 m.

3.3 Core Sub-sampling

Core sampling will be undertaken in the Gladstone Marina and Auckland Inlet. As described in Appendix D of the NAGD, samples are required from the full depth of dredging for potential contaminants, with “full depth” representing the entire upper layer (see Section 3.1). Acid sulfate may be present through the dredged material and will be sampled at 0.5 m intervals from surface to dredge depth. Therefore, acid sulfate sampling will occur at 0.5 m increments to the maximum dredge depth (or

core refusal, whichever is least) while potential contaminants of concern will be sampled from three horizons:

- 0 - 0.5 m, BGL
- 0.5 – 1 m BGL
- Between 1 m BGL and the end of the core (refusal depth) as a composite sample.

A summary of subsampling required based on the above sampling effort, present bathymetry and required dredge depth is shown in Table 3-2 above.

3.4 Field Quality Control

Quality Control Samples

The following field and laboratory quality control samples will be obtained (Table 3.2).

- Field triplicate samples (additional core samples at randomly selected locations as per Table 3.2) to determine the small-scale variability of the sediment's physical and chemical characteristics. At each field triplicate sample location, three separate cores/grabs will be collected.
- Triplicate split samples (sample numbers as per Table 3-1) where sediments will be thoroughly mixed and split into three sample containers set to assess laboratory variation, with one of the three samples sent to a second (reference) laboratory for analysis.
- One trip blank container per sampling day will be filled with inert material (e.g. chromatographic sand) to be analysed concurrent with the analysis of volatile organic substances.

3.5 Sample Collection Methodology

Survey Vessel and Field Personnel

The vessel to be used as the platform for the sampling will be a registered commercial vessel and will be operated by a suitably qualified skipper, and will include:

- At least 2D for partially smooth or 2C survey for outside of partially smooth waters, with davit arm/winch
- A differentially corrected global positioning system (dGPS) with an accuracy of approximately ±1 m
- On-board depth sounder (reliably accurate to ± 0.25m).

Field works will be undertaken by appropriately qualified sediment quality scientists and field technicians experienced in undertaking marine sediment quality studies.

Sediment Sampling Methodology and Equipment

Sediments in the Main Channel will be collected using a large van Veen grab with a gape of at least 0.1 m^2. The coarse nature of some sediments may prevent the effective closure of the grab. Any instances where the grab does not close fully will require re-sampling.

Sediments in dredge footprints outside of the Main Channel will be sampled with a vibro-core or other appropriate core sampling device. The choice of core barrel diameter and coring methodology (i.e. vibro-coring or drilling) would be dependent on the volume of material required for analyses, the texture of the sediment encountered at each sample location and the required length of core. Generally, vibro-coring would be undertaken in sandy to muddy substrates. Core penetration in muddy and sandy substrates is likely to be good, whereas poor penetration will be possible in cobble or gravel substrates (but such sediments are unlikely to be contaminated).

The acceptability of each sediment core will be determined immediately following collection, and the criteria for acceptance of the core will include:

- No obvious loss of surficial sediment
- The core must have entered the profile vertically
- There must be no gaps in the stratigraphy
- There must be no disturbance of the sediment stratigraphy
- The core must reach the depth of dredging, or core refusal in clay, dense sand or rock.

The sampling device will be thoroughly cleaned with De-con 90 solution prior to use and cleaned and rinsed with seawater between sampling locations to prevent cross contamination between samples. Samples in the pilot study for PFAS will only use mechanical cleaning (no De-con 90), personal care product will be minimised or not used (sunscreen, insect repellent, moisturiser, etc.), nitrile gloves and plastic containers (high-density polyethylene).

An appropriate number of samples will be obtained from each sampling location and composited to collect sufficient volume of sediment for all analyses.

Sample Handling and Chain of Custody

Sample management procedures will include the careful collection of sediment samples from the core tube or grab, following the recovery of the sediment sample from the seabed.

Photographs of the grab samples and cores will be taken and field personnel will log each core profile for its physical characteristics and variations in sediment type and texture. The core length will be measured and the appropriate sample interval sub-sampled and collected in a clean, stainless steel bowl for homogenisation prior to the filling of analytical laboratory-supplied clean sampling jars.

Sub-sampling of cores will be undertaken in accordance with Section 3.2.

Sample identifiers will include the location and depth interval, for example, GM1_0.50-1.00 will indicate that the sediment sample was collected from Gladstone Marina grid cell 1 (Figure 3-2) over the interval from 0.50 m to 1.00 m.

QA/QC samples will be blind-labelled to ensure that the laboratories cannot relate the QA sample back to the primary sample.

All sample handling and processing will be performed to minimise contamination and sample mix-ups. All sample equipment will be cleaned prior to sample collection using a scrub with decontamination solution followed by a rinse with seawater.

The workspace on the vessel will be washed down regularly with ambient seawater to clean all surfaces and minimise the potential for dust contamination of samples. All sample processing will be undertaken away from any potential contamination sources such as engine exhausts, fuels, oils, greases, lead weights, zinc anodes, antifouling paint etc.

Nitrile gloves will be worn by all field personnel handling the sediment, and gloves will be disposed of after processing of each core sample.

Utmost care will be maintained in ensuring that cross-contamination between samples is not possible. Samples collected from each interval will be placed into appropriately cleaned and preserved containers (labelled prior to filling) provided by the analytical laboratories.

Following sample processing and filling of sample containers, all samples will be immediately chilled. The chilled samples will be submitted to the laboratory under appropriate Chain of Custody documentation to ensure that the sample possession and processing can be traced from sample collection to reporting of results.

Core Log

All sediment cores will be geotechnically logged upon collection on a standardised pro-forma. The following information will be recorded:

- Project name and number;
- The name of the sample collector;
- Date and Time of sampling;
- Type of core sampler used (vibro-corer/ piston corer, type of core barrel used or manual excavation);
- Field sample number;
- Northing and Easting of sample location (from onboard dGPS);
- Sediment colour;
- Sediment odour;
- Field texture (fine sand, silt, clay, sand, clayey sand);
- Tidal predictions and water depth at sample location (derived from onboard depth sounder);
- Weather and sea state conditions at the time of sampling; and
- General comments pertaining to the sample (e.g. presence of organic matter or benthic organisms, etc.

3.6 Health and Safety and Contingency Plan

Health and Safety

The vessel skipper will keep in close contact with Harbour Control during sampling. Grab sampling can be completed within 10 minutes while core sampling can be completed at each location between 20 minutes and one hour with logging and processing undertaken in locations out of the path of large vessels (as necessary and dependent upon shipping movements).

A single anchor may be used to anchor the vessel; alternatively stern anchors may also be used if necessary. The main anchor would be placed upstream and upwind of the vessel. A marker buoy may be placed on the anchor if required.

The sampling vessel will display appropriate flags (R over Y, and/or circle diamond circle) for the work being carried out at all times. Interactions with other vessel traffic will be minimised by being mindful of approaching vessels.

Adverse Weather

The planning of field sampling will involve regular checking of available weather forecast services for the study area. There are no unusual hazards in operating the corer in wet weather.

In case of adverse weather conditions that would make sampling unacceptable due to strong winds and high waves, the sampling team and vessel operator would remain on stand-by until weather conditions improve to allow rigorous and safe collection of sediment samples.

Equipment Failure

The grab, corer, and lifting arrangement will be sufficiently robust to afford good operation and no failure of the equipment is expected to occur during the sampling. Prior to sampling, all equipment will be thoroughly checked and repaired if necessary. A secondary GPS, multiple spare core barrels, and tools to fix minor problems with coring equipment will be taken on the vessel in the event of gear failure.

In the unlikely event of equipment failure during sampling, repairs to any equipment would be undertaken as soon as possible to minimise delays as far as practical. The site is located near Gladstone, a major regional centre, where replacement equipment (including an alternate vessel) could be sourced if required.

3.7 Contaminants List

Table 3-3 provides the list of contaminant parameters to be analysed for this project. Based on the review of existing good quality data (Section 2) and in accordance with NAGD and NEPM requirements, the parameter test list includes substances known to occur in Port Curtis at levels greater than one-tenth of the screening levels, or substances which are potentially present based on historical review. Furthermore, supplementary sediment parameters such as particle size distribution, moisture content, total organic carbon, nutrients and acid sulfate potential will be analysed.

Contaminant screening levels are based firstly on the NAGD (2009) and subsequent updates to it (Simpson et al., 2013) as these are supported by recent effects-based data. For contaminants without screening levels in the NAGD, screening levels from the NEPM have been adopted. Contaminants without known screening levels will be assessed against twice the mean background concentration, as per the recommendations of ANZEEC/ARMCANZ 2000.

Several potential ECs are included in the list that have not been detected to date:

- BTEX – noting increases in potential sources in recent times, e.g. commercial and recreational vessels, LNG projects at Curtis Island.
- OC / OP pesticides and herbicides – while these compounds have not been detected in previous investigations in Port Curtis, Auckland Inlet is the receiving environment of urban and some agricultural catchments potentially containing these parameters. For this reason, OC / OP pesticides, and herbicides represent potential contaminants at Auckland Inlet, and are included as a precautionary measure because there is no recent past data for this site. There is a large body of evidence suggesting that OC / OP pesticides and herbicides are absent from the main channel.
- PFAS – limited testing of sediment outside of Port Central groundwater and seafood sampling in Ship Creek.

Dioxins and furans have been detected at low levels elsewhere in Port Curtis (DEHP 2012) at concentrations that fall within the inter-quartile range of other data collected in Australian estuaries (Müeller et al., 2004). In 2017, furans were not detectable in any of the sediments tested. However, dioxins were detected in varying levels, which is not uncommon in estuarine regions. The highest concentration occurred in Jacobs Channel (2680 pg/g) and lower at the EBSDS (114 pg/g) with reference sites returning a mean of 815 pg/g. In 2012, a report from the Queensland Department of Environment and Heritage Protection (DEHP, 2012) concluded the dioxin and furan concentration ranged from 43 to 5270 pg/g.

Due to the lack of elevated Dioxins/Furan in all previous studies and the high analysis costs, dioxins will be analysed from all reference and EBSDS sites, as well as 20% of test locations as a pilot study. Significant contamination (beyond twice mean background) will trigger further testing of 30% of

sampling locations (the full 50% of locations specified in Table 6 of NAGD, as required for probably clean sediments).

Perfluoroalkyl substances (PFAS) was widely utilised in firefighting foam that has only recently been phased out (complete ban coming into effect in 2019). While also used in other industrial products, highly contaminated sites are largely due to foam use at airports, fuel storage facilities, refineries and ports. PFAS has been detected at Port Central in ground water and Ship Creek from seafood sampling. PFAS has historically not been tested in previous SAP's (AMA 2017, BMT 2017, BMT 2012). A pilot study will be undertaken to assess whether PFAS should be included on the contaminant list. A total 20% of sample sites will be analysed, and any significant contamination will trigger further testing of 30% of sampling locations (the full 50% of locations specified in Table 6 of NAGD, as required for probably clean sediments).

TBT assessment in the NAGD has been updated with an explanatory note (Commonwealth of Australia, 2021). The new guidance allows for selective dredging of hotspots and normalisation of toxicity with porewater. TBT in PoG has recently only been found in one location, Lower Auckland inlet adjacent to the Auckland Point Wharfs at a historic slipway (AMA 2015a, 2018). This area (Lower Auckland Inlet) is not included in this SAP. TBT will still be tested in all samples due to proximity (Marina and Upper Auckland) as well as its normal distribution in marine sediments from anti-fouling paint.

The latest advice from the Department of Environment and Science (DES) stipulates that Acid Neutralising Capacity (ANC) is not allowed unless verified as 'available for neutralisation'. Considerations for the PoG in this respect are solely for areas targeted for onshore disposal, Marina, Upper Auckland, and Boyne River. These areas are to be considered for a combination of terrestrial and marine disposal (Section 1.4).

Laboratory testing of ASS will also be conducted on samples taken at 0.5m (or where change in lithology is identified) intervals along the full length of the retained core as described in Table 3.3. Extra sample will be retained for possible Slab or Chip Tray Incubation tests in the case of breaching the Practical Quantification Limit of 2 mole H^+/tonne. This will allow for an accurate assessment of ASS risk and confirmation of Acid Neutralising Capacity (ANC)(Simpson *et al*, 2018).

Boyne River Mouth contains mostly sand and gravel with little in the way of fines for testing of contaminants (BMT WBM 2017). The most recent sediment analysis from 2017 found that most contaminants of potential concern were not detected. For the purposes of this SAP, it is proposed that this area is probably clean.

Table 3.4 Contaminant List, Target Practical Quantification Limits (PQLs), Guideline Screening Levels, and Level of Investigation

Parameter	Target PQL	Screening Level	Level of Investigation
Basic Characteristics			
Particle Size Distribution	63 to 0.002 mm	-	All Samples
Moisture Content (%)	0.1	-	
Total Organic Carbon (%)	0.1	-	
Metals and Metalloids (mg/kg)			
Aluminium	200	12,918[1]	All Samples
Antimony	0.5	2[2]	

Parameter	Target PQL	Screening Level	Level of Investigation
Arsenic	1	20[2]	
Cadmium	0.1	1.5[2]	
Chromium	1	80[2]	
Copper	1	65[2]	
Iron	100	33,870[2]	
Lead	1	5[2]	
Mercury	0.01	0.15[2]	
Manganese	10	-	
Nickel	1	21[2]	
Silver	0.1	1[2]	
Zinc	1	200[2]	
Cyanide			
Cyanide	0.25	20[4]	All sites in Upper Auckland Inlet, reference sites and EBSDS
Organotin Compounds (µgSn/kg)			
MBT, DBT, and TBT	1 µg/kg[3]	9 µg/kg[2]	All samples
Organics (mg/kg)			
Total Petroleum Hydrocarbons	100	280[3]	All Samples
TPH Fractions	10-100	-	
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)	0.2	10 (Benzene)[5] 65 (Toluene)[5] 40 (Ethylbenzene)[5] 1.6 (Xylenes)[5]	
Polycyclic Aromatic Hydrocarbons (PAHs)	0.005 (0.1 for sum)	10,000[3]	
Organochlorine Pesticides (DDT DDE DDD, aldrin and dieldrin, chlordane, endosulfan, endrin, heptachlor, HCB, methoxychlor, mirex, toxaphene)	0.5-1	1.2 (DDT)[3] 1.4 (DDE)[3] 3.5 (DDD)[3] 2.8 (Dieldrin)[3] 4.5 (Chlordane)[3] 2.7 (Endrin)[3] TMBC- remainder[1]	
Organophosphorus Pesticides (Chloryrifos)	0.5	TMBC[1]	
Herbicides (2,4,5-T, 2,4-D, MCPA, MCPB, Mecoprop, Picloram)	0.02	TMBC[1]	
Dioxins and Furans	0.02 µg/kg	TMBC[1]	All samples in pilot study (20% sites)
PFAS (mg/kg)			

Parameter	Target PQL	Screening Level	Level of Investigation
PFAS	0.0005	TWBC	All samples in pilot study (20% sites)
Nutrients			
Total Nitrogen as N	20	-	All samples
Total Kjeldahl Nitrogen as N	20	-	
Total Phosphorus as P	1	-	
Nitrate and Nitrite as N	0.1	-	
Ammonia as N	0.1	4[3]	
Acid Sulfate Potential			
Chromium Suite	2 mole H^+/tonne	Liming rate based on Table 4.2 (Dear *et al.*, 2014)	All sites in Upper Auckland Inlet, Gladstone Marina, and Boyne River Mouth
Slab/Chip Tray Incubation test (for ANC)	0.1 pH unit	As per Slab Incubation Method NLM-8.1/ Chip Tray NLM-8.2	Undertaken on samples if initial net acidity results (less ANC) are greater than action criteria (0.03 %S / 8 mol H^+/t)

- No guideline for comparison

[1]TMBC = twice the mean background concentration. For aluminium and iron, 12,918 mg/kg and 33,870 mg/kg, respectively, have been used (URS 2009). Other organics will be compared to TMBC based on data from reference sites sampled in this SAP

[2]National Assessment Guidelines for Dredging NAGD (2009)

[3]Updated screening levels as per Simpson et al., (2013)

[4]Interim Sediment Quality Guideline (ISQG) from ANZECC ARMCANZ (2000)

[5] National Environment Protection (Assessment of Site Contamination) Measure April 2011

Not Included Parameters

It is proposed that the following contaminant groups be excluded from all analyses (except some analytes upper Auckland Inlet) based on the review of existing data (refer to Section 2 for details):

- PCBs – not detected in any previous studies
- Radionuclides – detected at low levels elsewhere in Port Curtis but lower than 1/10th of the screening level (less than 2% of screening level)
- Cyanides – not detected in previous sampling (to be sampled in upper Auckland Inlet only as a precaution given previous reporting (AMA, 2018) concentrations were below the LoR).
- OC and OP pesticides and herbicides – No pesticides or herbicides were detected in any of the previous studies (to be sampled in upper Auckland Inlet only only as a precaution given a lack of existing data).
- Selected metals – including cobalt, molybdenum, selenium, vanadium, and uranium. Cobalt and selenium concentrations (Angel et al., 2012) are generally well below 10% of the NEPM HIL-A. There are no guideline concentrations for the remaining metals, but metal concentrations generally are lower in Port Curtis than other Ports within Australia (Angel et al., 2012). There are no sources of uranium within the catchment.

3.8 Laboratory Analysis

Analytical Laboratories

The primary and secondary analysis of sediment samples will be undertaken by analytical laboratories fully accredited by the National Association of Testing Authorities (NATA) for the required analyses.

Both laboratories will follow laboratory QC procedures in accordance with requirements outlined in Appendix F of NAGD. This includes analysis of laboratory blanks, duplicates, certified reference materials and spiked samples.

Analytical Tests and PQLs

All samples must be analysed for parameters outlined in Table 3.4.

Sample Containers

Sample volumes will be specified by the laboratory performing the analysis. Large cobble and gravel fragments should be removed from the sample prior to storage in containers. Based on the proposed analyses, the following sample containers would be required per sample:

- 2 x 250 mL glass jar – organic/inorganic chemical analysis
- 1 x 125 mL glass jar – nutrient analyses
- 1 x 250 mL plastic jar – PFAS analysis
- 1 x medium plastic clipseal bag (50-100 g) – particle size distribution
- 1 x small clipseal bag (200 g) – acid sulfate soil.

3.9 Data Analysis and Assessment

Concentrations of contaminants measured in sediment samples will be compared to screening levels as described in Table 3-3. Those being Table 2 of NAGD in the first instance for all samples, and subsequently, Table 1A(1) and Table 1B(6) of the NEPM Volume 2 Schedule B1, and to determine whether the material is acceptable for placement at sea or on land.

Specifically, mean concentrations of chemical parameters at the upper 95% confidence level (95% UCL) will be compared against screening levels described in Table 3-3. The statistical analysis will follow the approach given in Appendix A of NAGD. This will inform whether the material is appropriate for placement at sea.

An assessment of the material's suitability for land-based re-use (if required) will follow the statistical analysis and the data evaluation procedures in Section 3.4, Volume 5 Schedule B4 of the NEPM. In the event that 95th percentile upper confidence limits for particular contaminants are exceeded, the next steps would be to follow the decision tree in Volume 1, Schedule A of the NEPM to determine a site remediation plan or collect further data describing the nature of contamination.

Given the lack of contamination history in past and present data elsewhere in Port Curtis, the probability of guideline exceedance is considered low, and will be addressed in a supplementary SAP if required.

3.10 Data Quality Objectives and Data Validation

Data quality aim for this SAP is that the information collected is suitable for undertaking an assessment of dredge material contamination in accordance with the framework provided in the NAGD. To achieve this aim, data quality objectives outlined in Table 3-4 must be met. The data quality objectives encompass:

- Data validation objectives - All laboratory analyses will be validated in accordance with Appendix A of NAGD (which are specific to marine sediments) to confirm suitable data quality for undertaking a rigorous characterisation of the proposed dredge material. This will involve an assessment of the following:
  - Sample holding times and storage conditions
  - Laboratory blanks, duplicates and surrogate/matrix spikes
  - Field triplicates samples, triplicate sample splits and trip blank.
- Completeness objective - At least 95% of all data received should be validated as suitable for use.
- Chain-of-custody form objectives – completed forms shall accompany the samples.
- Laboratory sample receipt objectives – the laboratory shall provide written confirmation on whether: the sample names/numbers received agree with chain-custody forms; samples were received intact; samples were received at specified temperature; and samples were received within appropriate holding times.

Table 3.5 Data Quality Objectives for Data Validation

Parameter	Data Quality Objective
Holding Time	Samples received within specified holding time (NAGD Appendix H)
Field Triplicate Samples	Relative Standard Deviation <50%
Triplicate Split Samples, including inter-laboratory samples	Relative Standard Deviation <50%
Laboratory Blanks	At or near the Limit of Reporting (LOR)
Laboratory Duplicate Samples	Relative Percent Difference (RPD) <35% or as per laboratory requirements
Laboratory Matrix Spikes	Recovery as per laboratory requirements
Surrogate Spikes	Recovery as per laboratory requirements
Chain-of-Custody forms	100% complete and included in SAP implementation report
Sample Receipt from Laboratory	Sample names/numbers received agree with chain-of-custody forms Samples were received intact Samples received at specific temperature Samples received within laboratory holding times
Completeness Objective	At least 95% of all data received should be validated as suitable for use

3.11 Reporting

The reporting of sediment quality results will be undertaken in a SAP Implementation Report that includes the following components:

- Summary of the SAP, or SAP appended to the report

- Outline of potential problems encountered and deviations from the SAP, including justification
- Description of the sampling carried out, along with the actual sampling locations, sample numbers (including replicates and QA samples), completed chain of custody (COC) forms, field logs and description of sediments
- Comparison of the 95% UCL of mean chemical concentrations of sediments in each of the proposed dredge pockets with appropriate screening levels described in Table 3-3
- Assessment of QA/QC procedures for both field and laboratory data
- Data validation including comparison to data quality objectives
- Appendices including all laboratory and field data, photos and statistics
- Conclusions regarding the acceptability of dredge material contaminant concentrations for beneficial re-use based on the NAGD in the first instance, and subsequently from the NEPM screening levels, as well as recommendations as to further work required including any requirements for ASS/PASS management.

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Annex B Sediment Log and Photographs

B.1 Main Channel, EBSDS, Reference and Boyne entrance

Figure B.1 MC1

Figure B.2 MC2

Figure B.3 MC3

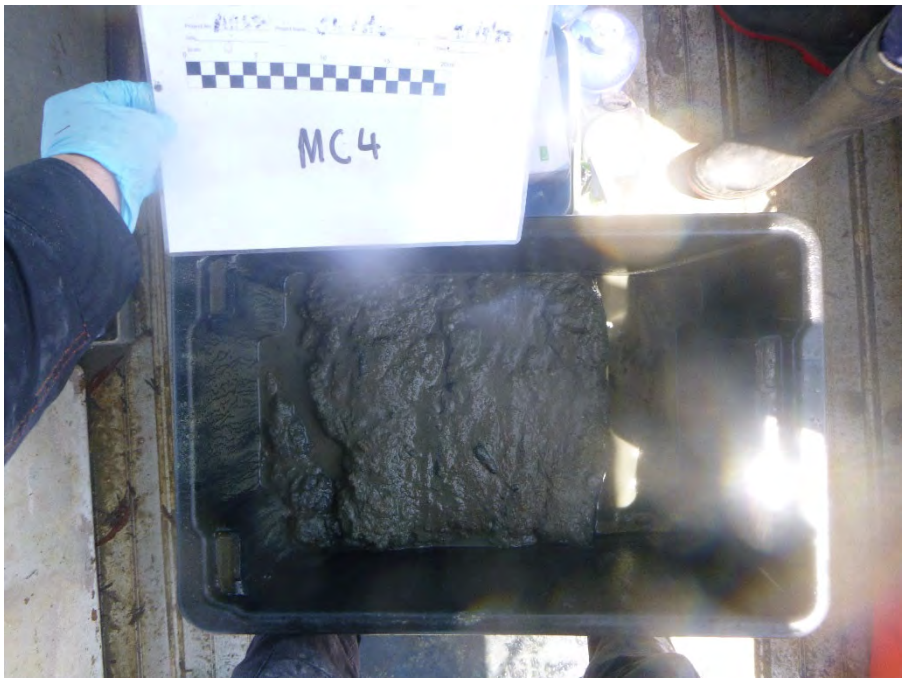

Figure B.4 MC4

Figure B.5 Click or tap here to enter text.

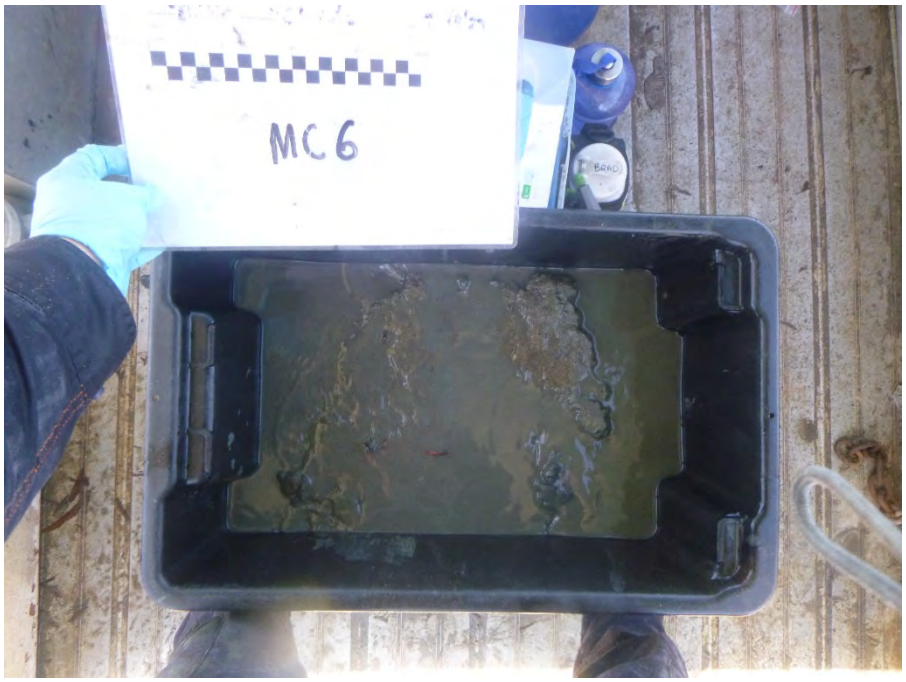

Figure B.6 MC6

Figure B.7 MC7

Figure B.8 MC8

Figure B.9 MC9

Figure B.10 MC10

Figure B.11 MC11

Figure B.12 MC12

Figure B.13 MC13

Figure B.14 MC14

Figure B.15 MC15

Figure B.16 MC16

Figure B.17 MC17

Figure B.18 MC18

Figure B.19 MC19

Figure B.20 MC20

Figure B.21 MC21

Figure B.22 MC22

Figure B.23 MC23

Figure B.24 MC24

Figure B.25 MC27

Figure B.26 MC28

Figure B.27 MC29

Figure B.28 MC30

Figure B.29 RB1

Figure B.30 RB2

Figure B.31 CN

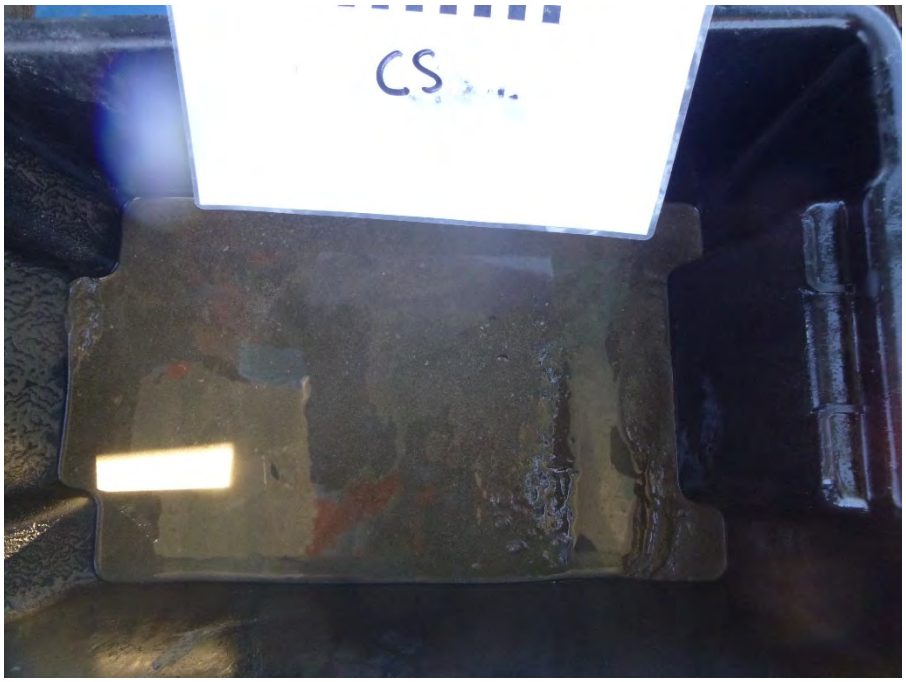

Figure B.32 CS

Figure B.33 DMA

Figure B.34 DMB

Figure B.35 BE1

Figure B.36 BE2

Figure B.37 BE3

Figure B.38 BE4

Figure B.39 BE5

Figure B.40 BE6

Figure B.41 BE9

Figure B.42 BE10

B.2 Upper Auckland

Figure B.43 UA1

Figure B.44 UA2

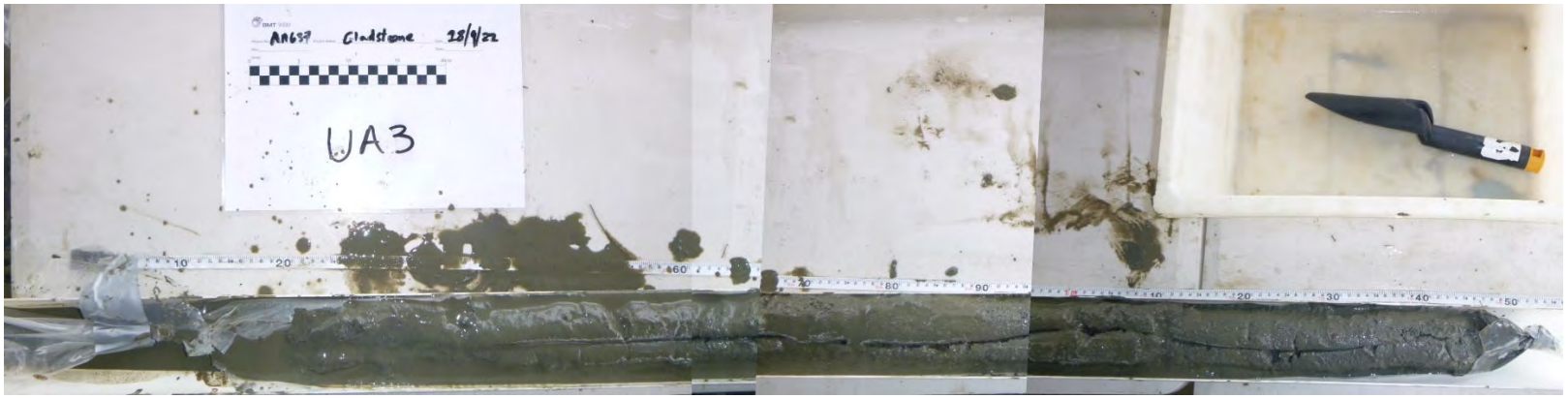

Figure B.45 UA3

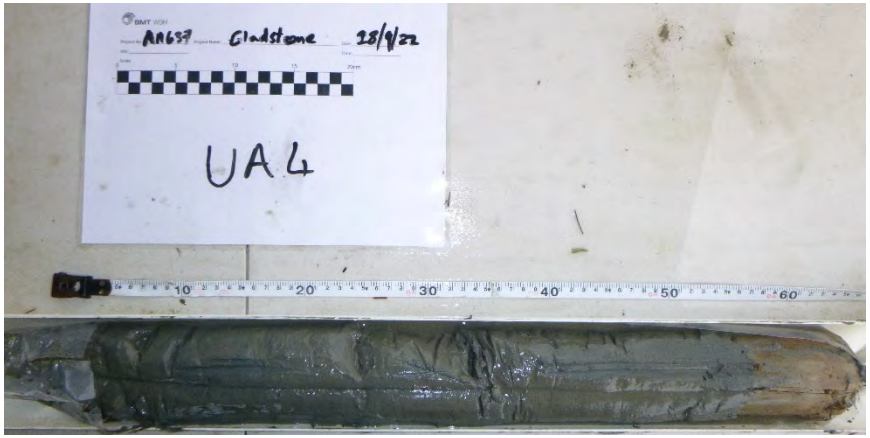

Figure B.46 UA4

Figure B.47 UA5

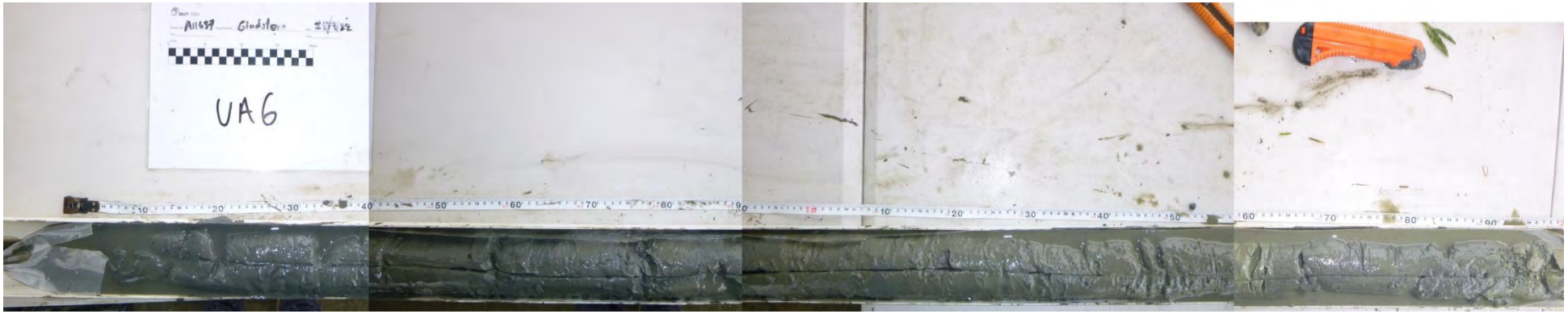

Figure B.48 UA6

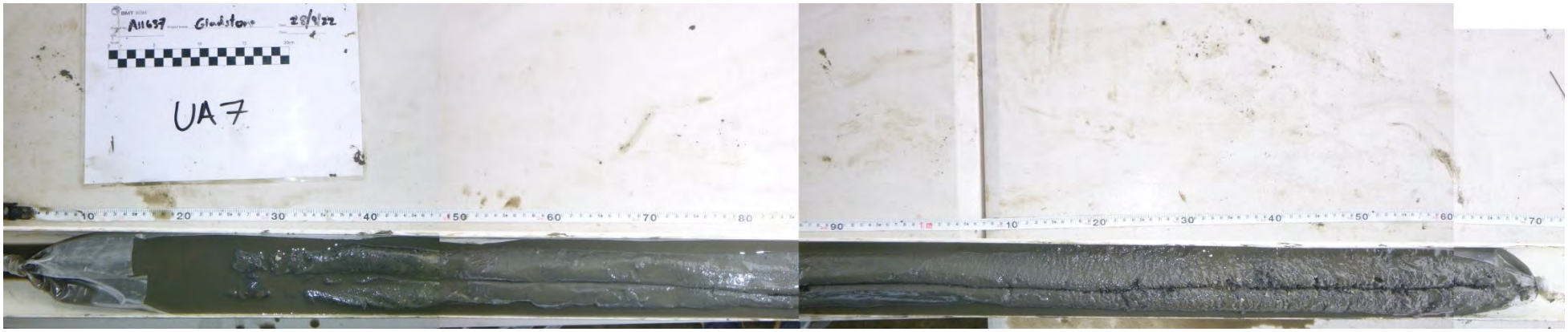

Figure B.49 UA7

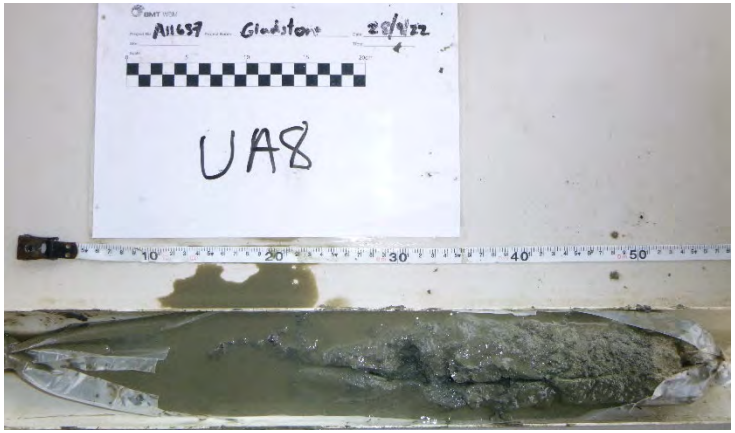

Figure B.50 UA8

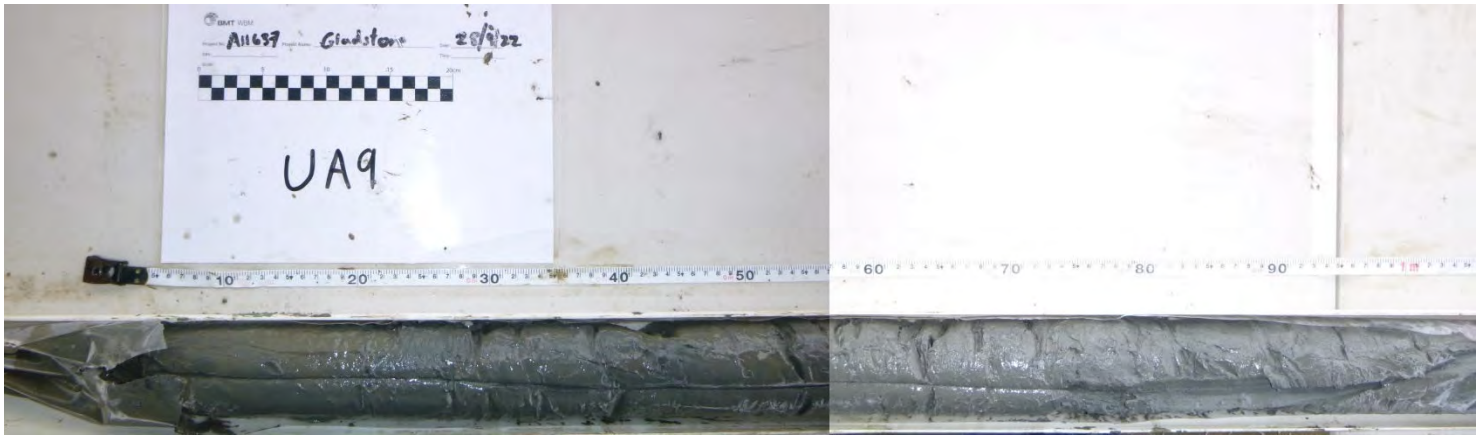

Figure B.51 UA9

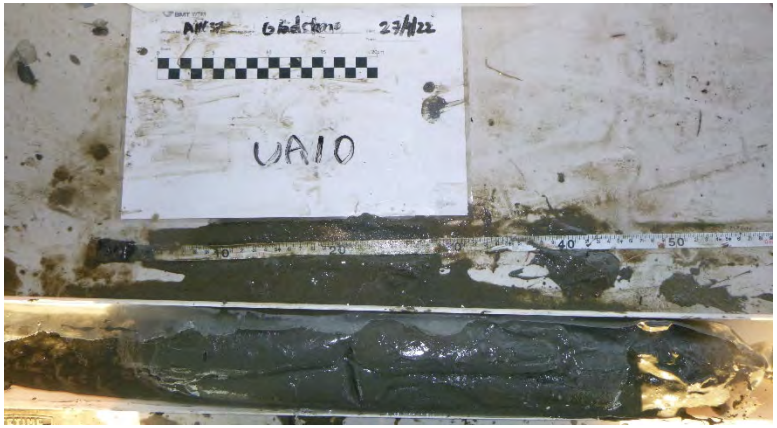

Figure B.52 UA10

Figure B.53 Click or tap here to enter text.

B.3 Gladstone Marina

Figure B.54 GM1

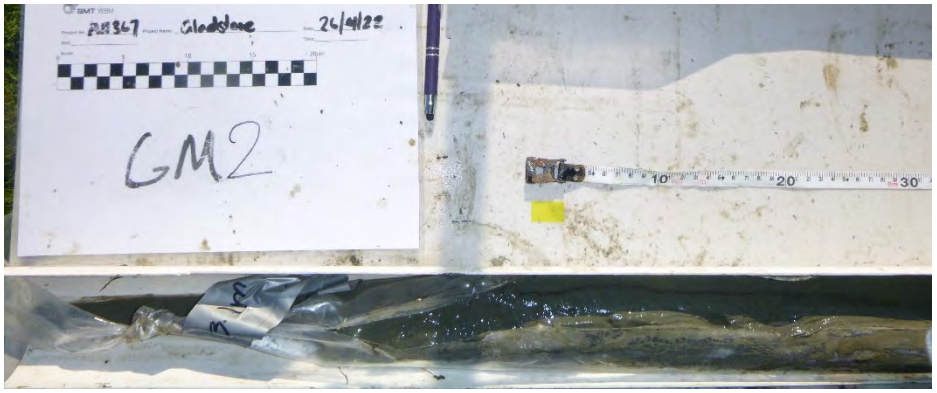

Figure B.55 GM2

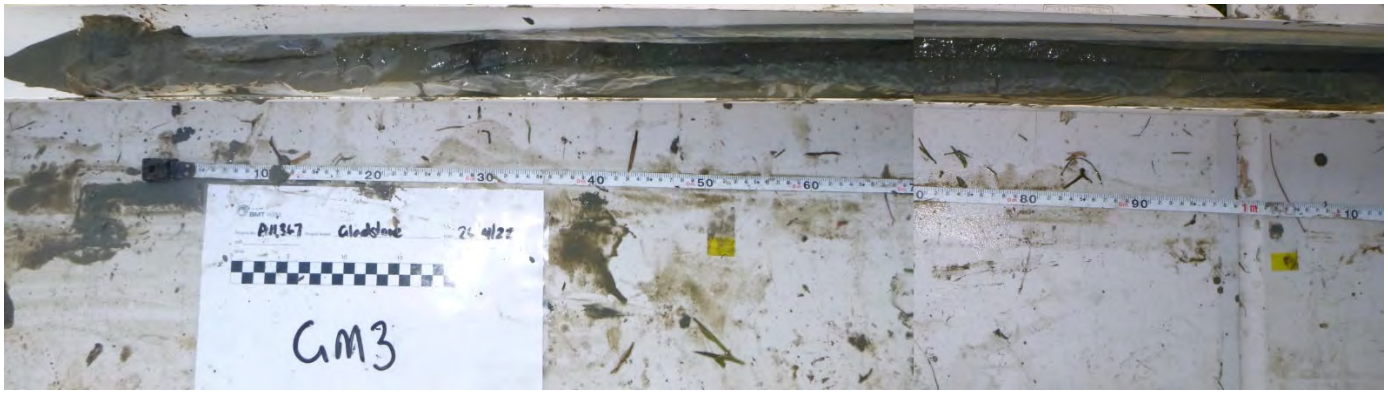

Figure B.56 GM3

Figure B.57 GM4

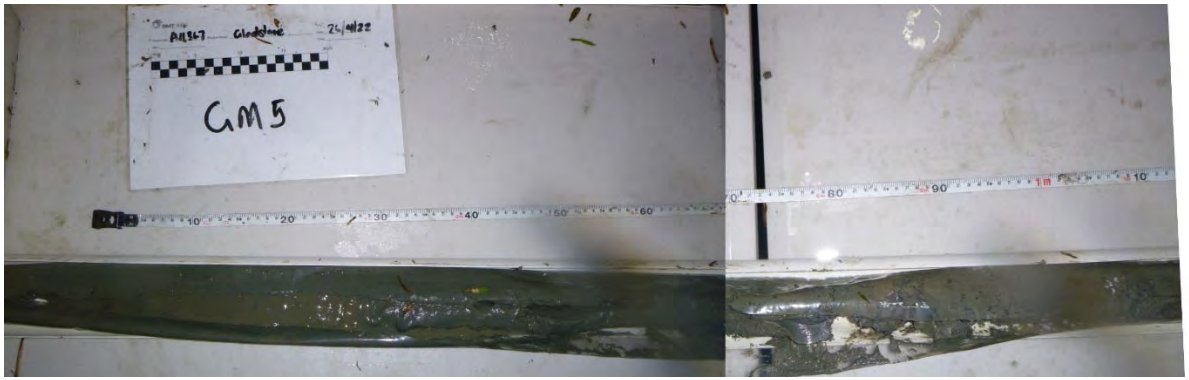

Figure B.58 GM5

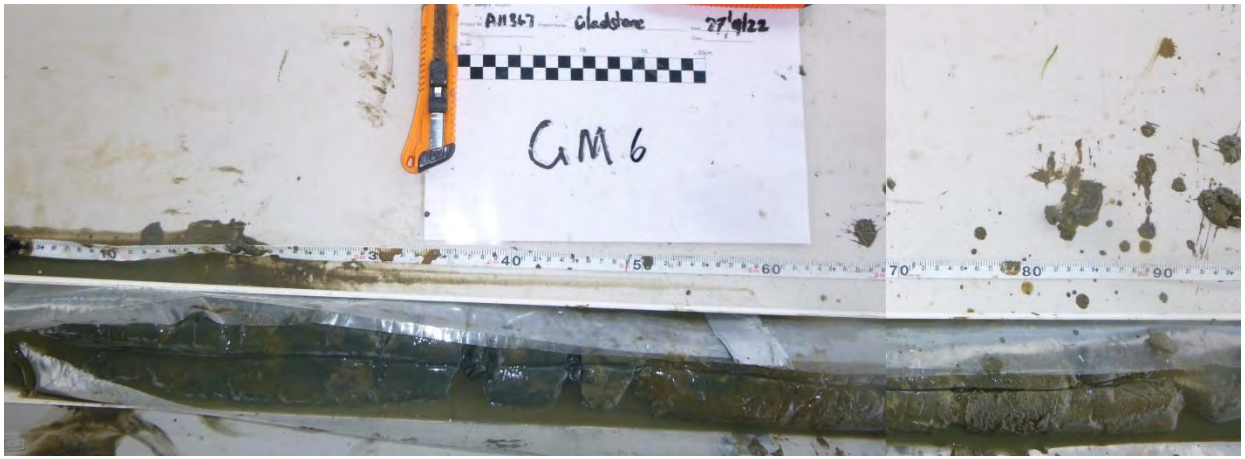

Figure B.59 GM6

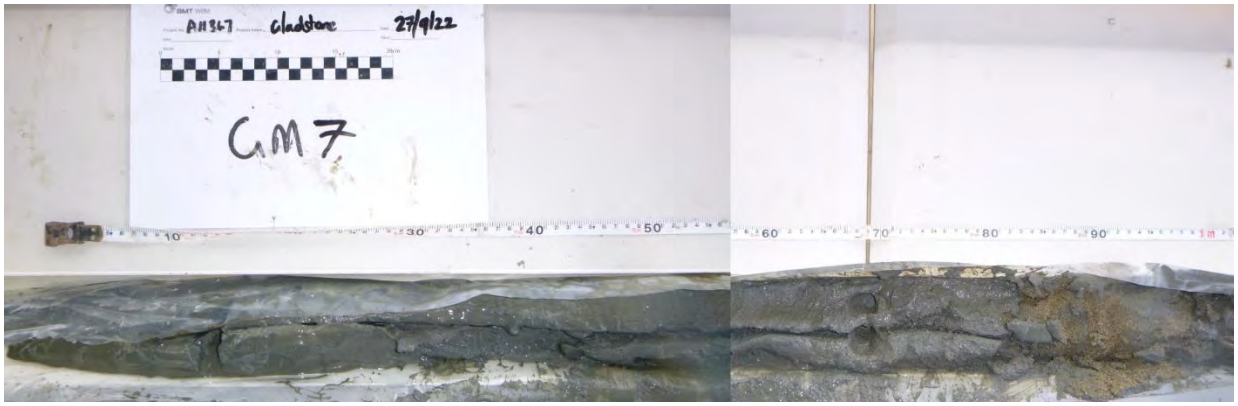

Figure B.60 GM7

Figure B.61 GM8

Figure B.62 Click or tap here to enter text.

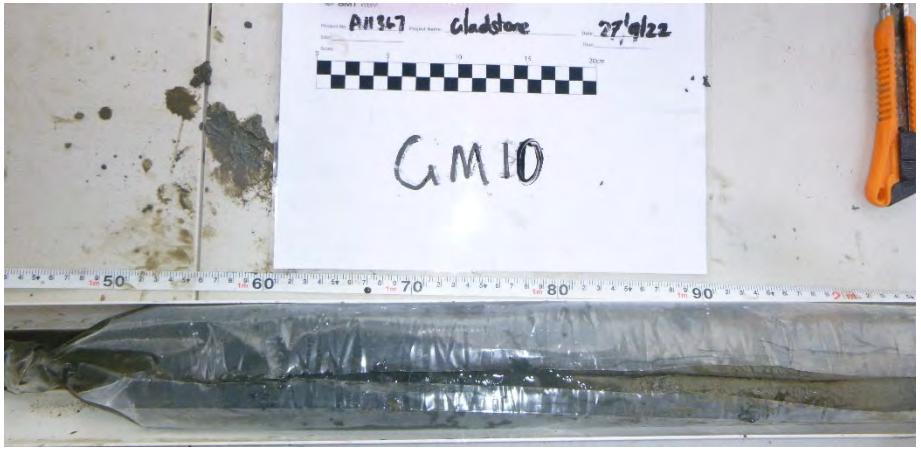

Figure B.63 Click or tap here to enter text.

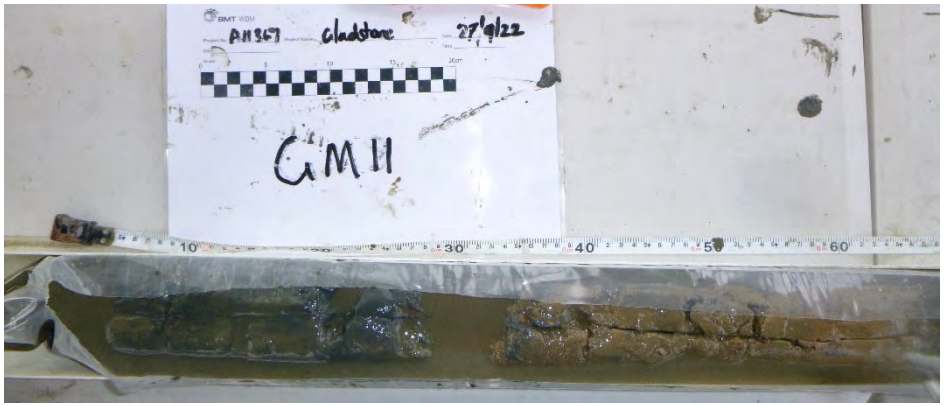

Figure B.64 GM11

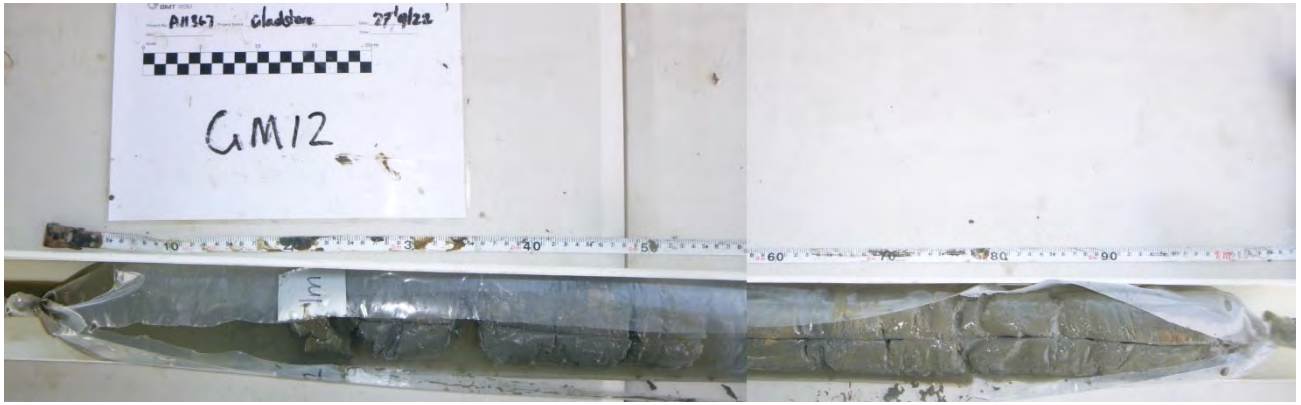

Figure B.65 GM12

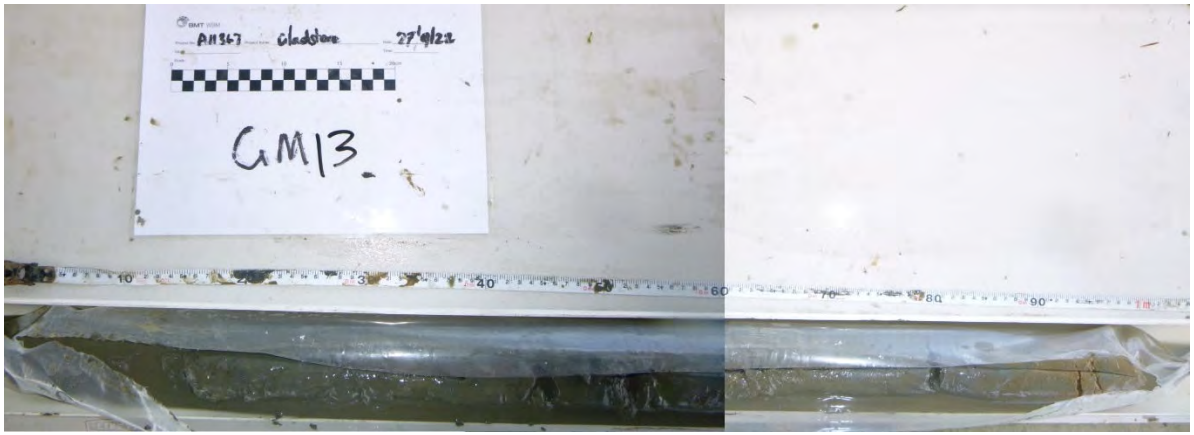

Figure B.66 GM13

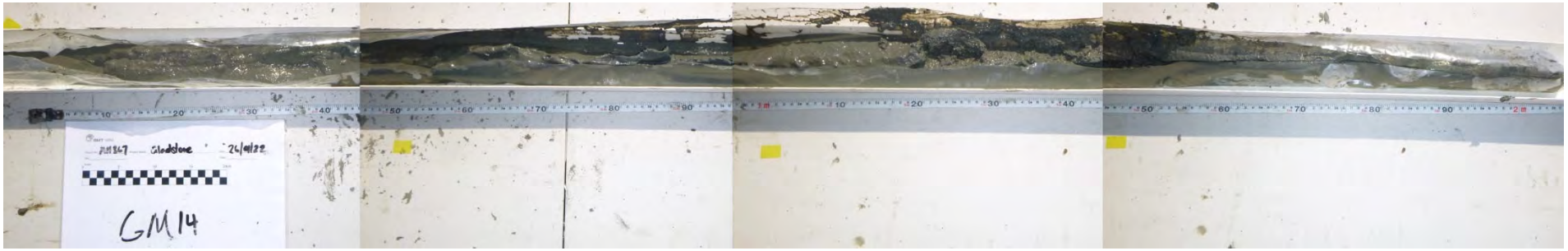

Figure B.67 GM14

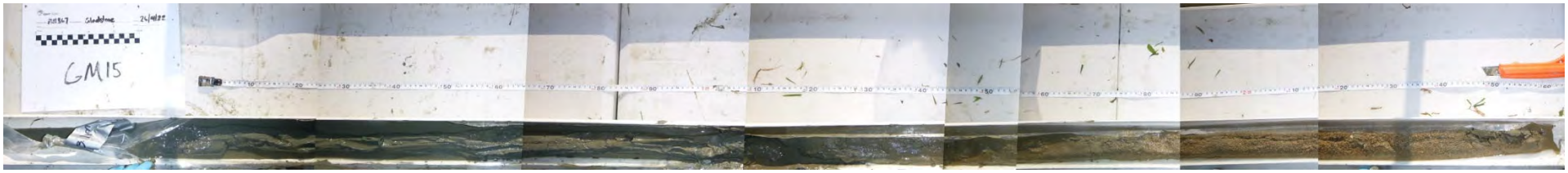

Figure B.68 GM15

Annex C Primary Laboratory Sediment Reports

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2228298**	Page	: 1 of 39
Client	: **BMT COMMERCIAL AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: CRAIG HEATHERINGTON	Contact	: Kimberly Hilton-Barber
Address	: PO BOX 203 SPRING HILL BRISBANE QLD 4004	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 7 3831 6744	Telephone	: +61-7-3243 7222
Project	: A11367 Gladstone - Sediment Quality	Date Samples Received	: 28-Sep-2022 10:50
Order number	: ----	Date Analysis Commenced	: 29-Sep-2022
C-O-C number	: ----	Issue Date	: 18-Oct-2022 13:01
Sampler	: BRAD HILES		
Site	: ----		
Quote number	: BN/523/22		
No. of samples received	: 29		
No. of samples analysed	: 29		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, 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
Layla Hafner	Acid Sulphate Soils - Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Layla Hafner	Acid Sulphate Soils - Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP090 Organotins: Sample 'GM2 0.5-1.0' shows poor MBT matrix spike recovery due to matrix interference.
- EA150H: Soil particle density results fell outside the scope of AS1289.3.6.3. Results should be scrutinised accordingly.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP080-SD: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP131A: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences and high matrix spike recovery has been noted for particular compounds due to ion enhancement.
- **Ammonia in Sediments and Ultra-trace PAH analysis is 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
- EG020SD (Total Metals in Sediments by ICP-MS): EB2228298-026 shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- EG005SD (Total Fe and Al in Sediments by ICP-AES): GM5 0.5-1.0 (EB2228298-026) shows poor duplicate results due to sample heterogeneity. This has been 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 ($CaCO_3$) 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: EA029 (SPOCAS): 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.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM2 0-0.5	GM2 0.5-1.0	GM2 >1	GM2 1.0-1.5	GM2 1.5-2.0
			Sampling date / time	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44
Compound	CAS Number	LOR	Unit	EB2228298-001	EB2228298-002	EB2228298-003	EB2228298-004	EB2228298-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.5	8.7	----	8.8	9.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	----	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	----	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.273	0.248	----	0.132	0.042
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	170	154	----	82	26
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	2.96	2.49	----	2.37	1.83
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	592	497	----	474	365
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.95	0.80	----	0.76	0.58
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	----	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	----	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	----	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	----	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.27	0.25	----	0.13	0.04
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	170	154	----	82	26
Liming Rate excluding ANC	----	1	kg CaCO3/t	13	12	----	6	2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	59.8	45.5	20.5	----	----
EA150: Particle Sizing								
+75µm	----	1	%	2	16	76	----	----
+150µm	----	1	%	<1	11	65	----	----
+300µm	----	1	%	<1	6	48	----	----
+425µm	----	1	%	<1	4	38	----	----
+600µm	----	1	%	<1	2	26	----	----
+1180µm	----	1	%	<1	<1	9	----	----
+2.36mm	----	1	%	<1	<1	2	----	----
+4.75mm	----	1	%	<1	<1	<1	----	----
+9.5mm	----	1	%	<1	<1	<1	----	----
+19.0mm	----	1	%	<1	<1	<1	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM2 0-0.5	GM2 0.5-1.0	GM2 >1	GM2 1.0-1.5	GM2 1.5-2.0
			Sampling date / time	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44
Compound	CAS Number	LOR	Unit	EB2228298-001	EB2228298-002	EB2228298-003	EB2228298-004	EB2228298-005
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+37.5mm	----	1	%	<1	<1	<1	----	----
+75.0mm	----	1	%	<1	<1	<1	----	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	24	46	14	----	----
Silt (2-60 µm)	----	1	%	73	36	10	----	----
Sand (0.06-2.00 mm)	----	1	%	3	18	72	----	----
Gravel (>2mm)	----	1	%	<1	<1	4	----	----
Cobbles (>6cm)	----	1	%	<1	<1	<1	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.43	2.65	2.72	----	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	11300	6910	2980	----	----
Iron	7439-89-6	50	mg/kg	26400	19000	8880	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	----	----
Arsenic	7440-38-2	1.00	mg/kg	10.2	9.36	2.22	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
Chromium	7440-47-3	1.0	mg/kg	23.6	13.1	7.0	----	----
Copper	7440-50-8	1.0	mg/kg	71.7	26.9	7.9	----	----
Cobalt	7440-48-4	0.5	mg/kg	11.4	10.9	4.2	----	----
Lead	7439-92-1	1.0	mg/kg	11.7	6.5	1.8	----	----
Manganese	7439-96-5	10	mg/kg	188	201	69	----	----
Nickel	7440-02-0	1.0	mg/kg	13.1	9.1	3.9	----	----
Selenium	7782-49-2	0.1	mg/kg	1.2	0.8	0.2	----	----
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
Vanadium	7440-62-2	2.0	mg/kg	58.4	46.1	25.5	----	----
Zinc	7440-66-6	1.0	mg/kg	83.8	37.3	12.8	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.03	0.02	<0.01	----	----
EK055: Ammonia as N								
Ammonia as N	7664-41-7	1	mg/kg	24	25	4	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	1.3	<0.1	1.2	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM2 0-0.5	GM2 0.5-1.0	GM2 >1	GM2 1.0-1.5	GM2 1.5-2.0
			Sampling date / time	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44
Compound	CAS Number	LOR	Unit	EB2228298-001	EB2228298-002	EB2228298-003	EB2228298-004	EB2228298-005
				Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	1100	510	100	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	1100	510	100	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	358	252	133	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	1.31	0.83	0.15	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	----	----
C10 - C14 Fraction	----	3	mg/kg	<3	<3	<3	----	----
C15 - C28 Fraction	----	3	mg/kg	5	3	<3	----	----
C29 - C36 Fraction	----	5	mg/kg	<5	<5	<5	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg	5	3	<3	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	----	----
>C10 - C16 Fraction	----	3	mg/kg	<3	<3	<3	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	<3.0	<3.0	----	----
>C16 - C34 Fraction	----	3	mg/kg	8	4	<3	----	----
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	----	----
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	8	4	<3	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	----	----
Dibutyltin	1002-53-5	1	µgSn/kg	5	2	<1	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg	5.6	1.9	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM2 0-0.5	GM2 0.5-1.0	GM2 >1	GM2 1.0-1.5	GM2 1.5-2.0
			Sampling date / time	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44	26-Sep-2022 15:44
Compound	CAS Number	LOR	Unit	EB2228298-001	EB2228298-002	EB2228298-003	EB2228298-004	EB2228298-005
				Result	Result	Result	Result	Result
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	<5	<4	----	----	----
Acenaphthene	83-32-9	4	µg/kg	<5	<4	----	----	----
Fluorene	86-73-7	4	µg/kg	<5	<4	----	----	----
Phenanthrene	85-01-8	4	µg/kg	12	6	----	----	----
Anthracene	120-12-7	4	µg/kg	<5	<4	----	----	----
Fluoranthene	206-44-0	4	µg/kg	17	10	----	----	----
Pyrene	129-00-0	4	µg/kg	18	11	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	10	6	----	----	----
Chrysene	218-01-9	4	µg/kg	13	7	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	16	6	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	6	4	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	12	6	----	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	12	6	----	----	----
Perylene	198-55-0	4	µg/kg	7	<4	----	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	10	5	----	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<5	<4	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	7	<4	----	----	----
Coronene	191-07-1	5	µg/kg	<5	<5	----	----	----
^ Sum of PAHs	----	4	µg/kg	140	67	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	16	8	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	18	10	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	20	12	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	79.4	66.2	77.1	----	----
Toluene-D8	2037-26-5	0.2	%	71.2	71.4	71.8	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	79.5	73.5	83.7	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	110	116	79.8	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	76.9	75.7	----	----	----
Anthracene-d10	1719-06-8	10	%	84.3	94.6	----	----	----
4-Terphenyl-d14	1718-51-0	10	%	82.9	91.6	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM4 0-0.5	GM16 0-0.5	GM4 0.5-1.0	GM4 >1	GM4 1.0-1.5
			Sampling date / time	26-Sep-2022 16:37	26-Sep-2022 16:37	26-Sep-2022 16:50	26-Sep-2022 16:50	26-Sep-2022 16:50
Compound	CAS Number	LOR	Unit	EB2228298-006	EB2228298-007	EB2228298-008	EB2228298-009	EB2228298-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.6	8.6	8.7	8.8	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	0.297	0.303	0.309	0.205	0.221
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	185	189	192	128	138
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	3.15	3.23	3.10	2.82	2.80
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	629	645	620	565	559
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.01	1.03	0.99	0.90	0.90
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	0.30	0.30	0.31	0.20	0.22
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	185	189	192	128	138
Liming Rate excluding ANC	----	1	kg CaCO3/t	14	14	14	10	10
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	57.1	56.9	48.7	36.0	----
EA150: Particle Sizing								
+75µm	----	1	%	1	----	8	28	----
+150µm	----	1	%	<1	----	4	18	----
+300µm	----	1	%	<1	----	2	11	----
+425µm	----	1	%	<1	----	<1	7	----
+600µm	----	1	%	<1	----	<1	3	----
+1180µm	----	1	%	<1	----	<1	<1	----
+2.36mm	----	1	%	<1	----	<1	<1	----
+4.75mm	----	1	%	<1	----	<1	<1	----
+9.5mm	----	1	%	<1	----	<1	<1	----
+19.0mm	----	1	%	<1	----	<1	<1	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM4 0-0.5	GM16 0-0.5	GM4 0.5-1.0	GM4 >1	GM4 1.0-1.5
			Sampling date / time	26-Sep-2022 16:37	26-Sep-2022 16:37	26-Sep-2022 16:50	26-Sep-2022 16:50	26-Sep-2022 16:50
Compound	CAS Number	LOR	Unit	EB2228298-006	EB2228298-007	EB2228298-008	EB2228298-009	EB2228298-010
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+37.5mm	----	1	%	<1	----	<1	<1	----
+75.0mm	----	1	%	<1	----	<1	<1	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	**33**	----	**52**	**41**	----
Silt (2-60 µm)	----	1	%	**65**	----	**38**	**29**	----
Sand (0.06-2.00 mm)	----	1	%	**2**	----	**10**	**30**	----
Gravel (>2mm)	----	1	%	<1	----	<1	<1	----
Cobbles (>6cm)	----	1	%	<1	----	<1	<1	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	**2.16**	----	**2.56**	**2.66**	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**10200**	**10400**	----	----	----
Iron	7439-89-6	50	mg/kg	**23700**	**24800**	----	----	----
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	**9.83**	**9.84**	----	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	----	----	----
Chromium	7440-47-3	1.0	mg/kg	**21.0**	**22.4**	----	----	----
Copper	7440-50-8	1.0	mg/kg	**37.0**	**39.7**	----	----	----
Cobalt	7440-48-4	0.5	mg/kg	**10.4**	**10.9**	----	----	----
Lead	7439-92-1	1.0	mg/kg	**9.5**	**9.8**	----	----	----
Manganese	7439-96-5	10	mg/kg	**187**	**193**	----	----	----
Nickel	7440-02-0	1.0	mg/kg	**11.9**	**12.8**	----	----	----
Selenium	7782-49-2	0.1	mg/kg	**1.1**	**0.9**	----	----	----
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	----	----	----
Vanadium	7440-62-2	2.0	mg/kg	**51.5**	**54.4**	----	----	----
Zinc	7440-66-6	1.0	mg/kg	**60.0**	**65.2**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	**0.02**	**0.02**	----	----	----
EK055: Ammonia as N								
Ammonia as N	7664-41-7	1	mg/kg	**20**	**18**	**36**	**32**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	**1.4**	**0.2**	**6.2**	**0.3**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM4 0-0.5	GM16 0-0.5	GM4 0.5-1.0	GM4 >1	GM4 1.0-1.5
			Sampling date / time	26-Sep-2022 16:37	26-Sep-2022 16:37	26-Sep-2022 16:50	26-Sep-2022 16:50	26-Sep-2022 16:50
Compound	CAS Number	LOR	Unit	EB2228298-006	EB2228298-007	EB2228298-008	EB2228298-009	EB2228298-010
				Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	1120	1040	760	460	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	1120	1040	770	460	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	326	307	253	311	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	1.36	1.37	1.05	0.54	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	----
C10 - C14 Fraction	----	3	mg/kg	4	3	<3	<3	----
C15 - C28 Fraction	----	3	mg/kg	11	9	6	3	----
C29 - C36 Fraction	----	5	mg/kg	<5	<5	<5	<5	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg	15	12	6	3	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	----
>C10 - C16 Fraction	----	3	mg/kg	4	3	<3	<3	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	<3.0	<3.0	<3.0	----
>C16 - C34 Fraction	----	3	mg/kg	13	11	7	4	----
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	----
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	17	14	7	4	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	----
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	2	<1	----
Tributyltin	56573-85-4	0.5	µgSn/kg	0.7	0.8	1.0	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM4 0-0.5	GM16 0-0.5	GM4 0.5-1.0	GM4 >1	GM4 1.0-1.5
			Sampling date / time	26-Sep-2022 16:37	26-Sep-2022 16:37	26-Sep-2022 16:50	26-Sep-2022 16:50	26-Sep-2022 16:50
Compound	CAS Number	LOR	Unit	EB2228298-006	EB2228298-007	EB2228298-008	EB2228298-009	EB2228298-010
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	<5	<5	<5	----
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	<5	<5	----
Acenaphthylene	208-96-8	4	µg/kg	<5	<5	<4	<4	----
Acenaphthene	83-32-9	4	µg/kg	<5	<5	<4	<4	----
Fluorene	86-73-7	4	µg/kg	<5	<5	<4	<4	----
Phenanthrene	85-01-8	4	µg/kg	11	12	9	<4	----
Anthracene	120-12-7	4	µg/kg	<5	<5	<4	<4	----
Fluoranthene	206-44-0	4	µg/kg	19	16	12	<4	----
Pyrene	129-00-0	4	µg/kg	21	17	14	<4	----
Benz(a)anthracene	56-55-3	4	µg/kg	9	8	8	<4	----
Chrysene	218-01-9	4	µg/kg	12	11	9	<4	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	12	10	10	<4	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<5	6	<4	<4	----
Benzo(e)pyrene	192-97-2	4	µg/kg	9	8	7	<4	----
Benzo(a)pyrene	50-32-8	4	µg/kg	8	9	8	<4	----
Perylene	198-55-0	4	µg/kg	7	6	5	5	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	8	8	7	<4	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<5	<5	<4	<4	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	5	6	5	<4	----
Coronene	191-07-1	5	µg/kg	<5	<5	<5	<5	----
^ Sum of PAHs	----	4	µg/kg	121	117	94	5	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	11	12	10	<4	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	13	14	13	5	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	15	16	15	10	----
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	69.0	74.3	57.7	79.0	----
Toluene-D8	2037-26-5	0.2	%	63.8	69.0	50.6	72.7	----
4-Bromofluorobenzene	460-00-4	0.2	%	74.3	82.1	61.2	85.6	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	85.9	89.1	82.1	84.0	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	85.5	76.5	72.3	75.4	----
Anthracene-d10	1719-06-8	10	%	92.8	114	97.8	90.3	----
4-Terphenyl-d14	1718-51-0	10	%	85.9	99.4	89.8	85.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM1 0.0.5	GM1 0.5-1.0	GM1 >1	GM1 1.0 - 1.5	GM9 0-0-5
			Sampling date / time	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 14:00
Compound	CAS Number	LOR	Unit	EB2228298-011	EB2228298-012	EB2228298-013	EB2228298-014	EB2228298-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.1	8.7	----	9.1	8.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	----	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	----	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.169	0.255	----	0.056	0.382
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	105	159	----	35	238
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	2.86	1.80	----	1.84	3.42
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	572	360	----	368	684
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.92	0.58	----	0.59	1.10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	----	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	----	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	----	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	----	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.17	0.26	----	0.06	0.38
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	105	159	----	35	238
Liming Rate excluding ANC	----	1	kg CaCO3/t	8	12	----	3	18
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	27.7	55.4	24.2	----	39.1
EA150: Particle Sizing								
+75µm	----	1	%	54	36	56	----	36
+150µm	----	1	%	38	33	32	----	28
+300µm	----	1	%	23	28	12	----	26
+425µm	----	1	%	18	24	8	----	24
+600µm	----	1	%	14	20	6	----	22
+1180µm	----	1	%	9	9	4	----	17
+2.36mm	----	1	%	4	4	2	----	12
+4.75mm	----	1	%	1	1	2	----	5
+9.5mm	----	1	%	<1	<1	<1	----	<1
+19.0mm	----	1	%	<1	<1	<1	----	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM1 0.0.5	GM1 0.5-1.0	GM1 >1	GM1 1.0 - 1.5	GM9 0-0-5
			Sampling date / time	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 14:00
Compound	CAS Number	LOR	Unit	EB2228298-011	EB2228298-012	EB2228298-013	EB2228298-014	EB2228298-015
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+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	%	**24**	**31**	**22**	----	**32**
Silt (2-60 µm)	----	1	%	**21**	**32**	**20**	----	**30**
Sand (0.06-2.00 mm)	----	1	%	**49**	**32**	**55**	----	**24**
Gravel (>2mm)	----	1	%	**6**	**5**	**3**	----	**14**
Cobbles (>6cm)	----	1	%	<1	<1	<1	----	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	**2.61**	**2.51**	**2.63**	----	**2.59**
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**4650**	**8260**	**5860**	----	**6400**
Iron	7439-89-6	50	mg/kg	**12400**	**18400**	**16300**	----	**17700**
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	**5.10**	**7.71**	**3.76**	----	**7.73**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	----	<0.1
Chromium	7440-47-3	1.0	mg/kg	**9.5**	**19.7**	**11.5**	----	**13.4**
Copper	7440-50-8	1.0	mg/kg	**15.4**	**49.9**	**21.6**	----	**25.2**
Cobalt	7440-48-4	0.5	mg/kg	**6.7**	**9.3**	**6.8**	----	**8.9**
Lead	7439-92-1	1.0	mg/kg	**3.8**	**11.8**	**3.5**	----	**6.2**
Manganese	7439-96-5	10	mg/kg	**106**	**135**	**103**	----	**218**
Nickel	7440-02-0	1.0	mg/kg	**6.4**	**11.1**	**7.6**	----	**8.4**
Selenium	7782-49-2	0.1	mg/kg	**0.4**	**1.0**	**0.5**	----	**0.8**
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	----	<0.1
Vanadium	7440-62-2	2.0	mg/kg	**31.8**	**51.6**	**42.3**	----	**39.4**
Zinc	7440-66-6	1.0	mg/kg	**22.2**	**80.6**	**23.8**	----	**32.6**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	**0.02**	<0.01	----	**0.02**
EK055: Ammonia as N								
Ammonia as N	7664-41-7	1	mg/kg	**5**	**17**	**2**	----	**22**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	**0.3**	**0.2**	----	**5.0**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM1 0.0.5	GM1 0.5-1.0	GM1 >1	GM1 1.0 - 1.5	GM9 0-0-5
			Sampling date / time	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 14:00
Compound	CAS Number	LOR	Unit	EB2228298-011	EB2228298-012	EB2228298-013	EB2228298-014	EB2228298-015
				Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	310	950	200	----	570
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	310	950	200	----	580
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	209	321	315	----	296
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.42	0.79	0.16	----	0.69
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	11	<3	----	6
C29 - C36 Fraction	----	5	mg/kg	<5	6	<5	----	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg	3	20	<3	----	6
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	----	<3
>C10 - C16 Fraction	----	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
>C16 - C34 Fraction	----	3	mg/kg	3	14	<3	----	6
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	----	<5
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	3	17	<3	----	6
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	----	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	----	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	----	<0.2
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	----	<1
Dibutyltin	1002-53-5	1	µgSn/kg	<1	1	<1	----	<1
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	1.2	<0.5	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM1 0.0.5	GM1 0.5-1.0	GM1 >1	GM1 1.0 - 1.5	GM9 0-0-5
			Sampling date / time	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 14:00
Compound	CAS Number	LOR	Unit	EB2228298-011	EB2228298-012	EB2228298-013	EB2228298-014	EB2228298-015
				Result	Result	Result	Result	Result
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	<5	<4	----	<4
Acenaphthene	83-32-9	4	µg/kg	<4	<5	<4	----	<4
Fluorene	86-73-7	4	µg/kg	<4	<5	<4	----	<4
Phenanthrene	85-01-8	4	µg/kg	<4	23	<4	----	<4
Anthracene	120-12-7	4	µg/kg	<4	<5	<4	----	<4
Fluoranthene	206-44-0	4	µg/kg	5	47	<4	----	<4
Pyrene	129-00-0	4	µg/kg	5	46	<4	----	<4
Benz(a)anthracene	56-55-3	4	µg/kg	<4	26	<4	----	<4
Chrysene	218-01-9	4	µg/kg	<4	33	<4	----	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	35	<4	----	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	15	<4	----	<4
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	25	<4	----	<4
Benzo(a)pyrene	50-32-8	4	µg/kg	<4	32	<4	----	<4
Perylene	198-55-0	4	µg/kg	<4	10	<4	----	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<4	23	<4	----	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	6	<4	----	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	18	<4	----	<4
Coronene	191-07-1	5	µg/kg	<5	6	<5	----	<5
^ Sum of PAHs	----	4	µg/kg	10	345	<4	----	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	48	<4	----	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	5	48	5	----	5
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	10	48	10	----	10
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM1 0.0.5	GM1 0.5-1.0	GM1 >1	GM1 1.0 - 1.5	GM9 0-0-5
			Sampling date / time	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 14:00
Compound	CAS Number	LOR	Unit	EB2228298-011	EB2228298-012	EB2228298-013	EB2228298-014	EB2228298-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM1 0.0.5	GM1 0.5-1.0	GM1 >1	GM1 1.0 - 1.5	GM9 0-0-5
			Sampling date / time	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 13:00	26-Sep-2022 14:00
Compound	CAS Number	LOR	Unit	EB2228298-011	EB2228298-012	EB2228298-013	EB2228298-014	EB2228298-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	<0.0002
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**87.6**	**74.7**	**78.7**	----	**77.3**
Toluene-D8	2037-26-5	0.2	%	**77.2**	**70.4**	**71.2**	----	**72.9**
4-Bromofluorobenzene	460-00-4	0.2	%	**90.7**	**80.0**	**84.2**	----	**83.4**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	**92.7**	**84.5**	**86.9**	----	**81.0**
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	**75.5**	**87.0**	**75.0**	----	**76.3**
Anthracene-d10	1719-06-8	10	%	**88.8**	**117**	**86.8**	----	**76.8**
4-Terphenyl-d14	1718-51-0	10	%	**77.2**	**98.6**	**81.7**	----	**78.2**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**113**	**104**	**108**	----	**93.5**
13C8-PFOA	----	0.0002	%	**102**	**105**	**101**	----	**106**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM9 0.5-1.0	GM9 71.0	GM9 1.0-1-5	GM14 0-0.5	GM14 0.5- 1.0
			Sampling date / time	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:07	26-Sep-2022 14:07
Compound	CAS Number	LOR	Unit	EB2228298-016	EB2228298-017	EB2228298-018	EB2228298-019	EB2228298-020
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.9	----	8.9	8.9	9.0
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.321	----	0.286	0.264	0.270
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	200	----	178	165	168
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	2.25	----	1.98	3.03	1.80
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	449	----	396	606	360
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.72	----	0.63	0.97	0.58
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	----	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	----	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.32	----	0.28	0.26	0.27
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	200	----	178	165	168
Liming Rate excluding ANC	----	1	kg CaCO3/t	15	----	13	12	13
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	37.4	33.9	----	40.4	31.0
EA150: Particle Sizing								
+75µm	----	1	%	38	52	----	48	53
+150µm	----	1	%	34	46	----	46	48
+300µm	----	1	%	27	35	----	41	39
+425µm	----	1	%	20	26	----	35	30
+600µm	----	1	%	12	16	----	29	20
+1180µm	----	1	%	2	3	----	16	4
+2.36mm	----	1	%	<1	<1	----	10	<1
+4.75mm	----	1	%	<1	<1	----	4	<1
+9.5mm	----	1	%	<1	<1	----	<1	<1
+19.0mm	----	1	%	<1	<1	----	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM9 0.5-1.0	GM9 71.0	GM9 1.0-1-5	GM14 0-0.5	GM14 0.5- 1.0
			Sampling date / time	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:07	26-Sep-2022 14:07
Compound	CAS Number	LOR	Unit	EB2228298-016	EB2228298-017	EB2228298-018	EB2228298-019	EB2228298-020
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+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	19	----	24	24
Silt (2-60 µm)	----	1	%	31	26	----	27	21
Sand (0.06-2.00 mm)	----	1	%	38	54	----	37	53
Gravel (>2mm)	----	1	%	1	1	----	12	2
Cobbles (>6cm)	----	1	%	<1	<1	----	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.54	2.63	----	2.60	2.62
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	4840	4760	----	5600	2980
Iron	7439-89-6	50	mg/kg	13300	13900	----	17000	9110
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	0.87	----	<0.50	<0.50
Arsenic	7440-38-2	1.00	mg/kg	7.51	7.14	----	6.71	5.12
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	----	<0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg	12.6	10.4	----	12.7	7.4
Copper	7440-50-8	1.0	mg/kg	21.4	14.6	----	26.2	10.8
Cobalt	7440-48-4	0.5	mg/kg	7.1	5.8	----	6.7	4.3
Lead	7439-92-1	1.0	mg/kg	6.2	5.3	----	5.8	3.5
Manganese	7439-96-5	10	mg/kg	126	101	----	123	81
Nickel	7440-02-0	1.0	mg/kg	7.5	6.1	----	7.6	4.3
Selenium	7782-49-2	0.1	mg/kg	0.6	0.5	----	0.6	0.4
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	----	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg	33.6	29.1	----	33.2	21.6
Zinc	7440-66-6	1.0	mg/kg	36.4	27.9	----	40.6	20.8
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.02	0.01	----	0.02	<0.01
EK055: Ammonia as N								
Ammonia as N	7664-41-7	1	mg/kg	40	24	----	28	18
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	1.6	1.4	----	5.2	4.4
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM9 0.5-1.0	GM9 71.0	GM9 1.0-1-5	GM14 0-0.5	GM14 0.5- 1.0
			Sampling date / time	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:07	26-Sep-2022 14:07
Compound	CAS Number	LOR	Unit	EB2228298-016	EB2228298-017	EB2228298-018	EB2228298-019	EB2228298-020
				Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	400	470	----	630	320
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	400	470	----	640	320
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	192	221	----	241	189
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.74	0.62	----	0.69	0.57
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	5	5	----	4	3
C29 - C36 Fraction	----	5	mg/kg	<5	<5	----	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg	5	5	----	4	3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	----	<3	<3
>C10 - C16 Fraction	----	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
>C16 - C34 Fraction	----	3	mg/kg	6	6	----	4	4
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	----	<5	<5
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	6	6	----	4	4
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	----	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg	1	1	----	<1	1
Tributyltin	56573-85-4	0.5	µgSn/kg	0.8	0.8	----	0.6	0.6

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	GM9 0.5-1.0	GM9 71.0	GM9 1.0-1-5	GM14 0-0.5	GM14 0.5- 1.0
				Sampling date / time	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:07	26-Sep-2022 14:07
					EB2228298-016	EB2228298-017	EB2228298-018	EB2228298-019	EB2228298-020
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	----	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	----	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	----	<4	<4
Acenaphthene	83-32-9	4	µg/kg		<4	<4	----	<4	<4
Fluorene	86-73-7	4	µg/kg		<4	<4	----	<4	<4
Phenanthrene	85-01-8	4	µg/kg		**8**	**5**	----	**6**	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	----	<4	<4
Fluoranthene	206-44-0	4	µg/kg		**9**	**8**	----	**7**	<4
Pyrene	129-00-0	4	µg/kg		**11**	**12**	----	**8**	<4
Benz(a)anthracene	56-55-3	4	µg/kg		**6**	**6**	----	**4**	<4
Chrysene	218-01-9	4	µg/kg		**7**	**8**	----	**5**	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		**11**	**12**	----	**6**	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	**4**	----	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		**7**	**7**	----	**4**	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		**6**	**10**	----	**4**	<4
Perylene	198-55-0	4	µg/kg		<4	<4	----	<4	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		**5**	**8**	----	**4**	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	----	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	**6**	----	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	----	<5	<5
^ **Sum of PAHs**	----	4	µg/kg		**70**	**86**	----	**48**	<4
^ **Benzo(a)pyrene TEQ (zero)**	----	4	µg/kg		**8**	**13**	----	**5**	<4
^ **Benzo(a)pyrene TEQ (half LOR)**	----	4	µg/kg		**10**	**15**	----	**7**	**5**
^ **Benzo(a)pyrene TEQ (LOR)**	----	4	µg/kg		**13**	**17**	----	**10**	**10**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM9 0.5-1.0	GM9 71.0	GM9 1.0-1-5	GM14 0-0.5	GM14 0.5- 1.0
			Sampling date / time	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:07	26-Sep-2022 14:07
Compound	CAS Number	LOR	Unit	EB2228298-016	EB2228298-017	EB2228298-018	EB2228298-019	EB2228298-020
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM9 0.5-1.0	GM9 71.0	GM9 1.0-1-5	GM14 0-0.5	GM14 0.5- 1.0
				Sampling date / time	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:00	26-Sep-2022 14:07	26-Sep-2022 14:07
Compound	CAS Number	LOR	Unit		EB2228298-016	EB2228298-017	EB2228298-018	EB2228298-019	EB2228298-020
					Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**72.4**	**78.6**	----	**69.0**	**75.0**
Toluene-D8	2037-26-5	0.2	%		**65.2**	**69.9**	----	**61.2**	**63.8**
4-Bromofluorobenzene	460-00-4	0.2	%		**84.2**	**84.2**	----	**72.3**	**79.3**
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		**80.0**	**94.9**	----	**87.4**	**104**
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		**75.9**	**78.3**	----	**71.7**	**85.2**
Anthracene-d10	1719-06-8	10	%		**93.3**	**98.9**	----	**87.9**	**93.4**
4-Terphenyl-d14	1718-51-0	10	%		**88.9**	**83.0**	----	**83.8**	**77.8**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**116**	**114**	----	----	----
13C8-PFOA	----	0.0002	%		**104**	**104**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM15 0-0.5	GM15 0.5-1.0	GM3 0-0-5	GM3 0.5-1.0	GM5 0-0.5
			Sampling date / time	26-Sep-2022 14:40	26-Sep-2022 14:40	26-Sep-2022 17:30	26-Sep-2022 17:30	26-Sep-2022 18:00
Compound	CAS Number	LOR	Unit	EB2228298-021	EB2228298-022	EB2228298-023	EB2228298-024	EB2228298-025
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.9	9.0	8.6	8.8	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	0.314	0.266	0.212	0.172	0.272
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	196	166	132	108	170
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	4.14	2.03	2.96	3.48	3.20
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	827	406	592	695	640
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.32	0.65	0.95	1.11	1.03
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	0.31	0.26	0.21	0.17	0.27
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	196	166	132	108	170
Liming Rate excluding ANC	----	1	kg CaCO3/t	15	12	10	8	13
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	39.2	39.4	56.4	45.4	53.2
EA150: Particle Sizing								
+75µm	----	1	%	37	54	4	14	6
+150µm	----	1	%	36	49	3	9	3
+300µm	----	1	%	32	39	2	5	1
+425µm	----	1	%	29	29	1	3	<1
+600µm	----	1	%	25	18	<1	2	<1
+1180µm	----	1	%	18	3	<1	1	<1
+2.36mm	----	1	%	12	<1	<1	<1	<1
+4.75mm	----	1	%	6	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM15 0-0.5	GM15 0.5-1.0	GM3 0-0-5	GM3 0.5-1.0	GM5 0-0.5
				Sampling date / time	26-Sep-2022 14:40	26-Sep-2022 14:40	26-Sep-2022 17:30	26-Sep-2022 17:30	26-Sep-2022 18:00
Compound	CAS Number	LOR	Unit		EB2228298-021	EB2228298-022	EB2228298-023	EB2228298-024	EB2228298-025
					Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued									
+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	%		32	25	51	32	48
Silt (2-60 µm)	----	1	%		29	20	43	53	45
Sand (0.06-2.00 mm)	----	1	%		25	54	6	14	7
Gravel (>2mm)	----	1	%		14	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		2.53	2.68	2.59	2.53	2.72
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		5280	4930	9300	7360	7680
Iron	7439-89-6	50	mg/kg		13600	15000	21800	19400	19800
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		5.60	7.78	9.08	8.15	12.5
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		10.3	12.0	19.5	15.0	18.4
Copper	7440-50-8	1.0	mg/kg		21.9	19.6	37.6	28.1	23.8
Cobalt	7440-48-4	0.5	mg/kg		6.4	6.7	10.3	10.9	11.3
Lead	7439-92-1	1.0	mg/kg		5.1	6.2	9.0	7.4	8.2
Manganese	7439-96-5	10	mg/kg		137	113	198	222	307
Nickel	7440-02-0	1.0	mg/kg		6.3	7.0	11.3	10.0	11.2
Selenium	7782-49-2	0.1	mg/kg		0.7	0.6	1.1	0.9	1.0
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg		30.0	33.4	50.8	47.2	48.2
Zinc	7440-66-6	1.0	mg/kg		37.2	36.2	58.4	44.4	48.2
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		0.01	0.01	0.02	0.02	0.03
EK055: Ammonia as N									
Ammonia as N	7664-41-7	1	mg/kg		26	31	16	17	23
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		1.6	1.4	0.6	0.6	0.2
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM15 0-0.5	GM15 0.5-1.0	GM3 0-0-5	GM3 0.5-1.0	GM5 0-0.5
			Sampling date / time	26-Sep-2022 14:40	26-Sep-2022 14:40	26-Sep-2022 17:30	26-Sep-2022 17:30	26-Sep-2022 18:00
Compound	CAS Number	LOR	Unit	EB2228298-021	EB2228298-022	EB2228298-023	EB2228298-024	EB2228298-025
				Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	500	400	890	620	900
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	500	400	890	620	900
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	196	213	293	261	345
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.72	0.63	1.07	0.51	1.20
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	5	7	3	<3	4
C29 - C36 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg	5	7	3	<3	4
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
>C10 - C16 Fraction	----	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
>C16 - C34 Fraction	----	3	mg/kg	7	8	4	<3	5
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	7	8	4	<3	5
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg	<1	1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg	0.6	0.8	0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM15 0-0.5	GM15 0.5-1.0	GM3 0-0-5	GM3 0.5-1.0	GM5 0-0.5
			Sampling date / time	26-Sep-2022 14:40	26-Sep-2022 14:40	26-Sep-2022 17:30	26-Sep-2022 17:30	26-Sep-2022 18:00
Compound	CAS Number	LOR	Unit	EB2228298-021	EB2228298-022	EB2228298-023	EB2228298-024	EB2228298-025
				Result	Result	Result	Result	Result
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	----
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	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM15 0-0.5	GM15 0.5-1.0	GM3 0-0-5	GM3 0.5-1.0	GM5 0-0.5
				Sampling date / time	26-Sep-2022 14:40	26-Sep-2022 14:40	26-Sep-2022 17:30	26-Sep-2022 17:30	26-Sep-2022 18:00
Compound	CAS Number	LOR	Unit		EB2228298-021	EB2228298-022	EB2228298-023	EB2228298-024	EB2228298-025
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
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	0.50	µg/kg		----	----	<0.50	<0.50	----
trans-Chlordane	5103-74-2	0.50	µg/kg		----	----	<0.50	<0.50	----
^ Total Chlordane (sum)	----	0.50	µg/kg		----	----	<0.50	<0.50	----
Oxychlordane	27304-13-8	0.50	µg/kg		----	----	<0.50	<0.50	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		----	----	<0.50	<0.50	----
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	<5	<4	<5
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<5	<4	<5
Fluorene	86-73-7	4	µg/kg		<4	<4	<5	<4	<5
Phenanthrene	85-01-8	4	µg/kg		8	5	11	5	7
Anthracene	120-12-7	4	µg/kg		<4	<4	<5	<4	<5
Fluoranthene	206-44-0	4	µg/kg		9	5	15	7	10
Pyrene	129-00-0	4	µg/kg		11	7	15	7	10
Benz(a)anthracene	56-55-3	4	µg/kg		5	4	8	<4	5
Chrysene	218-01-9	4	µg/kg		6	4	11	5	7
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		7	5	10	5	7
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<5	<4	<5
Benzo(e)pyrene	192-97-2	4	µg/kg		5	4	8	<4	<5
Benzo(a)pyrene	50-32-8	4	µg/kg		5	5	8	4	5
Perylene	198-55-0	4	µg/kg		<4	<4	7	<4	<5
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		5	4	8	4	<5
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	<5	<4	<5
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	5	<4	<5
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		61	43	106	37	51

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM15 0-0.5	GM15 0.5-1.0	GM3 0-0-5	GM3 0.5-1.0	GM5 0-0.5
			Sampling date / time	26-Sep-2022 14:40	26-Sep-2022 14:40	26-Sep-2022 17:30	26-Sep-2022 17:30	26-Sep-2022 18:00
Compound	CAS Number	LOR	Unit	EB2228298-021	EB2228298-022	EB2228298-023	EB2228298-024	EB2228298-025
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	6	6	10	4	6
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	9	8	13	7	9
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	11	11	15	10	11
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	<0.001	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	<0.0002	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM15 0-0.5	GM15 0.5-1.0	GM3 0-0-5	GM3 0.5-1.0	GM5 0-0.5
			Sampling date / time	26-Sep-2022 14:40	26-Sep-2022 14:40	26-Sep-2022 17:30	26-Sep-2022 17:30	26-Sep-2022 18:00
Compound	CAS Number	LOR	Unit	EB2228298-021	EB2228298-022	EB2228298-023	EB2228298-024	EB2228298-025
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.005	mg/kg	----	----	<0.006	<0.005	----
Azinphos-methyl	86-50-0	0.005	mg/kg	----	----	<0.006	<0.005	----
Chlorfenvinphos	470-90-6	0.005	mg/kg	----	----	<0.006	<0.005	----
Coumaphos	56-72-4	0.002	mg/kg	----	----	<0.003	<0.002	----
Diazinon	333-41-5	0.002	mg/kg	----	----	<0.003	<0.002	----
Dimethoate	60-51-5	0.004	mg/kg	----	----	<0.006	<0.004	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM15 0-0.5	GM15 0.5-1.0	GM3 0-0-5	GM3 0.5-1.0	GM5 0-0.5
				Sampling date / time	26-Sep-2022 14:40	26-Sep-2022 14:40	26-Sep-2022 17:30	26-Sep-2022 17:30	26-Sep-2022 18:00
Compound	CAS Number	LOR	Unit		EB2228298-021	EB2228298-022	EB2228298-023	EB2228298-024	EB2228298-025
					Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued									
Disulfoton	298-04-4	0.01	mg/kg		----	----	<0.02	<0.01	----
Ethoprophos	13194-48-4	0.002	mg/kg		----	----	<0.003	<0.002	----
Fenamiphos	22224-92-6	0.002	mg/kg		----	----	<0.003	<0.002	----
Fenitrothion	122-14-5	0.5	mg/kg		----	----	<0.6	<0.5	----
Fensulfothion	115-90-2	0.005	mg/kg		----	----	<0.005	<0.005	----
Fenthion	55-38-9	0.010	mg/kg		----	----	<0.016	<0.010	----
Malathion	121-75-5	0.005	mg/kg		----	----	<0.006	<0.005	----
^ Mevinphos	7786-34-7	0.005	mg/kg		----	----	<0.006	<0.005	----
Monocrotophos	6923-22-4	0.005	mg/kg		----	----	<0.006	<0.005	----
Omethoate	1113-02-6	0.002	mg/kg		----	----	<0.003	<0.002	----
Parathion	56-38-2	0.05	mg/kg		----	----	<0.06	<0.05	----
Parathion-methyl	298-00-0	0.5	mg/kg		----	----	<0.6	<0.5	----
Phorate	298-02-2	0.02	mg/kg		----	----	<0.03	<0.02	----
Pirimiphos-methyl	29232-93-7	0.002	mg/kg		----	----	<0.003	<0.002	----
Sulfotep	3689-24-5	0.001	mg/kg		----	----	<0.002	<0.001	----
Tetrachlorvinphos	22248-79-9	0.002	mg/kg		----	----	<0.003	<0.002	----
Triazophos	24017-47-8	0.001	mg/kg		----	----	<0.002	<0.001	----
EP234B: Thiocarbamates and Carbamates									
Aldicarb	116-06-3	0.01	mg/kg		----	----	<0.02	<0.01	----
Bendiocarb	22781-23-3	1	mg/kg		----	----	<1	<1	----
Benomyl	17804-35-2	0.005	mg/kg		----	----	<0.005	<0.005	----
Carbaryl	63-25-2	0.002	mg/kg		----	----	<0.003	<0.002	----
Carbofuran	1563-66-2	0.002	mg/kg		----	----	<0.003	<0.002	----
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg		----	----	<0.006	<0.005	----
Methiocarb	2032-65-7	0.002	mg/kg		----	----	<0.003	<0.002	----
Methomyl	16752-77-5	0.002	mg/kg		----	----	<0.003	<0.002	----
Molinate	2212-67-1	0.02	mg/kg		----	----	<0.03	<0.02	----
Oxamyl	23135-22-0	0.002	mg/kg		----	----	<0.003	<0.002	----
Thiobencarb	28249-77-6	0.002	mg/kg		----	----	<0.003	<0.002	----
Thiodicarb	59669-26-0	0.002	mg/kg		----	----	<0.003	<0.002	----
EP234D: Triazinone Herbicides									
Hexazinone	51235-04-2	0.004	mg/kg		----	----	<0.006	<0.004	----
Metribuzin	21087-64-9	0.004	mg/kg		----	----	<0.006	<0.004	----
EP234E: Conazole and Aminopyrimidine Fungicides									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM15 0-0.5	GM15 0.5-1.0	GM3 0-0-5	GM3 0.5-1.0	GM5 0-0.5
				Sampling date / time	26-Sep-2022 14:40	26-Sep-2022 14:40	26-Sep-2022 17:30	26-Sep-2022 17:30	26-Sep-2022 18:00
Compound	CAS Number	LOR	Unit		EB2228298-021	EB2228298-022	EB2228298-023	EB2228298-024	EB2228298-025
					Result	Result	Result	Result	Result
EP234E: Conazole and Aminopyrimidine Fungicides - Continued									
Cyproconazole	94361-06-5	0.004	mg/kg		----	----	<0.006	<0.004	----
Flusilazole	85509-19-9	0.004	mg/kg		----	----	<0.006	<0.004	----
Hexaconazole	79983-71-4	0.004	mg/kg		----	----	<0.006	<0.004	----
Paclobutrazole	76738-62-0	0.01	mg/kg		----	----	<0.02	<0.01	----
Propiconazole	60207-90-1	0.01	mg/kg		----	----	<0.02	<0.01	----
Tebuconazole	107534-96-3	0.002	mg/kg		----	----	<0.003	<0.002	----
Cyprodinil	121552-61-2	0.002	mg/kg		----	----	<0.003	<0.002	----
Pyrimethanil	53112-28-0	0.005	mg/kg		----	----	<0.006	<0.005	----
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides									
Diuron	330-54-1	0.005	mg/kg		----	----	<0.006	<0.005	----
Fluometuron	2164-17-2	0.002	mg/kg		----	----	<0.003	<0.002	----
Tebuthiuron	34014-18-1	0.005	mg/kg		----	----	<0.006	<0.005	----
Bromacil	314-40-9	0.005	mg/kg		----	----	<0.006	<0.005	----
EP234G: Chloracetanilides									
Metolachlor	51218-45-2	0.002	mg/kg		----	----	<0.003	<0.002	----
EP234H: Triazine Herbicides									
Ametryn	834-12-8	0.002	mg/kg		----	----	<0.003	<0.002	----
Atrazine	1912-24-9	0.002	mg/kg		----	----	<0.003	<0.002	----
Cyanazine	21725-46-2	0.005	mg/kg		----	----	<0.006	<0.005	----
Prometryn	7287-19-6	0.002	mg/kg		----	----	<0.003	<0.002	----
Propazine	139-40-2	0.002	mg/kg		----	----	<0.003	<0.002	----
Simazine	122-34-9	0.005	mg/kg		----	----	<0.006	<0.005	----
Terbuthylazine	5915-41-3	0.002	mg/kg		----	----	<0.003	<0.002	----
Terbutryn	886-50-0	0.1	mg/kg		----	----	<0.1	<0.1	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides									
Fenarimol	60168-88-9	0.005	mg/kg		----	----	<0.006	<0.005	----
Irgarol	28159-98-0	0.001	mg/kg		----	----	<0.001	<0.001	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**79.6**	**81.0**	**79.8**	**70.7**	**66.7**
Toluene-D8	2037-26-5	0.2	%		**71.9**	**76.1**	**73.3**	**63.3**	**60.4**
4-Bromofluorobenzene	460-00-4	0.2	%		**82.0**	**91.1**	**82.1**	**74.9**	**69.2**
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		**83.9**	**81.6**	**92.5**	**85.9**	**79.4**
EP130S: Organophosphorus Pesticide Surrogate									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM15 0-0.5	GM15 0.5-1.0	GM3 0-0-5	GM3 0.5-1.0	GM5 0-0.5
				Sampling date / time	26-Sep-2022 14:40	26-Sep-2022 14:40	26-Sep-2022 17:30	26-Sep-2022 17:30	26-Sep-2022 18:00
Compound	CAS Number	LOR	Unit		EB2228298-021	EB2228298-022	EB2228298-023	EB2228298-024	EB2228298-025
					Result	Result	Result	Result	Result
EP130S: Organophosphorus Pesticide Surrogate - Continued									
DEF	78-48-8	10	%		----	----	88.2	86.2	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		----	----	77.3	72.1	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		76.9	82.6	102	89.6	80.7
Anthracene-d10	1719-06-8	10	%		95.0	97.3	108	101	85.2
4-Terphenyl-d14	1718-51-0	10	%		80.2	77.4	113	84.2	84.3
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	----	99.5	100	----
13C8-PFOA	----	0.0002	%		----	----	108	102	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM5 0.5-1.0	TripSpike 1	TripBlank 081717	ALS Control Spike 1	----
			Sampling date / time	26-Sep-2022 18:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	----
Compound	CAS Number	LOR	Unit	EB2228298-026	EB2228298-027	EB2228298-028	EB2228298-029	--------
				Result	Result	Result	Result	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**8.9**	----	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.184**	----	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**114**	----	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**3.37**	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**673**	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**1.08**	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.18**	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**114**	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	**8**	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**35.1**	----	----	----	----
EA150: Particle Sizing								
+75µm	----	1	%	**34**	----	----	----	----
+150µm	----	1	%	**23**	----	----	----	----
+300µm	----	1	%	**12**	----	----	----	----
+425µm	----	1	%	**7**	----	----	----	----
+600µm	----	1	%	**4**	----	----	----	----
+1180µm	----	1	%	**2**	----	----	----	----
+2.36mm	----	1	%	**1**	----	----	----	----
+4.75mm	----	1	%	<1	----	----	----	----
+9.5mm	----	1	%	<1	----	----	----	----
+19.0mm	----	1	%	<1	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM5 0.5-1.0	TripSpike 1	TripBlank 081717	ALS Control Spike 1	----
				Sampling date / time	26-Sep-2022 18:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	----
Compound	CAS Number	LOR	Unit		EB2228298-026	EB2228298-027	EB2228298-028	EB2228298-029	--------
					Result	Result	Result	Result	----
EA150: Particle Sizing - Continued									
+37.5mm	----	1	%		<1	----	----	----	----
+75.0mm	----	1	%		<1	----	----	----	----
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		**28**	----	----	----	----
Silt (2-60 µm)	----	1	%		**36**	----	----	----	----
Sand (0.06-2.00 mm)	----	1	%		**35**	----	----	----	----
Gravel (>2mm)	----	1	%		**1**	----	----	----	----
Cobbles (>6cm)	----	1	%		<1	----	----	----	----
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		**2.53**	----	----	----	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		**7400**	----	----	----	----
Iron	7439-89-6	50	mg/kg		**20000**	----	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	----	----	----	----
Arsenic	7440-38-2	1.00	mg/kg		**6.65**	----	----	----	----
Cadmium	7440-43-9	0.1	mg/kg		<0.1	----	----	----	----
Chromium	7440-47-3	1.0	mg/kg		**11.6**	----	----	----	----
Copper	7440-50-8	1.0	mg/kg		**18.4**	----	----	----	----
Cobalt	7440-48-4	0.5	mg/kg		**8.8**	----	----	----	----
Lead	7439-92-1	1.0	mg/kg		**6.2**	----	----	----	----
Manganese	7439-96-5	10	mg/kg		**286**	----	----	----	----
Nickel	7440-02-0	1.0	mg/kg		**7.6**	----	----	----	----
Selenium	7782-49-2	0.1	mg/kg		**0.6**	----	----	----	----
Silver	7440-22-4	0.1	mg/kg		<0.1	----	----	----	----
Vanadium	7440-62-2	2.0	mg/kg		**43.3**	----	----	----	----
Zinc	7440-66-6	1.0	mg/kg		**30.1**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		**0.02**	----	----	----	----
EK055: Ammonia as N									
Ammonia as N	7664-41-7	1	mg/kg		**28**	----	----	----	----
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									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM5 0.5-1.0	TripSpike 1	TripBlank 081717	ALS Control Spike 1	----
			Sampling date / time	26-Sep-2022 18:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	----
Compound	CAS Number	LOR	Unit	EB2228298-026	EB2228298-027	EB2228298-028	EB2228298-029	--------
				Result	Result	Result	Result	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	**410**	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ **Total Nitrogen as N**	----	20	mg/kg	**410**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	**293**	----	----	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	**0.54**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	**55**	<10	**49**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	**62**	<10	**56**	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	----	**37**	<10	**33**	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	**0.8**	<0.2	**0.8**	----
Toluene	108-88-3	0.5	mg/kg	----	**10.4**	<0.5	**9.4**	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	**1.9**	<0.5	**1.8**	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	**8.6**	<0.5	**8.2**	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	**3.7**	<0.5	**3.1**	----
^ **Sum of BTEX**	----	0.2	mg/kg	----	**25.4**	<0.2	**23.3**	----
^ **Total Xylenes**	----	0.5	mg/kg	----	**12.3**	<0.5	**11.3**	----
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	<1	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	----	----	----	----
C10 - C14 Fraction	----	3	mg/kg	**4**	----	----	----	----
C15 - C28 Fraction	----	3	mg/kg	**7**	----	----	----	----
C29 - C36 Fraction	----	5	mg/kg	<5	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg	**11**	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	----	----	----	----
>C10 - C16 Fraction	----	3	mg/kg	**5**	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	----	----	----	----
>C16 - C34 Fraction	----	3	mg/kg	**7**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM5 0.5-1.0	TripSpike 1	TripBlank 081717	ALS Control Spike 1	----
			Sampling date / time	26-Sep-2022 18:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	----
Compound	CAS Number	LOR	Unit	EB2228298-026	EB2228298-027	EB2228298-028	EB2228298-029	--------
				Result	Result	Result	Result	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons - Continued								
>C34 - C40 Fraction	----	5	mg/kg	<5	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	**12**	----	----	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	----	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	----	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
Naphthalene	91-20-3	0.2	mg/kg	<0.2	----	----	----	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	----	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg	<1	----	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	----	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	----	----	----	----
Acenaphthylene	208-96-8	4	µg/kg	<4	----	----	----	----
Acenaphthene	83-32-9	4	µg/kg	<4	----	----	----	----
Fluorene	86-73-7	4	µg/kg	<4	----	----	----	----
Phenanthrene	85-01-8	4	µg/kg	<4	----	----	----	----
Anthracene	120-12-7	4	µg/kg	<4	----	----	----	----
Fluoranthene	206-44-0	4	µg/kg	<4	----	----	----	----
Pyrene	129-00-0	4	µg/kg	<4	----	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	<4	----	----	----	----
Chrysene	218-01-9	4	µg/kg	<4	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	----	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	----	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	----	----	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	<4	----	----	----	----
Perylene	198-55-0	4	µg/kg	<4	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<4	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM5 0.5-1.0	TripSpike 1	TripBlank 081717	ALS Control Spike 1	----
			Sampling date / time	26-Sep-2022 18:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	----
Compound	CAS Number	LOR	Unit	EB2228298-026	EB2228298-027	EB2228298-028	EB2228298-029	--------
				Result	Result	Result	Result	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	----	----	----	----
Coronene	191-07-1	5	µg/kg	<5	----	----	----	----
^ Sum of PAHs	----	4	µg/kg	<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	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	96.6	92.5	88.8	----
Toluene-D8	2037-26-5	0.2	%	----	98.2	97.2	95.0	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	103	117	113	----
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	68.6	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	70.4	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	82.8	----	----	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	69.0	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	85.3	----	----	----	----
Anthracene-d10	1719-06-8	10	%	94.4	----	----	----	----
4-Terphenyl-d14	1718-51-0	10	%	77.3	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	145
Toluene-D8	2037-26-5	42	144
4-Bromofluorobenzene	460-00-4	58	142
EP090S: Organotin Surrogate			
Tripropyltin	----	35	130
EP130S: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	14	102
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	119
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
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(SOIL) EP132B: Polynuclear Aromatic Hydrocarbons

(SOIL) EP132T: Base/Neutral Extractable Surrogates

(SOIL) EK055: Ammonia as N

(SOIL) EP130A: Organophosphorus Pesticides (Ultra-trace)

(SOIL) EP130S: Organophosphorus Pesticide Surrogate

(SOIL) EP131A: Organochlorine Pesticides

(SOIL) EP131S: OC Pesticide Surrogate

(SOIL) EP234A: OP Pesticides

(SOIL) EP234B: Thiocarbamates and Carbamates

(SOIL) EP234E: Conazole and Aminopyrimidine Fungicides

(SOIL) EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides

(SOIL) EP234H: Triazine Herbicides

(SOIL) EP234G: Chloracetanilides

(SOIL) EP234I: Miscellaneous (ESI Positive Mode) Pesticides

(SOIL) EP234D: Triazinone Herbicides

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2228441**	Page	: 1 of 31
Client	: **BMT COMMERCIAL AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: CRAIG HEATHERINGTON	Contact	: Kimberly Hilton-Barber
Address	: PO BOX 203 SPRING HILL BRISBANE QLD 4004	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 7 3831 6744	Telephone	: +61-7-3243 7222
Project	: A11637 Gladstone - Sediment Quality	Date Samples Received	: 29-Sep-2022 10:30
Order number	: ----	Date Analysis Commenced	: 29-Sep-2022
C-O-C number	: ----	Issue Date	: 24-Oct-2022 14:59
Sampler	: BRAD HILES		
Site	: ----		
Quote number	: BN/523/22		
No. of samples received	: 16		
No. of samples analysed	: 16		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, 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
Layla Hafner	Acid Sulphate Soils - Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP090-Organotin: Sample 'GM7 0.5-1.0' shows poor MBT matrix spike recovery due to matrix interference.
- EP071-SD-SV (TPH Semivolatiles): Sample 'VA10 0-0.5' shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EA150H: Soil particle density results fell outside the scope of AS1289.3.6.3. Results should be scrutinised accordingly.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP080-SD: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP131A: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP234: Poor matrix spike recovery for compounds due to matrix interferences and high matrix spike recovery has been noted for compounds due to ion enhancement.
- **Specialised Organics analysis is 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
- EG020SD-Total Metals in Sediments by ICP-MS: Sample 'GM7 0-0.5' (EB2228441-001) shows poor duplicate results due to sample matrix interference. Confirmed by visual inspection.
- EG020SD-Total Metals in Sediments by ICP-MS: Sample 'VA10 0-0.5' (EB2228441-011) shows poor duplicate results due to sample matrix interference. Confirmed by visual inspection.
- EG020T-Total Metals by ICP-MS: Sample 'GM7 0.5-1.0' (EB2228441-002) shows poor matrix spike recovery due to sample matrix interference. Confirmed by re-extraction and re-analysis.
- EG005T (Total Metals by ICP-AES): VA10 0-0.5 (EB2228441-011) shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- EK061G (Total Kjeldahl Nitrogen as N) / EK067G (Total Phosphorus as P) / EK062 (Total Nitrogen as N): Unable to perform analysis for samples EB2228441-001 to 013 due to incompatible sample matrix.
- 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'.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM7 0-0.5	GM7 0.5-1.0	GM8 0-0.5	GM11 0-0.5	GM10 0-0.5
			Sampling date / time	27-Sep-2022 09:36	27-Sep-2022 09:36	27-Sep-2022 10:00	27-Sep-2022 10:10	27-Sep-2022 10:40
Compound	CAS Number	LOR	Unit	EB2228441-001	EB2228441-002	EB2228441-003	EB2228441-004	EB2228441-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.6	9.0	8.7	8.8	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	0.452	0.179	0.200	0.161	0.276
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	282	112	125	100	172
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	3.52	1.92	2.92	1.31	2.00
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	704	384	584	262	400
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.13	0.62	0.94	0.42	0.64
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	0.45	0.18	0.20	0.16	0.28
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	282	112	125	100	172
Liming Rate excluding ANC	----	1	kg CaCO3/t	21	8	9	8	13
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	42.2	25.1	34.8	40.3	44.8
EA150: Particle Sizing								
+75µm	----	1	%	21	50	10	40	24
+150µm	----	1	%	12	42	6	29	16
+300µm	----	1	%	7	30	4	19	11
+425µm	----	1	%	5	17	3	16	8
+600µm	----	1	%	4	8	2	12	6
+1180µm	----	1	%	2	2	1	6	2
+2.36mm	----	1	%	2	1	<1	2	<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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM7 0-0.5	GM7 0.5-1.0	GM8 0-0.5	GM11 0-0.5	GM10 0-0.5
			Sampling date / time	27-Sep-2022 09:36	27-Sep-2022 09:36	27-Sep-2022 10:00	27-Sep-2022 10:10	27-Sep-2022 10:40
Compound	CAS Number	LOR	Unit	EB2228441-001	EB2228441-002	EB2228441-003	EB2228441-004	EB2228441-005
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+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	19	46	29	36
Silt (2-60 µm)	----	1	%	38	30	44	29	37
Sand (0.06-2.00 mm)	----	1	%	20	49	9	39	26
Gravel (>2mm)	----	1	%	2	2	1	3	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.51	2.43	2.62	2.62	2.66
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	8890	5670	5390	6840	9140
Iron	7439-89-6	50	mg/kg	20600	12700	11800	18100	25700
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	1.00	mg/kg	7.90	4.58	7.65	4.89	7.45
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg	15.2	9.9	14.9	11.9	15.2
Copper	7440-50-8	1.0	mg/kg	28.3	22.8	29.0	23.7	33.2
Cobalt	7440-48-4	0.5	mg/kg	11.4	10.5	11.7	12.0	13.6
Lead	7439-92-1	1.0	mg/kg	6.5	4.0	5.7	3.8	6.6
Manganese	7439-96-5	10	mg/kg	226	283	352	440	581
Nickel	7440-02-0	1.0	mg/kg	10.4	7.6	9.5	8.5	9.8
Selenium	7782-49-2	0.1	mg/kg	0.8	0.5	0.7	0.5	0.8
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	47.4	43.5	56.3	49.8	78.8
Zinc	7440-66-6	1.0	mg/kg	38.7	21.7	37.2	29.9	37.3
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.02	<0.01	0.02	0.01	0.01
EK055: Ammonia as N								
Ammonia as N	7664-41-7	1	mg/kg	18	6	15	14	20
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.2	<0.1	0.3	0.2	0.3
EP003: Total Organic Carbon (TOC) in Soil								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM7 0-0.5	GM7 0.5-1.0	GM8 0-0.5	GM11 0-0.5	GM10 0-0.5
			Sampling date / time	27-Sep-2022 09:36	27-Sep-2022 09:36	27-Sep-2022 10:00	27-Sep-2022 10:10	27-Sep-2022 10:40
Compound	CAS Number	LOR	Unit	EB2228441-001	EB2228441-002	EB2228441-003	EB2228441-004	EB2228441-005
				Result	Result	Result	Result	Result
EP003: Total Organic Carbon (TOC) in Soil - Continued								
Total Organic Carbon	----	0.02	%	0.89	0.28	0.62	0.40	0.47
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	5	6
C15 - C28 Fraction	----	3	mg/kg	24	4	10	18	15
C29 - C36 Fraction	----	5	mg/kg	28	8	14	15	19
^ C10 - C36 Fraction (sum)	----	3	mg/kg	58	12	27	38	40
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
>C10 - C16 Fraction	----	3	mg/kg	5	<3	<3	3	4
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	<3.0	<3.0	<3.0	<3.0
>C16 - C34 Fraction	----	3	mg/kg	44	10	20	28	28
>C34 - C40 Fraction	----	5	mg/kg	14	<5	7	9	9
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	63	10	27	40	41
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg	1	<1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Bromophos-ethyl	4824-78-6	10	µg/kg	----	----	<10	----	----
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	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM7 0-0.5	GM7 0.5-1.0	GM8 0-0.5	GM11 0-0.5	GM10 0-0.5
				Sampling date / time	27-Sep-2022 09:36	27-Sep-2022 09:36	27-Sep-2022 10:00	27-Sep-2022 10:10	27-Sep-2022 10:40
Compound	CAS Number	LOR	Unit		EB2228441-001	EB2228441-002	EB2228441-003	EB2228441-004	EB2228441-005
					Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued									
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	----	----
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	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM7 0-0.5	GM7 0.5-1.0	GM8 0-0.5	GM11 0-0.5	GM10 0-0.5
				Sampling date / time	27-Sep-2022 09:36	27-Sep-2022 09:36	27-Sep-2022 10:00	27-Sep-2022 10:10	27-Sep-2022 10:40
Compound	CAS Number	LOR	Unit		EB2228441-001	EB2228441-002	EB2228441-003	EB2228441-004	EB2228441-005
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
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	0.50	µg/kg		----	----	<0.50	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		----	----	<0.50	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg		----	----	<0.50	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		----	----	<0.50	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		----	----	<0.50	----	----
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	6
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg		4	<4	<4	<4	6
Pyrene	129-00-0	4	µg/kg		5	<4	<4	<4	7
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	5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		5	<4	<4	<4	6
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	5
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		14	<4	<4	<4	51
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	<4	<4	6
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		5	5	5	5	8
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		10	10	10	10	11
EP234A: OP Pesticides									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM7 0-0.5	GM7 0.5-1.0	GM8 0-0.5	GM11 0-0.5	GM10 0-0.5
				Sampling date / time	27-Sep-2022 09:36	27-Sep-2022 09:36	27-Sep-2022 10:00	27-Sep-2022 10:10	27-Sep-2022 10:40
Compound	CAS Number	LOR	Unit		EB2228441-001	EB2228441-002	EB2228441-003	EB2228441-004	EB2228441-005
					Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued									
Azinphos-ethyl	2642-71-9	0.005	mg/kg		----	----	<0.005	----	----
Azinphos-methyl	86-50-0	0.005	mg/kg		----	----	<0.005	----	----
Chlorfenvinphos	470-90-6	0.005	mg/kg		----	----	<0.005	----	----
Coumaphos	56-72-4	0.002	mg/kg		----	----	<0.002	----	----
Diazinon	333-41-5	0.002	mg/kg		----	----	<0.002	----	----
Dimethoate	60-51-5	0.004	mg/kg		----	----	<0.004	----	----
Disulfoton	298-04-4	0.01	mg/kg		----	----	<0.01	----	----
Ethoprophos	13194-48-4	0.002	mg/kg		----	----	<0.002	----	----
Fenamiphos	22224-92-6	0.002	mg/kg		----	----	<0.002	----	----
Fenitrothion	122-14-5	0.5	mg/kg		----	----	<0.5	----	----
Fensulfothion	115-90-2	0.005	mg/kg		----	----	<0.005	----	----
Fenthion	55-38-9	0.010	mg/kg		----	----	<0.010	----	----
Malathion	121-75-5	0.005	mg/kg		----	----	<0.005	----	----
^ Mevinphos	7786-34-7	0.005	mg/kg		----	----	<0.005	----	----
Monocrotophos	6923-22-4	0.005	mg/kg		----	----	<0.005	----	----
Omethoate	1113-02-6	0.002	mg/kg		----	----	<0.002	----	----
Parathion	56-38-2	0.05	mg/kg		----	----	<0.05	----	----
Parathion-methyl	298-00-0	0.5	mg/kg		----	----	<0.5	----	----
Phorate	298-02-2	0.02	mg/kg		----	----	<0.02	----	----
Pirimiphos-methyl	29232-93-7	0.002	mg/kg		----	----	<0.002	----	----
Sulfotep	3689-24-5	0.001	mg/kg		----	----	<0.001	----	----
Tetrachlorvinphos	22248-79-9	0.002	mg/kg		----	----	<0.002	----	----
Triazophos	24017-47-8	0.001	mg/kg		----	----	<0.001	----	----
EP234B: Thiocarbamates and Carbamates									
Aldicarb	116-06-3	0.01	mg/kg		----	----	<0.01	----	----
Bendiocarb	22781-23-3	1	mg/kg		----	----	<1	----	----
Benomyl	17804-35-2	0.005	mg/kg		----	----	<0.005	----	----
Carbaryl	63-25-2	0.002	mg/kg		----	----	<0.002	----	----
Carbofuran	1563-66-2	0.002	mg/kg		----	----	<0.002	----	----
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg		----	----	<0.005	----	----
Methiocarb	2032-65-7	0.002	mg/kg		----	----	<0.002	----	----
Methomyl	16752-77-5	0.002	mg/kg		----	----	<0.002	----	----
Molinate	2212-67-1	0.02	mg/kg		----	----	<0.02	----	----
Oxamyl	23135-22-0	0.002	mg/kg		----	----	<0.002	----	----
Thiobencarb	28249-77-6	0.002	mg/kg		----	----	<0.002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM7 0-0.5	GM7 0.5-1.0	GM8 0-0.5	GM11 0-0.5	GM10 0-0.5
			Sampling date / time	27-Sep-2022 09:36	27-Sep-2022 09:36	27-Sep-2022 10:00	27-Sep-2022 10:10	27-Sep-2022 10:40
Compound	CAS Number	LOR	Unit	EB2228441-001	EB2228441-002	EB2228441-003	EB2228441-004	EB2228441-005
				Result	Result	Result	Result	Result
EP234B: Thiocarbamates and Carbamates - Continued								
Thiodicarb	59669-26-0	0.002	mg/kg	----	----	<0.002	----	----
EP234D: Triazinone Herbicides								
Hexazinone	51235-04-2	0.004	mg/kg	----	----	<0.004	----	----
Metribuzin	21087-64-9	0.004	mg/kg	----	----	<0.004	----	----
EP234E: Conazole and Aminopyrimidine Fungicides								
Cyproconazole	94361-06-5	0.004	mg/kg	----	----	<0.004	----	----
Flusilazole	85509-19-9	0.004	mg/kg	----	----	<0.004	----	----
Hexaconazole	79983-71-4	0.004	mg/kg	----	----	<0.004	----	----
Paclobutrazole	76738-62-0	0.01	mg/kg	----	----	<0.01	----	----
Propiconazole	60207-90-1	0.01	mg/kg	----	----	<0.01	----	----
Tebuconazole	107534-96-3	0.002	mg/kg	----	----	<0.002	----	----
Cyprodinil	121552-61-2	0.002	mg/kg	----	----	<0.002	----	----
Pyrimethanil	53112-28-0	0.005	mg/kg	----	----	<0.005	----	----
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides								
Diuron	330-54-1	0.005	mg/kg	----	----	<0.005	----	----
Fluometuron	2164-17-2	0.002	mg/kg	----	----	<0.002	----	----
Tebuthiuron	34014-18-1	0.005	mg/kg	----	----	<0.005	----	----
Bromacil	314-40-9	0.005	mg/kg	----	----	<0.005	----	----
EP234G: Chloracetanilides								
Metolachlor	51218-45-2	0.002	mg/kg	----	----	<0.002	----	----
EP234H: Triazine Herbicides								
Ametryn	834-12-8	0.002	mg/kg	----	----	<0.002	----	----
Atrazine	1912-24-9	0.002	mg/kg	----	----	<0.002	----	----
Cyanazine	21725-46-2	0.005	mg/kg	----	----	<0.005	----	----
Prometryn	7287-19-6	0.002	mg/kg	----	----	<0.002	----	----
Propazine	139-40-2	0.002	mg/kg	----	----	<0.002	----	----
Simazine	122-34-9	0.005	mg/kg	----	----	<0.005	----	----
Terbuthylazine	5915-41-3	0.002	mg/kg	----	----	<0.002	----	----
Terbutryn	886-50-0	0.1	mg/kg	----	----	<0.1	----	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
Fenarimol	60168-88-9	0.005	mg/kg	----	----	<0.005	----	----
Irgarol	28159-98-0	0.001	mg/kg	----	----	<0.001	----	----
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**71.9**	**94.8**	**90.0**	**86.2**	**92.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM7 0-0.5	GM7 0.5-1.0	GM8 0-0.5	GM11 0-0.5	GM10 0-0.5
				Sampling date / time	27-Sep-2022 09:36	27-Sep-2022 09:36	27-Sep-2022 10:00	27-Sep-2022 10:10	27-Sep-2022 10:40
Compound	CAS Number	LOR	Unit		EB2228441-001	EB2228441-002	EB2228441-003	EB2228441-004	EB2228441-005
					Result	Result	Result	Result	Result
EP080-SD: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	0.2	%		55.5	94.0	80.7	68.2	78.1
4-Bromofluorobenzene	460-00-4	0.2	%		64.2	91.6	87.7	77.3	84.4
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		107	109	106	88.6	112
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		----	----	68.4	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		----	----	57.4	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		79.9	77.4	85.1	91.4	86.1
Anthracene-d10	1719-06-8	10	%		83.9	91.5	108	111	101
4-Terphenyl-d14	1718-51-0	10	%		83.9	78.6	81.1	80.3	84.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM6 0-0.5	GM12 0-0.5	GM13 0-0.5	UA2 0-0.5	UA2 0.5-1.0
			Sampling date / time	27-Sep-2022 11:00	27-Sep-2022 12:20	27-Sep-2022 12:40	27-Sep-2022 16:56	27-Sep-2022 16:56
Compound	CAS Number	LOR	Unit	EB2228441-006	EB2228441-007	EB2228441-008	EB2228441-009	EB2228441-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.9	8.6	8.2	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	0.199	0.580	0.662	0.314	0.332
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	124	362	413	196	207
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	2.29	1.64	1.12	5.27	4.94
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	458	327	223	1050	986
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.74	0.52	0.36	1.69	1.58
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	0.23	0.42	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	144	264	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	11	20	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.20	0.58	0.66	0.31	0.33
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	124	362	413	196	207
Liming Rate excluding ANC	----	1	kg CaCO3/t	9	27	31	15	16
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	44.2	31.7	36.6	46.3	31.8
EA150: Particle Sizing								
+75µm	----	1	%	37	31	35	44	26
+150µm	----	1	%	18	12	22	34	18
+300µm	----	1	%	2	3	16	19	12
+425µm	----	1	%	<1	2	12	11	7
+600µm	----	1	%	<1	<1	10	6	4
+1180µm	----	1	%	<1	<1	3	2	1
+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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM6 0-0.5	GM12 0-0.5	GM13 0-0.5	UA2 0-0.5	UA2 0.5-1.0
			Sampling date / time	27-Sep-2022 11:00	27-Sep-2022 12:20	27-Sep-2022 12:40	27-Sep-2022 16:56	27-Sep-2022 16:56
Compound	CAS Number	LOR	Unit	EB2228441-006	EB2228441-007	EB2228441-008	EB2228441-009	EB2228441-010
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+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	%	35	29	22	27	24
Silt (2-60 µm)	----	1	%	26	39	41	26	48
Sand (0.06-2.00 mm)	----	1	%	39	32	36	46	28
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	2.68	2.42	2.30	2.54	2.48
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	5570	5820	7120	4570	6800
Iron	7439-89-6	50	mg/kg	13500	18200	20800	14200	17800
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	8.12	8.10	9.64	13.0	7.58
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.5
Chromium	7440-47-3	1.0	mg/kg	16.3	11.2	15.7	24.1	15.1
Copper	7440-50-8	1.0	mg/kg	27.1	16.2	25.6	29.3	28.9
Cobalt	7440-48-4	0.5	mg/kg	11.9	8.1	11.9	11.4	12.4
Lead	7439-92-1	1.0	mg/kg	5.7	5.0	5.8	16.8	12.3
Manganese	7439-96-5	10	mg/kg	322	223	240	318	2210
Nickel	7440-02-0	1.0	mg/kg	10.2	6.5	9.8	12.1	12.2
Selenium	7782-49-2	0.1	mg/kg	0.8	0.5	0.6	0.8	0.8
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	55.3	79.4	54.6	59.8	60.8
Zinc	7440-66-6	1.0	mg/kg	41.4	20.6	33.2	79.5	33.1
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.02	0.01	0.01	0.03	0.01
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	----	<1	<1
EK055: Ammonia as N								
Ammonia as N	7664-41-7	1	mg/kg	23	4	2	3	1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM6 0-0.5	GM12 0-0.5	GM13 0-0.5	UA2 0-0.5	UA2 0.5-1.0
			Sampling date / time	27-Sep-2022 11:00	27-Sep-2022 12:20	27-Sep-2022 12:40	27-Sep-2022 16:56	27-Sep-2022 16:56
Compound	CAS Number	LOR	Unit	EB2228441-006	EB2228441-007	EB2228441-008	EB2228441-009	EB2228441-010
				Result	Result	Result	Result	Result
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser - Continued								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	<0.1
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	**0.59**	**0.55**	**0.72**	**1.45**	**1.42**
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	**5**	**3**	<3	**16**	**5**
C15 - C28 Fraction	----	3	mg/kg	**12**	**5**	**12**	**72**	**28**
C29 - C36 Fraction	----	5	mg/kg	**16**	**15**	**16**	**91**	**27**
^ C10 - C36 Fraction (sum)	----	3	mg/kg	**33**	**23**	**28**	**179**	**60**
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
>C10 - C16 Fraction	----	3	mg/kg	**4**	<3	<3	**16**	**4**
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	<3.0	<3.0	<3.0	<3.0
>C16 - C34 Fraction	----	3	mg/kg	**24**	**16**	**24**	**134**	**46**
>C34 - C40 Fraction	----	5	mg/kg	**8**	**6**	**8**	**59**	**20**
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	**36**	**22**	**32**	**209**	**70**
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	<1	**4**	<1
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	**3.3**	<0.5
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Bromophos-ethyl	4824-78-6	10	µg/kg	----	<10	----	<10	<10
Carbophenothion	786-19-6	10	µg/kg	----	<10	----	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg	----	<10.0	----	<10.0	<10.0

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM6 0-0.5	GM12 0-0.5	GM13 0-0.5	UA2 0-0.5	UA2 0.5-1.0
			Sampling date / time	27-Sep-2022 11:00	27-Sep-2022 12:20	27-Sep-2022 12:40	27-Sep-2022 16:56	27-Sep-2022 16:56
Compound	CAS Number	LOR	Unit	EB2228441-006	EB2228441-007	EB2228441-008	EB2228441-009	EB2228441-010
				Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	----	<10	----	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg	----	<10	----	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg	----	<10	----	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg	----	<10	----	<10	<10
Diazinon	333-41-5	10	µg/kg	----	<10	----	<10	<10
Dichlorvos	62-73-7	10	µg/kg	----	<10	----	<10	<10
Dimethoate	60-51-5	10	µg/kg	----	<10	----	<10	<10
Ethion	563-12-2	10	µg/kg	----	<10	----	<10	<10
Fenamiphos	22224-92-6	10	µg/kg	----	<10	----	<10	<10
Fenthion	55-38-9	10	µg/kg	----	<10	----	<10	<10
Malathion	121-75-5	10	µg/kg	----	<10	----	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg	----	<10	----	<10	<10
Monocrotophos	6923-22-4	10	µg/kg	----	<10	----	<10	<10
Parathion	56-38-2	10	µg/kg	----	<10	----	<10	<10
Parathion-methyl	298-00-0	10	µg/kg	----	<10	----	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg	----	<10	----	<10	<10
Prothiofos	34643-46-4	10	µg/kg	----	<10	----	<10	<10
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM6 0-0.5	GM12 0-0.5	GM13 0-0.5	UA2 0-0.5	UA2 0.5-1.0
			Sampling date / time	27-Sep-2022 11:00	27-Sep-2022 12:20	27-Sep-2022 12:40	27-Sep-2022 16:56	27-Sep-2022 16:56
Compound	CAS Number	LOR	Unit	EB2228441-006	EB2228441-007	EB2228441-008	EB2228441-009	EB2228441-010
				Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued								
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	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
trans-Chlordane	5103-74-2	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
^ Total Chlordane (sum)	----	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
Oxychlordane	27304-13-8	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg	----	<0.50	----	<0.50	<0.50
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	17	<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	32	<4
Anthracene	120-12-7	4	µg/kg	<4	<4	<4	21	<4
Fluoranthene	206-44-0	4	µg/kg	5	<4	<4	58	<4
Pyrene	129-00-0	4	µg/kg	5	<4	<4	68	<4
Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	<4	43	<4
Chrysene	218-01-9	4	µg/kg	4	<4	<4	37	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	<4	<4	40	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	<4	17	<4
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	<4	30	<4
Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	<4	47	<4
Perylene	198-55-0	4	µg/kg	<4	<4	<4	14	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<4	<4	<4	38	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	<4	<4	6	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	<4	22	<4
Coronene	191-07-1	5	µg/kg	<5	<5	<5	13	<5
^ Sum of PAHs	----	4	µg/kg	19	<4	<4	503	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	<4	<4	66	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	5	5	5	66	5
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	10	10	10	66	10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM6 0-0.5	GM12 0-0.5	GM13 0-0.5	UA2 0-0.5	UA2 0.5-1.0
			Sampling date / time	27-Sep-2022 11:00	27-Sep-2022 12:20	27-Sep-2022 12:40	27-Sep-2022 16:56	27-Sep-2022 16:56
Compound	CAS Number	LOR	Unit	EB2228441-006	EB2228441-007	EB2228441-008	EB2228441-009	EB2228441-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM6 0-0.5	GM12 0-0.5	GM13 0-0.5	UA2 0-0.5	UA2 0.5-1.0
			Sampling date / time	27-Sep-2022 11:00	27-Sep-2022 12:20	27-Sep-2022 12:40	27-Sep-2022 16:56	27-Sep-2022 16:56
Compound	CAS Number	LOR	Unit	EB2228441-006	EB2228441-007	EB2228441-008	EB2228441-009	EB2228441-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.005	mg/kg	----	<0.005	----	<0.005	<0.005
Azinphos-methyl	86-50-0	0.005	mg/kg	----	<0.005	----	<0.005	<0.005
Chlorfenvinphos	470-90-6	0.005	mg/kg	----	<0.005	----	<0.005	<0.005
Coumaphos	56-72-4	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Diazinon	333-41-5	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Dimethoate	60-51-5	0.004	mg/kg	----	<0.004	----	<0.004	<0.004
Disulfoton	298-04-4	0.01	mg/kg	----	<0.01	----	<0.01	<0.01
Ethoprophos	13194-48-4	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Fenamiphos	22224-92-6	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Fenitrothion	122-14-5	0.5	mg/kg	----	<0.5	----	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM6 0-0.5	GM12 0-0.5	GM13 0-0.5	UA2 0-0.5	UA2 0.5-1.0
				Sampling date / time	27-Sep-2022 11:00	27-Sep-2022 12:20	27-Sep-2022 12:40	27-Sep-2022 16:56	27-Sep-2022 16:56
Compound	CAS Number	LOR	Unit		EB2228441-006	EB2228441-007	EB2228441-008	EB2228441-009	EB2228441-010
					Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued									
Fensulfothion	115-90-2	0.005	mg/kg		----	<0.005	----	<0.005	<0.005
Fenthion	55-38-9	0.010	mg/kg		----	<0.010	----	<0.010	<0.010
Malathion	121-75-5	0.005	mg/kg		----	<0.005	----	<0.005	<0.005
^ **Mevinphos**	7786-34-7	0.005	mg/kg		----	<0.005	----	<0.005	<0.005
Monocrotophos	6923-22-4	0.005	mg/kg		----	<0.005	----	<0.005	<0.005
Omethoate	1113-02-6	0.002	mg/kg		----	<0.002	----	<0.002	<0.002
Parathion	56-38-2	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
Parathion-methyl	298-00-0	0.5	mg/kg		----	<0.5	----	<0.5	<0.5
Phorate	298-02-2	0.02	mg/kg		----	<0.02	----	<0.02	<0.02
Pirimiphos-methyl	29232-93-7	0.002	mg/kg		----	<0.002	----	<0.002	<0.002
Sulfotep	3689-24-5	0.001	mg/kg		----	<0.001	----	<0.001	<0.001
Tetrachlorvinphos	22248-79-9	0.002	mg/kg		----	<0.002	----	<0.002	<0.002
Triazophos	24017-47-8	0.001	mg/kg		----	<0.001	----	<0.001	<0.001
EP234B: Thiocarbamates and Carbamates									
Aldicarb	116-06-3	0.01	mg/kg		----	<0.01	----	<0.01	<0.01
Bendiocarb	22781-23-3	1	mg/kg		----	<1	----	<1	<1
Benomyl	17804-35-2	0.005	mg/kg		----	<0.005	----	<0.005	<0.005
Carbaryl	63-25-2	0.002	mg/kg		----	<0.002	----	<0.002	<0.002
Carbofuran	1563-66-2	0.002	mg/kg		----	<0.002	----	<0.002	<0.002
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg		----	<0.005	----	<0.005	<0.005
Methiocarb	2032-65-7	0.002	mg/kg		----	<0.002	----	<0.002	<0.002
Methomyl	16752-77-5	0.002	mg/kg		----	<0.002	----	<0.002	<0.002
Molinate	2212-67-1	0.02	mg/kg		----	<0.02	----	**0.02**	<0.02
Oxamyl	23135-22-0	0.002	mg/kg		----	<0.002	----	<0.002	<0.002
Thiobencarb	28249-77-6	0.002	mg/kg		----	<0.002	----	<0.002	<0.002
Thiodicarb	59669-26-0	0.002	mg/kg		----	<0.002	----	<0.002	<0.002
EP234D: Triazinone Herbicides									
Hexazinone	51235-04-2	0.004	mg/kg		----	<0.004	----	<0.004	<0.004
Metribuzin	21087-64-9	0.004	mg/kg		----	<0.004	----	<0.004	<0.004
EP234E: Conazole and Aminopyrimidine Fungicides									
Cyproconazole	94361-06-5	0.004	mg/kg		----	<0.004	----	<0.004	<0.004
Flusilazole	85509-19-9	0.004	mg/kg		----	<0.004	----	<0.004	<0.004
Hexaconazole	79983-71-4	0.004	mg/kg		----	<0.004	----	<0.004	<0.004
Paclobutrazole	76738-62-0	0.01	mg/kg		----	<0.01	----	<0.01	<0.01

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM6 0-0.5	GM12 0-0.5	GM13 0-0.5	UA2 0-0.5	UA2 0.5-1.0
			Sampling date / time	27-Sep-2022 11:00	27-Sep-2022 12:20	27-Sep-2022 12:40	27-Sep-2022 16:56	27-Sep-2022 16:56
Compound	CAS Number	LOR	Unit	EB2228441-006	EB2228441-007	EB2228441-008	EB2228441-009	EB2228441-010
				Result	Result	Result	Result	Result
EP234E: Conazole and Aminopyrimidine Fungicides - Continued								
Propiconazole	60207-90-1	0.01	mg/kg	----	<0.01	----	**0.01**	<0.01
Tebuconazole	107534-96-3	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Cyprodinil	121552-61-2	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Pyrimethanil	53112-28-0	0.005	mg/kg	----	<0.005	----	<0.005	<0.005
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides								
Diuron	330-54-1	0.005	mg/kg	----	<0.005	----	<0.005	<0.005
Fluometuron	2164-17-2	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Tebuthiuron	34014-18-1	0.005	mg/kg	----	<0.005	----	<0.005	<0.005
Bromacil	314-40-9	0.005	mg/kg	----	<0.005	----	<0.005	<0.005
EP234G: Chloracetanilides								
Metolachlor	51218-45-2	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
EP234H: Triazine Herbicides								
Ametryn	834-12-8	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Atrazine	1912-24-9	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Cyanazine	21725-46-2	0.005	mg/kg	----	<0.005	----	<0.005	<0.005
Prometryn	7287-19-6	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Propazine	139-40-2	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Simazine	122-34-9	0.005	mg/kg	----	<0.005	----	<0.005	<0.005
Terbuthylazine	5915-41-3	0.002	mg/kg	----	<0.002	----	<0.002	<0.002
Terbutryn	886-50-0	0.1	mg/kg	----	<0.1	----	<0.1	<0.1
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
Fenarimol	60168-88-9	0.005	mg/kg	----	<0.005	----	<0.005	<0.005
Irgarol	28159-98-0	0.001	mg/kg	----	<0.001	----	<0.001	<0.001
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**98.2**	**86.0**	**90.3**	**83.0**	**83.6**
Toluene-D8	2037-26-5	0.2	%	**88.3**	**69.8**	**73.1**	**67.2**	**82.8**
4-Bromofluorobenzene	460-00-4	0.2	%	**83.2**	**80.5**	**80.4**	**73.5**	**92.6**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	**99.8**	**89.7**	**90.6**	**91.7**	**92.6**
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	----	**77.0**	----	**40.0**	**74.9**
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	----	**65.3**	----	**59.2**	**74.8**
EP132T: Base/Neutral Extractable Surrogates								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM6 0-0.5	GM12 0-0.5	GM13 0-0.5	UA2 0-0.5	UA2 0.5-1.0
				Sampling date / time	27-Sep-2022 11:00	27-Sep-2022 12:20	27-Sep-2022 12:40	27-Sep-2022 16:56	27-Sep-2022 16:56
Compound	CAS Number	LOR	Unit		EB2228441-006	EB2228441-007	EB2228441-008	EB2228441-009	EB2228441-010
					Result	Result	Result	Result	Result
EP132T: Base/Neutral Extractable Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	10	%		**82.7**	**70.7**	**77.1**	**90.0**	**75.4**
Anthracene-d10	1719-06-8	10	%		**101**	**84.3**	**95.8**	**96.6**	**79.9**
4-Terphenyl-d14	1718-51-0	10	%		**81.3**	**80.4**	**85.0**	**94.3**	**78.4**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**----**	**----**	**----**	**112**	**116**
13C8-PFOA	----	0.0002	%		**----**	**----**	**----**	**102**	**104**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	VA10 0-0.5	VA11 0-0.5	UA1 0-0.5	Trip Spike 4	081716 Trip Blank
			Sampling date / time	27-Sep-2022 17:00	27-Sep-2022 17:00	27-Sep-2022 17:42	27-Sep-2022 17:42	27-Sep-2022 17:42
Compound	CAS Number	LOR	Unit	EB2228441-011	EB2228441-012	EB2228441-013	EB2228441-014	EB2228441-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.8	8.7	8.9	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.224	0.409	0.301	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	140	255	188	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	3.46	3.92	2.55	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	692	783	509	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.11	1.26	0.82	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.22	0.41	0.30	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	140	255	188	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	10	19	14	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	49.8	46.8	32.0	----	----
EA150: Particle Sizing								
+75µm	----	1	%	23	21	45	----	----
+150µm	----	1	%	15	15	40	----	----
+300µm	----	1	%	7	7	36	----	----
+425µm	----	1	%	4	4	33	----	----
+600µm	----	1	%	2	2	30	----	----
+1180µm	----	1	%	<1	1	24	----	----
+2.36mm	----	1	%	<1	<1	16	----	----
+4.75mm	----	1	%	<1	<1	8	----	----
+9.5mm	----	1	%	<1	<1	<1	----	----
+19.0mm	----	1	%	<1	<1	<1	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	VA10 0-0.5	VA11 0-0.5	UA1 0-0.5	Trip Spike 4	081716 Trip Blank
				Sampling date / time	27-Sep-2022 17:00	27-Sep-2022 17:00	27-Sep-2022 17:42	27-Sep-2022 17:42	27-Sep-2022 17:42
Compound	CAS Number	LOR	Unit		EB2228441-011	EB2228441-012	EB2228441-013	EB2228441-014	EB2228441-015
					Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued									
+37.5mm	----	1	%		<1	<1	<1	----	----
+75.0mm	----	1	%		<1	<1	<1	----	----
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		38	29	14	----	----
Silt (2-60 µm)	----	1	%		36	49	39	----	----
Sand (0.06-2.00 mm)	----	1	%		26	21	29	----	----
Gravel (>2mm)	----	1	%		<1	1	18	----	----
Cobbles (>6cm)	----	1	%		<1	<1	<1	----	----
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.54	2.48	2.18	----	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		8040	9320	5540	----	----
Iron	7439-89-6	50	mg/kg		21900	24200	28000	----	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	<0.50	----	----
Arsenic	7440-38-2	1.00	mg/kg		11.6	11.3	12.3	----	----
Cadmium	7440-43-9	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
Chromium	7440-47-3	1.0	mg/kg		21.1	23.0	23.0	----	----
Copper	7440-50-8	1.0	mg/kg		28.7	28.8	27.1	----	----
Cobalt	7440-48-4	0.5	mg/kg		10.8	11.8	11.7	----	----
Lead	7439-92-1	1.0	mg/kg		12.7	17.0	18.9	----	----
Manganese	7439-96-5	10	mg/kg		252	279	469	----	----
Nickel	7440-02-0	1.0	mg/kg		11.0	12.8	10.4	----	----
Selenium	7782-49-2	0.1	mg/kg		0.8	0.9	0.7	----	----
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
Vanadium	7440-62-2	2.0	mg/kg		53.0	55.8	67.6	----	----
Zinc	7440-66-6	1.0	mg/kg		61.2	91.5	40.3	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		0.02	0.02	0.02	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	----	----
EK055: Ammonia as N									
Ammonia as N	7664-41-7	1	mg/kg		2	3	2	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	VA10 0-0.5	VA11 0-0.5	UA1 0-0.5	Trip Spike 4	081716 Trip Blank
			Sampling date / time	27-Sep-2022 17:00	27-Sep-2022 17:00	27-Sep-2022 17:42	27-Sep-2022 17:42	27-Sep-2022 17:42
Compound	CAS Number	LOR	Unit	EB2228441-011	EB2228441-012	EB2228441-013	EB2228441-014	EB2228441-015
				Result	Result	Result	Result	Result
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser - Continued								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	1.04	1.32	0.59	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	32	<10
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	39	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	20	<10
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	6.6	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	1.7	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	7.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	3.1	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	19.1	<0.2
^ Total Xylenes	----	0.5	mg/kg	----	----	----	10.6	<0.5
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	<1
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	----	----
C10 - C14 Fraction	----	3	mg/kg	10	10	4	----	----
C15 - C28 Fraction	----	3	mg/kg	52	56	11	----	----
C29 - C36 Fraction	----	5	mg/kg	65	75	20	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg	127	141	35	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	----	----
>C10 - C16 Fraction	----	3	mg/kg	11	10	<3	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	<3.0	<3.0	----	----
>C16 - C34 Fraction	----	3	mg/kg	96	108	25	----	----
>C34 - C40 Fraction	----	5	mg/kg	39	47	13	----	----
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	146	165	38	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	VA10 0-0.5	VA11 0-0.5	UA1 0-0.5	Trip Spike 4	081716 Trip Blank
			Sampling date / time	27-Sep-2022 17:00	27-Sep-2022 17:00	27-Sep-2022 17:42	27-Sep-2022 17:42	27-Sep-2022 17:42
Compound	CAS Number	LOR	Unit	EB2228441-011	EB2228441-012	EB2228441-013	EB2228441-014	EB2228441-015
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	----	----
Dibutyltin	1002-53-5	1	µgSn/kg	**1**	**2**	<1	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg	**0.6**	**3.8**	<0.5	----	----
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	<10	----	----
Carbophenothion	786-19-6	10	µg/kg	<10	<10	<10	----	----
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg	<10.0	<10.0	<10.0	----	----
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	<10	----	----
Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	<10	----	----
Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	<10	----	----
Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	<10	----	----
Diazinon	333-41-5	10	µg/kg	<10	<10	<10	----	----
Dichlorvos	62-73-7	10	µg/kg	<10	<10	<10	----	----
Dimethoate	60-51-5	10	µg/kg	<10	<10	<10	----	----
Ethion	563-12-2	10	µg/kg	<10	<10	<10	----	----
Fenamiphos	22224-92-6	10	µg/kg	<10	<10	<10	----	----
Fenthion	55-38-9	10	µg/kg	<10	<10	<10	----	----
Malathion	121-75-5	10	µg/kg	<10	<10	<10	----	----
Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	<10	----	----
Monocrotophos	6923-22-4	10	µg/kg	<10	<10	<10	----	----
Parathion	56-38-2	10	µg/kg	<10	<10	<10	----	----
Parathion-methyl	298-00-0	10	µg/kg	<10	<10	<10	----	----
Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	<10	----	----
Prothiofos	34643-46-4	10	µg/kg	<10	<10	<10	----	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	<0.50	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	VA10 0-0.5	VA11 0-0.5	UA1 0-0.5	Trip Spike 4	081716 Trip Blank
			Sampling date / time	27-Sep-2022 17:00	27-Sep-2022 17:00	27-Sep-2022 17:42	27-Sep-2022 17:42	27-Sep-2022 17:42
Compound	CAS Number	LOR	Unit	EB2228441-011	EB2228441-012	EB2228441-013	EB2228441-014	EB2228441-015
				Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued								
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	72-54-8/72-55-9/50-29-2	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	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	<5	<5	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	**5**	<5	----	----
Acenaphthylene	208-96-8	4	µg/kg	<4	**15**	<4	----	----
Acenaphthene	83-32-9	4	µg/kg	<4	<4	<4	----	----
Fluorene	86-73-7	4	µg/kg	<4	<4	<4	----	----
Phenanthrene	85-01-8	4	µg/kg	**12**	**48**	<4	----	----
Anthracene	120-12-7	4	µg/kg	<4	**19**	<4	----	----
Fluoranthene	206-44-0	4	µg/kg	**17**	**47**	**9**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	VA10 0-0.5	VA11 0-0.5	UA1 0-0.5	Trip Spike 4	081716 Trip Blank
				Sampling date / time	27-Sep-2022 17:00	27-Sep-2022 17:00	27-Sep-2022 17:42	27-Sep-2022 17:42	27-Sep-2022 17:42
Compound	CAS Number	LOR	Unit		EB2228441-011	EB2228441-012	EB2228441-013	EB2228441-014	EB2228441-015
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Pyrene	129-00-0	4	µg/kg		19	47	12	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		11	29	12	----	----
Chrysene	218-01-9	4	µg/kg		12	24	10	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		16	25	14	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		5	12	6	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		12	20	8	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg		15	31	15	----	----
Perylene	198-55-0	4	µg/kg		9	12	6	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		13	21	8	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	5	<4	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		9	16	7	----	----
Coronene	191-07-1	5	µg/kg		<5	6	<5	----	----
^ Sum of PAHs	----	4	µg/kg		150	382	107	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		19	45	19	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		21	45	21	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		23	45	23	----	----
EP234A: OP Pesticides									
Azinphos-ethyl	2642-71-9	0.005	mg/kg		<0.005	<0.005	<0.005	----	----
Azinphos-methyl	86-50-0	0.005	mg/kg		<0.005	<0.005	<0.005	----	----
Chlorfenvinphos	470-90-6	0.005	mg/kg		<0.005	<0.005	<0.005	----	----
Coumaphos	56-72-4	0.002	mg/kg		<0.002	<0.002	<0.002	----	----
Diazinon	333-41-5	0.002	mg/kg		<0.002	<0.002	<0.002	----	----
Dimethoate	60-51-5	0.004	mg/kg		<0.004	<0.004	<0.004	----	----
Disulfoton	298-04-4	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Ethoprophos	13194-48-4	0.002	mg/kg		<0.002	<0.002	<0.002	----	----
Fenamiphos	22224-92-6	0.002	mg/kg		<0.002	<0.002	<0.002	----	----
Fenitrothion	122-14-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fensulfothion	115-90-2	0.005	mg/kg		<0.005	<0.005	<0.005	----	----
Fenthion	55-38-9	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
Malathion	121-75-5	0.005	mg/kg		<0.005	<0.005	<0.005	----	----
^ Mevinphos	7786-34-7	0.005	mg/kg		<0.005	<0.005	<0.005	----	----
Monocrotophos	6923-22-4	0.005	mg/kg		<0.005	<0.005	<0.005	----	----
Omethoate	1113-02-6	0.002	mg/kg		<0.002	<0.002	<0.002	----	----
Parathion	56-38-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Parathion-methyl	298-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	VA10 0-0.5	VA11 0-0.5	UA1 0-0.5	Trip Spike 4	081716 Trip Blank
			Sampling date / time	27-Sep-2022 17:00	27-Sep-2022 17:00	27-Sep-2022 17:42	27-Sep-2022 17:42	27-Sep-2022 17:42
Compound	CAS Number	LOR	Unit	EB2228441-011	EB2228441-012	EB2228441-013	EB2228441-014	EB2228441-015
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Phorate	298-02-2	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Pirimiphos-methyl	29232-93-7	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Sulfotep	3689-24-5	0.001	mg/kg	<0.001	<0.001	<0.001	----	----
Tetrachlorvinphos	22248-79-9	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Triazophos	24017-47-8	0.001	mg/kg	<0.001	<0.001	<0.001	----	----
EP234B: Thiocarbamates and Carbamates								
Aldicarb	116-06-3	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
Bendiocarb	22781-23-3	1	mg/kg	<1	<1	<1	----	----
Benomyl	17804-35-2	0.005	mg/kg	<0.005	<0.005	<0.005	----	----
Carbaryl	63-25-2	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Carbofuran	1563-66-2	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg	<0.005	<0.005	<0.005	----	----
Methiocarb	2032-65-7	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Methomyl	16752-77-5	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Molinate	2212-67-1	0.02	mg/kg	**0.03**	<0.02	<0.02	----	----
Oxamyl	23135-22-0	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Thiobencarb	28249-77-6	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Thiodicarb	59669-26-0	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
EP234D: Triazinone Herbicides								
Hexazinone	51235-04-2	0.004	mg/kg	<0.004	<0.004	<0.004	----	----
Metribuzin	21087-64-9	0.004	mg/kg	<0.004	<0.004	<0.004	----	----
EP234E: Conazole and Aminopyrimidine Fungicides								
Cyproconazole	94361-06-5	0.004	mg/kg	<0.004	<0.004	<0.004	----	----
Flusilazole	85509-19-9	0.004	mg/kg	<0.004	<0.004	<0.004	----	----
Hexaconazole	79983-71-4	0.004	mg/kg	<0.004	<0.004	<0.004	----	----
Paclobutrazole	76738-62-0	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
Propiconazole	60207-90-1	0.01	mg/kg	**0.01**	<0.01	<0.01	----	----
Tebuconazole	107534-96-3	0.002	mg/kg	**0.002**	**0.002**	<0.002	----	----
Cyprodinil	121552-61-2	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Pyrimethanil	53112-28-0	0.005	mg/kg	<0.005	<0.005	<0.005	----	----
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides								
Diuron	330-54-1	0.005	mg/kg	<0.005	<0.005	<0.005	----	----
Fluometuron	2164-17-2	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Tebuthiuron	34014-18-1	0.005	mg/kg	<0.005	<0.005	<0.005	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	VA10 0-0.5	VA11 0-0.5	UA1 0-0.5	Trip Spike 4	081716 Trip Blank
			Sampling date / time	27-Sep-2022 17:00	27-Sep-2022 17:00	27-Sep-2022 17:42	27-Sep-2022 17:42	27-Sep-2022 17:42
Compound	CAS Number	LOR	Unit	EB2228441-011	EB2228441-012	EB2228441-013	EB2228441-014	EB2228441-015
				Result	Result	Result	Result	Result
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued								
Bromacil	314-40-9	0.005	mg/kg	<0.005	<0.005	<0.005	----	----
EP234G: Chloracetanilides								
Metolachlor	51218-45-2	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
EP234H: Triazine Herbicides								
Ametryn	834-12-8	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Atrazine	1912-24-9	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Cyanazine	21725-46-2	0.005	mg/kg	<0.005	<0.005	<0.005	----	----
Prometryn	7287-19-6	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Propazine	139-40-2	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Simazine	122-34-9	0.005	mg/kg	<0.005	<0.005	<0.005	----	----
Terbuthylazine	5915-41-3	0.002	mg/kg	<0.002	<0.002	<0.002	----	----
Terbutryn	886-50-0	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
Fenarimol	60168-88-9	0.005	mg/kg	<0.005	<0.005	<0.005	----	----
Irgarol	28159-98-0	0.001	mg/kg	<0.001	<0.001	<0.001	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	85.6	108
Toluene-D8	2037-26-5	0.2	%	----	----	----	78.9	98.8
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	80.4	112
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	79.9	85.0	89.8	----	----
Toluene-D8	2037-26-5	0.2	%	75.5	79.6	87.0	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	86.4	85.2	93.8	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	87.1	103	110	----	----
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	66.3	58.1	91.6	----	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	55.5	48.9	80.6	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	89.8	94.5	106	----	----
Anthracene-d10	1719-06-8	10	%	109	112	99.8	----	----
4-Terphenyl-d14	1718-51-0	10	%	80.0	82.2	93.7	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	ALS CONTROL SPIKE	----	----	----	----
			Sampling date / time	27-Sep-2022 17:42	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2228441-016	--------	--------	--------	--------
				Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	**48**	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	**58**	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	**30**	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	**0.6**	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	**10.8**	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	**2.2**	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	**10.2**	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	**4.1**	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg	**27.9**	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg	**14.3**	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**90.0**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**84.2**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**84.1**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	145
Toluene-D8	2037-26-5	42	144
4-Bromofluorobenzene	460-00-4	58	142
EP090S: Organotin Surrogate			
Tripropyltin	----	35	130
EP130S: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	14	102
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	119
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
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(SOIL) EP132B: Polynuclear Aromatic Hydrocarbons

(SOIL) EP132T: Base/Neutral Extractable Surrogates

(SOIL) EK055: Ammonia as N

(SOIL) EP234G: Chloracetanilides

(SOIL) EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides

(SOIL) EP234E: Conazole and Aminopyrimidine Fungicides

(SOIL) EP234I: Miscellaneous (ESI Positive Mode) Pesticides

(SOIL) EP234H: Triazine Herbicides

(SOIL) EP234A: OP Pesticides

(SOIL) EP234B: Thiocarbamates and Carbamates

(SOIL) EP234D: Triazinone Herbicides

(SOIL) EP130A: Organophosphorus Pesticides (Ultra-trace)

(SOIL) EP130S: Organophosphorus Pesticide Surrogate

(SOIL) EP131A: Organochlorine Pesticides

(SOIL) EP131S: OC Pesticide Surrogate

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2228462**	Page	: 1 of 7
Client	: **BMT COMMERCIAL AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: CRAIG HEATHERINGTON	Contact	: Kimberly Hilton-Barber
Address	: PO BOX 203 SPRING HILL BRISBANE QLD 4004	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 7 3831 6744	Telephone	: +61-7-3243 7222
Project	: A11367 Gladstone - Sediment Quality	Date Samples Received	: 28-Sep-2022 10:50
Order number	: ----	Date Analysis Commenced	: 06-Oct-2022
C-O-C number	: ----	Issue Date	: 11-Oct-2022 10:56
Sampler	: BRAD HILES		
Site	: ----		
Quote number	: BN/523/22		
No. of samples received	: 8		
No. of samples analysed	: 8		

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, unless the sampling was conducted by ALS. 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*
Peter Blow	HRMS Chemist	GCMSMS, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- EP300: T = tetra, Pe = penta, Hx = hexa, Hp = hepta, O = octa, CDD dioxin = chlorinated dibenzo-p-dioxin, CDF furan = chlorinated dibenzofuran
- EP300L: The absolute recovery of 13C12 isotopically labelled compounds added by the Laboratory to both quantitate and measure extraction efficiency.
- EP300: LORs for Totals are calculated by multiplying the number of peaks by the individual LOR per compound.
- EP300: Refer to supplementary reports for individual analyte TEQs, sample-specific limits of reporting (LOR) and Quality Control results.
- EP300: I-TEQ = International toxic equivalence
  WHO-TEQ = World Health Organisation toxic equivalence
  I-TEQ1 (zero) and WHO-TEQ1 (zero) calculated treating <LOR as zero concentration
  I-TEQ2 (0.5 LOR) and WHO-TEQ2 (0.5 LOR) calculated treating <LOR as half LOR concentration
  I-TEQ3 (LOR) and WHO-TEQ3 (LOR) calculated treating <LOR as LOR concentration
- EP300: Samples dried prior to analysis. Results reported on a dry weight basis.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM1 0.0.5	GM1 0.5-1.0	GM1 >1	GM9 0-0-5	GM9 0.5-1.0
			Sampling date / time	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00
Compound	CAS Number	LOR	Unit	EB2228462-011	EB2228462-012	EB2228462-013	EB2228462-015	EB2228462-016
				Result	Result	Result	Result	Result
EP300A: Dioxins and Furans								
2378-TCDD	1746-01-6	-	pg/g	<0.5	<0.5	<0.5	<0.5	<0.5
12378-PeCDD	40321-76-4	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
123478-HxCDD	39227-28-6	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
123678-HxCDD	57653-85-7	-	pg/g	<2.5	**2.9**	<2.5	<2.5	<2.5
123789-HxCDD	19408-74-3	-	pg/g	<2.5	**5.0**	<2.5	**3.5**	**3.9**
1234678-HpCDD	35822-46-9	-	pg/g	**20.8**	**72.3**	**10.7**	**43.7**	**63.3**
OCDD	3268-87-9	-	pg/g	**328**	**1240**	**174**	**725**	**910**
2378-TCDF	51207-31-9	-	pg/g	<0.5	<0.5	<0.5	<0.5	<0.5
12378-PeCDF	57117-41-6	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
23478-PeCDF	57117-31-4	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
123478-HxCDF	70648-26-9	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
123678-HxCDF	57117-44-9	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
234678-HxCDF	60851-34-5	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
123789-HxCDF	72918-21-9	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
1234678-HpCDF	67562-39-4	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
1234789-HpCDF	55673-89-7	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
OCDF	39001-02-0	-	pg/g	<4.9	<5.0	<5.0	<4.9	<4.9
EP300B: Dioxins and Furans - Group Totals								
Tetra-Dioxins	----	-	pg/g	<4.9	**12.5**	**1.5**	**13.5**	**12.6**
Penta-Dioxins	----	-	pg/g	<19.7	**34.9**	<14.9	**30.1**	**31.6**
Hexa-Dioxins	----	-	pg/g	**48.1**	**162**	**24.3**	**141**	**151**
Hepta-Dioxins	----	-	pg/g	**80.9**	**278**	**39.0**	**213**	**249**
Octa-Dioxin	----	-	pg/g	**328**	**1240**	**174**	**725**	**910**
Tetra-Furans	----	-	pg/g	<0.5	<7.0	<0.5	<0.5	<0.5
Penta-Furans	----	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
Hexa-Furans	----	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
Hepta-Furans	----	-	pg/g	<2.5	<2.5	<2.5	<2.5	<2.5
Octa-Furan	----	-	pg/g	<4.9	<5.0	<5.0	<4.9	<4.9
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ)								
Total WHO-TEQ1 (zero)	----	-	pg/g	**0.31**	**1.89**	**0.16**	**1.00**	**1.30**
Total WHO-TEQ2 (0.5 LOR)	----	-	pg/g	**3.11**	**4.46**	**2.97**	**3.69**	**3.98**
Total WHO-TEQ3 (LOR)	----	-	pg/g	**5.90**	**7.04**	**5.79**	**6.37**	**6.66**
Total I-TEQ1 (zero)	----	-	pg/g	**0.54**	**2.75**	**0.28**	**1.51**	**1.93**
Total I-TEQ2 (0.5 LOR)	----	-	pg/g	**2.99**	**4.98**	**2.75**	**3.85**	**4.27**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GM1 0.0.5	GM1 0.5-1.0	GM1 >1	GM9 0-0-5	GM9 0.5-1.0
				Sampling date / time	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00
Compound	CAS Number	LOR	Unit		EB2228462-011	EB2228462-012	EB2228462-013	EB2228462-015	EB2228462-016
					Result	Result	Result	Result	Result
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ) - Continued									
Total I-TEQ3 (LOR)	----	-	pg/g		**5.45**	**7.21**	**5.22**	**6.19**	**6.61**
EP300L: Dioxins and Furans - Isotopically Labelled Standards									
2378-TCDD (13C12)	76523-40-5	0.25	%		**102**	**77.6**	**67.5**	**78.2**	**89.5**
12378-PeCDD (13C12)	109719-79-1	0.25	%		**91.9**	**81.5**	**84.5**	**83.5**	**92.5**
123478-HxCDD (13C12)	109719-80-4	0.25	%		**78.9**	**80.9**	**84.7**	**78.2**	**79.5**
123678-HxCDD (13C12)	109719-81-5	0.25	%		**74.4**	**76.0**	**87.4**	**75.4**	**78.8**
1234678-HpCDD (13C12)	109719-83-7	0.25	%		**65.6**	**71.9**	**73.2**	**69.6**	**64.6**
OCDD (13C12)	114423-97-1	0.25	%		**49.8**	**77.9**	**60.0**	**76.8**	**49.7**
2378-TCDF (13C12)	89059-46-1	0.25	%		**98.3**	**80.8**	**60.3**	**73.1**	**83.8**
12378-PeCDF (13C12)	109719-77-9	0.25	%		**97.8**	**93.4**	**81.5**	**90.4**	**98.2**
23478-PeCDF (13C12)	116843-02-8	0.25	%		**96.8**	**85.9**	**87.2**	**84.0**	**93.0**
123478-HxCDF (13C12)	114423-98-2	0.25	%		**80.3**	**83.7**	**91.5**	**80.3**	**80.6**
123678-HxCDF (13C12)	116843-03-9	0.25	%		**76.1**	**79.5**	**82.5**	**70.3**	**77.7**
234678-HxCDF (13C12)	116843-05-1	0.25	%		**84.0**	**81.9**	**88.7**	**87.1**	**83.1**
123789-HxCDF (13C12)	116843-04-0	0.25	%		**81.6**	**86.6**	**90.8**	**77.0**	**78.5**
1234678-HpCDF (13C12)	109719-84-8	0.25	%		**59.5**	**73.5**	**69.3**	**77.7**	**66.5**
1234789-HpCDF (13C12)	109719-94-0	0.25	%		**79.6**	**78.6**	**88.7**	**84.5**	**83.4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM9 71.0	GM3 0-0-5	GM3 0.5-1.0	----	----
			Sampling date / time	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2228462-017	EB2228462-023	EB2228462-024	--------	--------
				Result	Result	Result	----	----
EP300A: Dioxins and Furans								
2378-TCDD	1746-01-6	-	pg/g	<0.5	<0.5	<0.5	----	----
12378-PeCDD	40321-76-4	-	pg/g	<2.5	<2.5	<2.5	----	----
123478-HxCDD	39227-28-6	-	pg/g	<2.5	<2.5	<2.5	----	----
123678-HxCDD	57653-85-7	-	pg/g	<2.5	<2.5	<2.5	----	----
123789-HxCDD	19408-74-3	-	pg/g	**2.7**	**3.4**	**3.8**	----	----
1234678-HpCDD	35822-46-9	-	pg/g	**45.9**	**49.0**	**54.5**	----	----
OCDD	3268-87-9	-	pg/g	**678**	**741**	**944**	----	----
2378-TCDF	51207-31-9	-	pg/g	<0.5	<0.5	<0.5	----	----
12378-PeCDF	57117-41-6	-	pg/g	<2.5	<2.5	<2.5	----	----
23478-PeCDF	57117-31-4	-	pg/g	<2.5	<2.5	<2.5	----	----
123478-HxCDF	70648-26-9	-	pg/g	<2.5	<2.5	<2.5	----	----
123678-HxCDF	57117-44-9	-	pg/g	<2.5	<2.5	<2.5	----	----
234678-HxCDF	60851-34-5	-	pg/g	<2.5	<2.5	<2.5	----	----
123789-HxCDF	72918-21-9	-	pg/g	<2.5	<2.5	<2.5	----	----
1234678-HpCDF	67562-39-4	-	pg/g	<2.5	<2.5	<2.5	----	----
1234789-HpCDF	55673-89-7	-	pg/g	<2.5	<2.5	<2.5	----	----
OCDF	39001-02-0	-	pg/g	<5.0	<4.9	<5.0	----	----
EP300B: Dioxins and Furans - Group Totals								
Tetra-Dioxins	----	-	pg/g	**8.0**	**11.4**	**11.0**	----	----
Penta-Dioxins	----	-	pg/g	**21.5**	**24.4**	**27.0**	----	----
Hexa-Dioxins	----	-	pg/g	**101**	**116**	**125**	----	----
Hepta-Dioxins	----	-	pg/g	**179**	**181**	**204**	----	----
Octa-Dioxin	----	-	pg/g	**678**	**741**	**944**	----	----
Tetra-Furans	----	-	pg/g	<0.5	<0.5	<0.5	----	----
Penta-Furans	----	-	pg/g	<2.5	<2.5	<2.5	----	----
Hexa-Furans	----	-	pg/g	<2.5	<2.5	<2.5	----	----
Hepta-Furans	----	-	pg/g	<2.5	<2.5	<2.5	----	----
Octa-Furan	----	-	pg/g	<5.0	<4.9	<5.0	----	----
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ)								
Total WHO-TEQ1 (zero)	----	-	pg/g	**0.93**	**1.05**	**1.21**	----	----
Total WHO-TEQ2 (0.5 LOR)	----	-	pg/g	**3.64**	**3.71**	**3.90**	----	----
Total WHO-TEQ3 (LOR)	----	-	pg/g	**6.34**	**6.38**	**6.60**	----	----
Total I-TEQ1 (zero)	----	-	pg/g	**1.41**	**1.57**	**1.87**	----	----
Total I-TEQ2 (0.5 LOR)	----	-	pg/g	**3.76**	**3.89**	**4.22**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	GM9 71.0	GM3 0-0-5	GM3 0.5-1.0	----	----
			Sampling date / time	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2228462-017	EB2228462-023	EB2228462-024	--------	--------
				Result	Result	Result	----	----
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ) - Continued								
Total I-TEQ3 (LOR)	----	-	pg/g	**6.12**	**6.21**	**6.57**	**----**	**----**
EP300L: Dioxins and Furans - Isotopically Labelled Standards								
2378-TCDD (13C12)	76523-40-5	0.25	%	**83.0**	**84.1**	**88.7**	**----**	**----**
12378-PeCDD (13C12)	109719-79-1	0.25	%	**84.1**	**85.2**	**80.6**	**----**	**----**
123478-HxCDD (13C12)	109719-80-4	0.25	%	**88.0**	**80.4**	**80.2**	**----**	**----**
123678-HxCDD (13C12)	109719-81-5	0.25	%	**88.6**	**79.9**	**77.0**	**----**	**----**
1234678-HpCDD (13C12)	109719-83-7	0.25	%	**72.3**	**66.9**	**73.7**	**----**	**----**
OCDD (13C12)	114423-97-1	0.25	%	**71.9**	**63.4**	**67.5**	**----**	**----**
2378-TCDF (13C12)	89059-46-1	0.25	%	**85.5**	**96.3**	**92.8**	**----**	**----**
12378-PeCDF (13C12)	109719-77-9	0.25	%	**98.1**	**94.5**	**91.8**	**----**	**----**
23478-PeCDF (13C12)	116843-02-8	0.25	%	**89.6**	**89.7**	**82.8**	**----**	**----**
123478-HxCDF (13C12)	114423-98-2	0.25	%	**90.6**	**84.8**	**90.1**	**----**	**----**
123678-HxCDF (13C12)	116843-03-9	0.25	%	**81.7**	**75.7**	**82.9**	**----**	**----**
234678-HxCDF (13C12)	116843-05-1	0.25	%	**90.3**	**81.7**	**86.8**	**----**	**----**
123789-HxCDF (13C12)	116843-04-0	0.25	%	**88.7**	**69.0**	**82.1**	**----**	**----**
1234678-HpCDF (13C12)	109719-84-8	0.25	%	**76.8**	**69.1**	**78.6**	**----**	**----**
1234789-HpCDF (13C12)	109719-94-0	0.25	%	**86.3**	**75.9**	**77.9**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP300L: Dioxins and Furans - Isotopically Labelled Standards			
2378-TCDD (13C12)	76523-40-5	25	164
12378-PeCDD (13C12)	109719-79-1	25	181
123478-HxCDD (13C12)	109719-80-4	32	141
123678-HxCDD (13C12)	109719-81-5	28	130
1234678-HpCDD (13C12)	109719-83-7	23	140
OCDD (13C12)	114423-97-1	17	157
2378-TCDF (13C12)	89059-46-1	24	169
12378-PeCDF (13C12)	109719-77-9	24	185
23478-PeCDF (13C12)	116843-02-8	21	178
123478-HxCDF (13C12)	114423-98-2	26	152
123678-HxCDF (13C12)	116843-03-9	26	123
234678-HxCDF (13C12)	116843-05-1	28	136
123789-HxCDF (13C12)	116843-04-0	29	147
1234678-HpCDF (13C12)	109719-84-8	28	143
1234789-HpCDF (13C12)	109719-94-0	26	138

Addendum A to Certificate of Analysis for Workorder EB2228462

Laboratory Sample ID: EB2228462-011
Client Sample ID: GM1 0.0.5
QC Lot Number: 4620593:4620594

Sample Matrix: SOIL
Test Type: EP300A:EP300B

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	102
12378-PeCDD	<2.5	2.5	1	0.00	1.23	2.47	0.5	0.00	0.62	1.23	91.9
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	78.9
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	74.4
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	20.8	2.5	0.01	0.21	0.21	0.21	0.01	0.21	0.21	0.21	65.6
OCDD	328	9.9	0.0003	0.10	0.10	0.10	0.001	0.33	0.33	0.33	49.8
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	98.3
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	97.8
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.23	96.8
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	80.3
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	76.1
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	84.0
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.6
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	59.5
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	79.6
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	0.31	3.11	5.90	**Σ TEQ**	0.54	2.99	5.45	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	<4.9	4.9	10
Penta-dioxins	<19.7	19.7	8
Hexa-dioxins	48.1	19.7	8
Hepta-dioxins	80.9	4.9	2
Octa-dioxin	328	9.9	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<4.9	4.9	1
Σ PCDD/Fs	457		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Laboratory Sample ID: EB2228462-012
Client Sample ID: GM1 0.5-1.0
QC Lot Number: 4620593:4620594

Sample Matrix: SOIL
Test Type: EP300A:EP300B

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ [1] (zero)	WHO-TEQ [2] (0.5 LOR)	WHO-TEQ [3] (LOR)	I-TEF	I-TEQ [1] (zero)	I-TEQ [2] (0.5 LOR)	I-TEQ [3] (LOR)	$^{13}C_{12}$ [5] Rec (%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	77.6
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.49	0.5	0.00	0.62	1.24	81.5
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	80.9
123678-HxCDD	2.9	2.5	0.1	0.29	0.29	0.29	0.1	0.29	0.29	0.29	76.0
123789-HxCDD	5.0	2.5	0.1	0.50	0.50	0.50	0.1	0.50	0.50	0.50	-
1234678-HpCDD	72.3	2.5	0.01	0.72	0.72	0.72	0.01	0.72	0.72	0.72	71.9
OCDD	1240	10.0	0.0003	0.37	0.37	0.37	0.001	1.24	1.24	1.24	77.9
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	80.8
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	93.4
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.75	0.5	0.00	0.62	1.24	85.9
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	83.7
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	79.5
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.9
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	86.6
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	73.5
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	78.6
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	1.89	4.46	7.04	**Σ TEQ**	2.75	4.98	7.21	

Group Totals	Conc pg/g	LOR [4] pg/g	No. of peaks
Tetra-dioxins	12.5	5.5	11
Penta-dioxins	34.9	22.4	9
Hexa-dioxins	162	17.4	7
Hepta-dioxins	278	5.0	2
Octa-dioxin	1240	10.0	1
Tetra-furans	<7.0	7.0	14
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<5.0	5.0	1
Σ PCDD/Fs	1727		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Laboratory Sample ID: EB2228462-013
Client Sample ID: GM1 >1
QC Lot Number: 4620593:4620594

Sample Matrix: SOIL
Test Type: EP300A:EP300B

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ [1] (zero)	WHO-TEQ [2] (0.5 LOR)	WHO-TEQ [3] (LOR)	I-TEF	I-TEQ [1] (zero)	I-TEQ [2] (0.5 LOR)	I-TEQ [3] (LOR)	$^{13}C_{12}$ [5] Rec (%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	67.5
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.48	0.5	0.00	0.62	1.24	84.5
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	84.7
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	87.4
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	10.7	2.5	0.01	0.11	0.11	0.11	0.01	0.11	0.11	0.11	73.2
OCDD	174	9.9	0.0003	0.05	0.05	0.05	0.001	0.17	0.17	0.17	60.0
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	60.3
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	81.5
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.24	87.2
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	91.5
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	82.5
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	88.7
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	90.8
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	69.3
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	88.7
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	0.16	2.97	5.79	**Σ TEQ**	0.28	2.75	5.22	

Group Totals	Conc pg/g	LOR [4] pg/g	No. of peaks
Tetra-dioxins	1.5	1.5	3
Penta-dioxins	<14.9	14.9	6
Hexa-dioxins	24.3	19.8	8
Hepta-dioxins	39.0	5.0	2
Octa-dioxin	174	9.9	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<5.0	5.0	1
Σ PCDD/Fs	239		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Laboratory Sample ID: EB2228462-015
Client Sample ID: GM9 0-0-5
QC Lot Number: 4620593:4620594

Sample Matrix: SOIL
Test Type: EP300A:EP300B

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ [1] (zero)	WHO-TEQ [2] (0.5 LOR)	WHO-TEQ [3] (LOR)	I-TEF	I-TEQ [1] (zero)	I-TEQ [2] (0.5 LOR)	I-TEQ [3] (LOR)	$^{13}C_{12}$ [5] Rec (%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	78.2
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.47	0.5	0.00	0.62	1.24	83.5
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	78.2
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	75.4
123789-HxCDD	3.5	2.5	0.1	0.35	0.35	0.35	0.1	0.35	0.35	0.35	-
1234678-HpCDD	43.7	2.5	0.01	0.44	0.44	0.44	0.01	0.44	0.44	0.44	69.6
OCDD	725	9.9	0.0003	0.22	0.22	0.22	0.001	0.73	0.73	0.73	76.8
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	73.1
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	90.4
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.24	84.0
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	80.3
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	70.3
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	87.1
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	77.0
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	77.7
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	84.5
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	1.00	3.69	6.37	**Σ TEQ**	1.51	3.85	6.19	

Group Totals	Conc pg/g	LOR [4] pg/g	No. of peaks
Tetra-dioxins	13.5	5.9	12
Penta-dioxins	30.1	22.3	9
Hexa-dioxins	141	19.8	8
Hepta-dioxins	213	4.9	2
Octa-dioxin	725	9.9	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<4.9	4.9	1
Σ PCDD/Fs	1123		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Laboratory Sample ID: EB2228462-016
Client Sample ID: GM9 0.5-1.0
QC Lot Number: 4620593:4620594

Sample Matrix: SOIL
Test Type: EP300A:EP300B

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	89.5
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.47	0.5	0.00	0.62	1.24	92.5
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	79.5
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	78.8
123789-HxCDD	3.9	2.5	0.1	0.39	0.39	0.39	0.1	0.39	0.39	0.39	-
1234678-HpCDD	63.3	2.5	0.01	0.63	0.63	0.63	0.01	0.63	0.63	0.63	64.6
OCDD	910	9.9	0.0003	0.27	0.27	0.27	0.001	0.91	0.91	0.91	49.7
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	83.8
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	98.2
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.24	93.0
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	80.6
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	77.7
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	83.1
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	78.5
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	66.5
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	83.4
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	1.30	3.98	6.66	**Σ TEQ**	1.93	4.27	6.61	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	12.6	5.4	11
Penta-dioxins	31.6	22.2	9
Hexa-dioxins	151	19.8	8
Hepta-dioxins	249	4.9	2
Octa-dioxin	910	9.9	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<4.9	4.9	1
Σ PCDD/Fs	1354		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Laboratory Sample ID: EB2228462-017
Client Sample ID: GM9 71.0
QC Lot Number: 4620593:4620594

Sample Matrix: SOIL
Test Type: EP300A:EP300B

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	83.0
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.49	0.5	0.00	0.62	1.25	84.1
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	88.0
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	88.6
123789-HxCDD	2.7	2.5	0.1	0.27	0.27	0.27	0.1	0.27	0.27	0.27	-
1234678-HpCDD	45.9	2.5	0.01	0.46	0.46	0.46	0.01	0.46	0.46	0.46	72.3
OCDD	678	10.0	0.0003	0.20	0.20	0.20	0.001	0.68	0.68	0.68	71.9
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	85.5
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	98.1
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.75	0.5	0.00	0.62	1.25	89.6
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	90.6
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.7
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	90.3
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	88.7
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	76.8
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	86.3
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	0.93	3.64	6.34	**Σ TEQ**	1.41	3.76	6.12	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	8.0	5.0	10
Penta-dioxins	21.5	19.9	8
Hexa-dioxins	101	19.9	8
Hepta-dioxins	179	5.0	2
Octa-dioxin	678	10.0	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<5.0	5.0	1
Σ PCDD/Fs	988		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Laboratory Sample ID: EB2228462-023
Client Sample ID: GM3 0-0-5
QC Lot Number: 4620593:4620594

Sample Matrix: SOIL
Test Type: EP300A:EP300B

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ [1] (zero)	WHO-TEQ [2] (0.5 LOR)	WHO-TEQ [3] (LOR)	I-TEF	I-TEQ [1] (zero)	I-TEQ [2] (0.5 LOR)	I-TEQ [3] (LOR)	$^{13}C_{12}$ [5] Rec (%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	84.1
12378-PeCDD	<2.5	2.5	1	0.00	1.23	2.45	0.5	0.00	0.61	1.23	85.2
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	80.4
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	79.9
123789-HxCDD	3.4	2.5	0.1	0.34	0.34	0.34	0.1	0.34	0.34	0.34	-
1234678-HpCDD	49.0	2.5	0.01	0.49	0.49	0.49	0.01	0.49	0.49	0.49	66.9
OCDD	741	9.8	0.0003	0.22	0.22	0.22	0.001	0.74	0.74	0.74	63.4
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	96.3
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	94.5
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.61	1.23	89.7
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	84.8
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	75.7
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.7
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	69.0
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	69.1
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	75.9
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	1.05	3.71	6.38	**Σ TEQ**	1.57	3.89	6.21	

Group Totals	Conc pg/g	LOR [4] pg/g	No. of peaks
Tetra-dioxins	11.4	5.9	12
Penta-dioxins	24.4	22.1	9
Hexa-dioxins	116	19.6	8
Hepta-dioxins	181	4.9	2
Octa-dioxin	741	9.8	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<4.9	4.9	1
Σ PCDD/Fs	1074		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Laboratory Sample ID: EB2228462-024
Client Sample ID: GM3 0.5-1.0
QC Lot Number: 4620593:4620594

Sample Matrix: SOIL
Test Type: EP300A:EP300B

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	88.7
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.48	0.5	0.00	0.62	1.24	80.6
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	80.2
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	77.0
123789-HxCDD	3.8	2.5	0.1	0.38	0.38	0.38	0.1	0.38	0.38	0.38	-
1234678-HpCDD	54.5	2.5	0.01	0.55	0.55	0.55	0.01	0.55	0.55	0.55	73.7
OCDD	944	9.9	0.0003	0.28	0.28	0.28	0.001	0.94	0.94	0.94	67.5
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	92.8
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	91.8
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.24	82.8
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	90.1
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	82.9
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	86.8
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	82.1
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	78.6
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	77.9
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	1.21	3.90	6.60	**Σ TEQ**	1.87	4.22	6.57	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	11.0	6.0	12
Penta-dioxins	27.0	24.8	10
Hexa-dioxins	125	19.9	8
Hepta-dioxins	204	5.0	2
Octa-dioxin	944	9.9	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<5.0	5.0	1
Σ PCDD/Fs	1311		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2228615**	Page	: 1 of 49
Client	: **BMT COMMERCIAL AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: CRAIG HEATHERINGTON	Contact	: Kimberly Hilton-Barber
Address	: PO BOX 203 SPRING HILL BRISBANE QLD 4004	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 7 3831 6744	Telephone	: +61-7-3243 7222
Project	: A11367 Gladstone - Sediment Quality	Date Samples Received	: 30-Sep-2022 14:55
Order number	: ----	Date Analysis Commenced	: 01-Oct-2022
C-O-C number	: ----	Issue Date	: 18-Oct-2022 13:05
Sampler	: BRAD HILES		
Site	: ----		
Quote number	: BN/523/22		
No. of samples received	: 23		
No. of samples analysed	: 23		

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, unless the sampling was conducted by ALS. 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
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Inorganics, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Keegan Mullane	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Layla Hafner	Acid Sulphate Soils - Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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 by SFA): Some samples contain a high amount of moisture. LOR values have been adjusted accordingly.
- EP090-Organotin: Sample 'UA7 0.5-1.0' shows poor MBT matrix spike recovery due to matrix interference.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences and high matrix spike recovery has been noted for particular compounds due to ion enhancement.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP080-SD: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP131A: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- **Specialty Organics analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- EP132B-SD : Poor duplicate precision due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- EG020-SD (Total Metals Sediments by ICP-MS): Sample UA7 0.5-1.0 (EB2228615-002) shows poor matrix spike recovery 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 ($CaCO_3$) 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: EA029 (SPOCAS): 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.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA7 0-0.5	UA7 0.5-1.0	UA7 >1	UA7 1.0-1.5	UA7 1.5-2.0
			Sampling date / time	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17
Compound	CAS Number	LOR	Unit	EB2228615-001	EB2228615-002	EB2228615-003	EB2228615-004	EB2228615-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.8	8.6	----	8.6	8.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	----	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	----	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.254	0.460	----	0.472	0.215
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	159	287	----	294	134
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	3.48	2.04	----	7.74	8.18
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	696	408	----	1540	1630
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.12	0.65	----	2.48	2.62
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	----	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.02	----	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	15	----	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	1	----	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.25	0.46	----	0.47	0.22
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	159	287	----	294	134
Liming Rate excluding ANC	----	1	kg CaCO3/t	12	22	----	22	10
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	51.4	44.4	35.3	----	----
EA150: Particle Sizing								
+75µm	----	1	%	36	37	72	----	----
+150µm	----	1	%	19	30	70	----	----
+300µm	----	1	%	3	21	57	----	----
+425µm	----	1	%	2	16	45	----	----
+600µm	----	1	%	1	11	36	----	----
+1180µm	----	1	%	<1	3	16	----	----
+2.36mm	----	1	%	<1	<1	2	----	----
+4.75mm	----	1	%	<1	<1	<1	----	----
+9.5mm	----	1	%	<1	<1	<1	----	----
+19.0mm	----	1	%	<1	<1	<1	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA7 0-0.5	UA7 0.5-1.0	UA7 >1	UA7 1.0-1.5	UA7 1.5-2.0
			Sampling date / time	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17
Compound	CAS Number	LOR	Unit	EB2228615-001	EB2228615-002	EB2228615-003	EB2228615-004	EB2228615-005
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+37.5mm	----	1	%	<1	<1	<1	----	----
+75.0mm	----	1	%	<1	<1	<1	----	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	**39**	**39**	**17**	----	----
Silt (2-60 µm)	----	1	%	**23**	**22**	**11**	----	----
Sand (0.06-2.00 mm)	----	1	%	**38**	**38**	**66**	----	----
Gravel (>2mm)	----	1	%	<1	**1**	**6**	----	----
Cobbles (>6cm)	----	1	%	<1	<1	<1	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	**2.69**	**2.65**	**2.68**	----	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**7160**	**6190**	**3280**	----	----
Iron	7439-89-6	50	mg/kg	**21900**	**21200**	**22200**	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	----	----
Arsenic	7440-38-2	1.00	mg/kg	**12.7**	**12.9**	**26.2**	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
Chromium	7440-47-3	1.0	mg/kg	**17.1**	**16.7**	**15.0**	----	----
Copper	7440-50-8	1.0	mg/kg	**20.9**	**18.0**	**10.4**	----	----
Cobalt	7440-48-4	0.5	mg/kg	**10.1**	**9.8**	**12.4**	----	----
Lead	7439-92-1	1.0	mg/kg	**9.2**	**10.3**	**6.7**	----	----
Manganese	7439-96-5	10	mg/kg	**260**	**241**	**256**	----	----
Nickel	7440-02-0	1.0	mg/kg	**9.9**	**9.8**	**6.4**	----	----
Selenium	7782-49-2	0.1	mg/kg	**0.8**	**0.8**	**0.6**	----	----
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
Vanadium	7440-62-2	2.0	mg/kg	**45.1**	**44.2**	**49.3**	----	----
Zinc	7440-66-6	1.0	mg/kg	**55.0**	**46.2**	**22.0**	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	**0.02**	**0.02**	**0.02**	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<2	<1	<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								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA7 0-0.5	UA7 0.5-1.0	UA7 >1	UA7 1.0-1.5	UA7 1.5-2.0
			Sampling date / time	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17
Compound	CAS Number	LOR	Unit	EB2228615-001	EB2228615-002	EB2228615-003	EB2228615-004	EB2228615-005
				Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	870	650	700	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	870	650	700	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	300	290	236	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	1.20	1.27	2.45	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	----	----
C10 - C14 Fraction	----	3	mg/kg	<3	<3	4	----	----
C15 - C28 Fraction	----	3	mg/kg	6	<3	109	----	----
C29 - C36 Fraction	----	5	mg/kg	<5	<5	11	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg	6	<3	124	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	----	----
>C10 - C16 Fraction	----	3	mg/kg	<3	<3	4	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	<3.0	<3.0	----	----
>C16 - C34 Fraction	----	3	mg/kg	8	<3	116	----	----
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	16	----	----
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	8	<3	136	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	----	----
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	<1	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg	1.0	<0.5	<0.5	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	UA7 0-0.5	UA7 0.5-1.0	UA7 >1	UA7 1.0-1.5	UA7 1.5-2.0
				Sampling date / time	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17
					EB2228615-001	EB2228615-002	EB2228615-003	EB2228615-004	EB2228615-005
					Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	----	----
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	----	----
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	----	----
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	----	----
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	<10	----	----
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	<10	----	----
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	<10	----	----
Diazinon	333-41-5	10	µg/kg		<10	<10	<10	----	----
Dichlorvos	62-73-7	10	µg/kg		<10	<10	<10	----	----
Dimethoate	60-51-5	10	µg/kg		<10	<10	<10	----	----
Ethion	563-12-2	10	µg/kg		<10	<10	<10	----	----
Fenamiphos	22224-92-6	10	µg/kg		<10	<10	<10	----	----
Fenthion	55-38-9	10	µg/kg		<10	<10	<10	----	----
Malathion	121-75-5	10	µg/kg		<10	<10	<10	----	----
Azinphos Methyl	86-50-0	10	µg/kg		<10	<10	<10	----	----
Monocrotophos	6923-22-4	10	µg/kg		<10	<10	<10	----	----
Parathion	56-38-2	10	µg/kg		<10	<10	<10	----	----
Parathion-methyl	298-00-0	10	µg/kg		<10	<10	<10	----	----
Pirimphos-ethyl	23505-41-1	10	µg/kg		<10	<10	<10	----	----
Prothiofos	34643-46-4	10	µg/kg		<10	<10	<10	----	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	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	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA7 0-0.5	UA7 0.5-1.0	UA7 >1	UA7 1.0-1.5	UA7 1.5-2.0
			Sampling date / time	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17
Compound	CAS Number	LOR	Unit	EB2228615-001	EB2228615-002	EB2228615-003	EB2228615-004	EB2228615-005
				Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued								
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	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg	<0.50	<0.50	<0.50	----	----
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	<5	<5	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	<5	----	----
Acenaphthylene	208-96-8	4	µg/kg	<5	<4	<4	----	----
Acenaphthene	83-32-9	4	µg/kg	**12**	<4	<4	----	----
Fluorene	86-73-7	4	µg/kg	**6**	<4	<4	----	----
Phenanthrene	85-01-8	4	µg/kg	**38**	<4	<4	----	----
Anthracene	120-12-7	4	µg/kg	**6**	<4	<4	----	----
Fluoranthene	206-44-0	4	µg/kg	**48**	<4	<4	----	----
Pyrene	129-00-0	4	µg/kg	**37**	<4	<4	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	**22**	<4	<4	----	----
Chrysene	218-01-9	4	µg/kg	**23**	<4	<4	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	**24**	<4	<4	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	**9**	<4	<4	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	**14**	<4	<4	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	**20**	<4	<4	----	----
Perylene	198-55-0	4	µg/kg	**12**	<4	<4	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	**13**	<4	<4	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<5	<4	<4	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	**11**	<4	<4	----	----
Coronene	191-07-1	5	µg/kg	<5	<5	<5	----	----
^ Sum of PAHs	----	4	µg/kg	**295**	<4	<4	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA7 0-0.5	UA7 0.5-1.0	UA7 >1	UA7 1.0-1.5	UA7 1.5-2.0
			Sampling date / time	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17
Compound	CAS Number	LOR	Unit	EB2228615-001	EB2228615-002	EB2228615-003	EB2228615-004	EB2228615-005
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	**27**	<4	<4	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	**29**	**5**	**5**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	**31**	**10**	**10**	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA7 0-0.5	UA7 0.5-1.0	UA7 >1	UA7 1.0-1.5	UA7 1.5-2.0
			Sampling date / time	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17
Compound	CAS Number	LOR	Unit	EB2228615-001	EB2228615-002	EB2228615-003	EB2228615-004	EB2228615-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
Azinphos-methyl	86-50-0	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
Chlorfenvinphos	470-90-6	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
Coumaphos	56-72-4	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Diazinon	333-41-5	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Dimethoate	60-51-5	0.004	mg/kg	<0.006	<0.004	<0.004	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA7 0-0.5	UA7 0.5-1.0	UA7 >1	UA7 1.0-1.5	UA7 1.5-2.0
			Sampling date / time	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17
Compound	CAS Number	LOR	Unit	EB2228615-001	EB2228615-002	EB2228615-003	EB2228615-004	EB2228615-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Disulfoton	298-04-4	0.01	mg/kg	<0.02	<0.01	<0.01	----	----
Ethoprophos	13194-48-4	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Fenamiphos	22224-92-6	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Fenitrothion	122-14-5	0.5	mg/kg	<0.6	<0.5	<0.5	----	----
Fensulfothion	115-90-2	0.005	mg/kg	<0.005	<0.005	<0.005	----	----
Fenthion	55-38-9	0.010	mg/kg	<0.016	<0.010	<0.010	----	----
Malathion	121-75-5	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
^ Mevinphos	7786-34-7	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
Monocrotophos	6923-22-4	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
Omethoate	1113-02-6	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Parathion	56-38-2	0.05	mg/kg	<0.06	<0.05	<0.05	----	----
Parathion-methyl	298-00-0	0.5	mg/kg	<0.6	<0.5	<0.5	----	----
Phorate	298-02-2	0.02	mg/kg	<0.03	<0.02	<0.02	----	----
Pirimiphos-methyl	29232-93-7	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Sulfotep	3689-24-5	0.001	mg/kg	<0.002	<0.001	<0.001	----	----
Tetrachlorvinphos	22248-79-9	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Triazophos	24017-47-8	0.001	mg/kg	<0.002	<0.001	<0.001	----	----
EP234B: Thiocarbamates and Carbamates								
Aldicarb	116-06-3	0.01	mg/kg	<0.02	<0.01	<0.01	----	----
Bendiocarb	22781-23-3	1	mg/kg	<1	<1	<1	----	----
Benomyl	17804-35-2	0.005	mg/kg	<0.005	<0.005	<0.005	----	----
Carbaryl	63-25-2	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Carbofuran	1563-66-2	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
Methiocarb	2032-65-7	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Methomyl	16752-77-5	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Molinate	2212-67-1	0.02	mg/kg	<0.03	<0.02	<0.02	----	----
Oxamyl	23135-22-0	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Thiobencarb	28249-77-6	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Thiodicarb	59669-26-0	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
EP234D: Triazinone Herbicides								
Hexazinone	51235-04-2	0.004	mg/kg	<0.006	<0.004	<0.004	----	----
Metribuzin	21087-64-9	0.004	mg/kg	<0.006	<0.004	<0.004	----	----
EP234E: Conazole and Aminopyrimidine Fungicides								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA7 0-0.5	UA7 0.5-1.0	UA7 >1	UA7 1.0-1.5	UA7 1.5-2.0
			Sampling date / time	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17
Compound	CAS Number	LOR	Unit	EB2228615-001	EB2228615-002	EB2228615-003	EB2228615-004	EB2228615-005
				Result	Result	Result	Result	Result
EP234E: Conazole and Aminopyrimidine Fungicides - Continued								
Cyproconazole	94361-06-5	0.004	mg/kg	<0.006	<0.004	<0.004	----	----
Flusilazole	85509-19-9	0.004	mg/kg	<0.006	<0.004	<0.004	----	----
Hexaconazole	79983-71-4	0.004	mg/kg	<0.006	<0.004	<0.004	----	----
Paclobutrazole	76738-62-0	0.01	mg/kg	<0.02	<0.01	<0.01	----	----
Propiconazole	60207-90-1	0.01	mg/kg	<0.02	<0.01	<0.01	----	----
Tebuconazole	107534-96-3	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Cyprodinil	121552-61-2	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Pyrimethanil	53112-28-0	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides								
Diuron	330-54-1	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
Fluometuron	2164-17-2	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Tebuthiuron	34014-18-1	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
Bromacil	314-40-9	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
EP234G: Chloracetanilides								
Metolachlor	51218-45-2	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
EP234H: Triazine Herbicides								
Ametryn	834-12-8	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Atrazine	1912-24-9	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Cyanazine	21725-46-2	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
Prometryn	7287-19-6	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Propazine	139-40-2	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Simazine	122-34-9	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
Terbuthylazine	5915-41-3	0.002	mg/kg	<0.003	<0.002	<0.002	----	----
Terbutryn	886-50-0	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
Fenarimol	60168-88-9	0.005	mg/kg	<0.006	<0.005	<0.005	----	----
Irgarol	28159-98-0	0.001	mg/kg	<0.001	<0.001	<0.001	----	----
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**75.7**	**80.7**	**72.8**	----	----
Toluene-D8	2037-26-5	0.2	%	**66.5**	**75.4**	**61.3**	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**67.1**	**79.1**	**61.7**	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	**75.9**	**87.5**	**81.9**	----	----
EP130S: Organophosphorus Pesticide Surrogate								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	UA7 0-0.5	UA7 0.5-1.0	UA7 >1	UA7 1.0-1.5	UA7 1.5-2.0
				Sampling date / time	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17	28-Sep-2022 10:17
Compound	CAS Number	LOR	Unit		EB2228615-001	EB2228615-002	EB2228615-003	EB2228615-004	EB2228615-005
					Result	Result	Result	Result	Result
EP130S: Organophosphorus Pesticide Surrogate - Continued									
DEF	78-48-8	10	%		**53.0**	**75.5**	**82.9**	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		**49.9**	**82.1**	**62.4**	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		**91.1**	**96.8**	**96.6**	----	----
Anthracene-d10	1719-06-8	10	%		**108**	**103**	**110**	----	----
4-Terphenyl-d14	1718-51-0	10	%		**89.5**	**80.8**	**88.4**	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**104**	**92.0**	**108**	----	----
13C8-PFOA	----	0.0002	%		**107**	**97.0**	**107**	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	UA8 0-0.5	UA9 0-0.5	UA12 0-0.5	UA9 0.5-1.0	UA6 0.0-0.5
				Sampling date / time	28-Sep-2022 14:34	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:59
					EB2228615-006	EB2228615-007	EB2228615-008	EB2228615-010	EB2228615-011
					Result	Result	Result	Result	Result
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		8.2	8.2	8.2	8.4	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		0.953	0.622	0.714	0.769	0.327
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		594	388	445	479	204
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		3.54	1.93	1.92	2.90	4.25
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		707	386	385	580	849
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		1.13	0.62	0.62	0.93	1.36
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		0.20	0.21	0.30	0.15	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t		123	131	189	93	<10
Liming Rate	----	1	kg CaCO3/t		9	10	14	7	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		0.95	0.62	0.71	0.77	0.33
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		594	388	445	479	204
Liming Rate excluding ANC	----	1	kg CaCO3/t		45	29	33	36	15
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		47.2	48.6	47.7	44.5	54.3
EA150: Particle Sizing									
+75µm	----	1	%		19	12	8	13	9
+150µm	----	1	%		13	6	3	7	1
+300µm	----	1	%		7	2	<1	3	<1
+425µm	----	1	%		6	1	<1	2	<1
+600µm	----	1	%		5	1	<1	2	<1
+1180µm	----	1	%		2	<1	<1	1	<1
+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

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA8 0-0.5	UA9 0-0.5	UA12 0-0.5	UA9 0.5-1.0	UA6 0.0-0.5
			Sampling date / time	28-Sep-2022 14:34	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:59
Compound	CAS Number	LOR	Unit	EB2228615-006	EB2228615-007	EB2228615-008	EB2228615-010	EB2228615-011
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+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	47	48	49	48
Silt (2-60 µm)	----	1	%	40	39	41	36	41
Sand (0.06-2.00 mm)	----	1	%	19	14	11	14	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	2.71	2.61	2.49	2.56	2.55
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	6830	9000	8150	8660	7100
Iron	7439-89-6	50	mg/kg	22300	24800	21500	24800	16400
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	11.4	13.3	10.9	15.4	10.1
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	15.2	19.9	17.6	19.4	14.8
Copper	7440-50-8	1.0	mg/kg	18.1	23.7	21.4	20.2	17.5
Cobalt	7440-48-4	0.5	mg/kg	14.7	10.3	9.7	11.6	7.8
Lead	7439-92-1	1.0	mg/kg	11.6	11.5	10.5	10.0	6.9
Manganese	7439-96-5	10	mg/kg	536	198	246	264	168
Nickel	7440-02-0	1.0	mg/kg	10.6	10.6	9.8	11.2	8.1
Selenium	7782-49-2	0.1	mg/kg	0.8	1.0	0.9	1.2	0.8
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	46.5	47.3	44.8	48.9	34.1
Zinc	7440-66-6	1.0	mg/kg	43.5	48.7	49.5	37.2	37.8
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.01	0.03	0.02	0.03	0.01
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<1	<1	<1	<2
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.2	<0.1	<0.1	0.1	0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA8 0-0.5	UA9 0-0.5	UA12 0-0.5	UA9 0.5-1.0	UA6 0.0-0.5
			Sampling date / time	28-Sep-2022 14:34	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:59
Compound	CAS Number	LOR	Unit	EB2228615-006	EB2228615-007	EB2228615-008	EB2228615-010	EB2228615-011
				Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	660	950	840	990	850
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	660	950	840	990	850
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	321	324	309	303	302
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.97	1.48	1.51	1.48	1.31
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	4	<3	3	<3	<3
C15 - C28 Fraction	----	3	mg/kg	6	4	6	4	3
C29 - C36 Fraction	----	5	mg/kg	6	<5	6	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg	16	4	15	4	3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
>C10 - C16 Fraction	----	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
>C16 - C34 Fraction	----	3	mg/kg	10	7	10	6	4
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	10	7	10	6	4
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	UA8 0-0.5	UA9 0-0.5	UA12 0-0.5	UA9 0.5-1.0	UA6 0.0-0.5
				Sampling date / time	28-Sep-2022 14:34	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:59
					EB2228615-006	EB2228615-007	EB2228615-008	EB2228615-010	EB2228615-011
					Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg		<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg		<10	<10	<10	<10	<10
Dimethoate	60-51-5	10	µg/kg		<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg		<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg		<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg		<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg		<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg		<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg		<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg		<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg		<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg		<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg		<10	<10	<10	<10	<10
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	UA8 0-0.5	UA9 0-0.5	UA12 0-0.5	UA9 0.5-1.0	UA6 0.0-0.5
				Sampling date / time	28-Sep-2022 14:34	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:59
					EB2228615-006	EB2228615-007	EB2228615-008	EB2228615-010	EB2228615-011
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin	72-20-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
^ **Total Chlordane (sum)**	----	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<4	<4	<5
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	<4	<5
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	<4	<5
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	<4	**7**
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	<4	<5
Fluoranthene	206-44-0	4	µg/kg		**5**	<4	<4	<4	**12**
Pyrene	129-00-0	4	µg/kg		**5**	**4**	<4	<4	**11**
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	<4	**7**
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	<4	**8**
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	<4	**10**
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	<4	<5
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	<4	**6**
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	**8**
Perylene	198-55-0	4	µg/kg		<4	<4	<4	<4	<5
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	**6**
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<5
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<5
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ **Sum of PAHs**	----	4	µg/kg		**10**	**4**	<4	<4	**75**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA8 0-0.5	UA9 0-0.5	UA12 0-0.5	UA9 0.5-1.0	UA6 0.0-0.5
			Sampling date / time	28-Sep-2022 14:34	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:59
Compound	CAS Number	LOR	Unit	EB2228615-006	EB2228615-007	EB2228615-008	EB2228615-010	EB2228615-011
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	<4	<4	<4	**10**
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	**5**	**5**	**5**	**5**	**12**
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	**10**	**10**	**10**	**10**	**15**
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
Azinphos-methyl	86-50-0	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
Chlorfenvinphos	470-90-6	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
Coumaphos	56-72-4	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Diazinon	333-41-5	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Dimethoate	60-51-5	0.004	mg/kg	<0.004	<0.004	<0.004	<0.004	<0.006
Disulfoton	298-04-4	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.02
Ethoprophos	13194-48-4	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Fenamiphos	22224-92-6	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Fenitrothion	122-14-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.6
Fensulfothion	115-90-2	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005
Fenthion	55-38-9	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.016
Malathion	121-75-5	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
^ Mevinphos	7786-34-7	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
Monocrotophos	6923-22-4	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
Omethoate	1113-02-6	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Parathion	56-38-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.06
Parathion-methyl	298-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.6
Phorate	298-02-2	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.03
Pirimiphos-methyl	29232-93-7	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Sulfotep	3689-24-5	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.002
Tetrachlorvinphos	22248-79-9	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Triazophos	24017-47-8	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.002
EP234B: Thiocarbamates and Carbamates								
Aldicarb	116-06-3	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.02
Bendiocarb	22781-23-3	1	mg/kg	<1	<1	<1	<1	<1
Benomyl	17804-35-2	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005
Carbaryl	63-25-2	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Carbofuran	1563-66-2	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA8 0-0.5	UA9 0-0.5	UA12 0-0.5	UA9 0.5-1.0	UA6 0.0-0.5
			Sampling date / time	28-Sep-2022 14:34	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:59
Compound	CAS Number	LOR	Unit	EB2228615-006	EB2228615-007	EB2228615-008	EB2228615-010	EB2228615-011
				Result	Result	Result	Result	Result
EP234B: Thiocarbamates and Carbamates - Continued								
Methiocarb	2032-65-7	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Methomyl	16752-77-5	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Molinate	2212-67-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.03
Oxamyl	23135-22-0	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Thiobencarb	28249-77-6	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Thiodicarb	59669-26-0	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
EP234D: Triazinone Herbicides								
Hexazinone	51235-04-2	0.004	mg/kg	<0.004	<0.004	<0.004	<0.004	<0.006
Metribuzin	21087-64-9	0.004	mg/kg	<0.004	<0.004	<0.004	<0.004	<0.006
EP234E: Conazole and Aminopyrimidine Fungicides								
Cyproconazole	94361-06-5	0.004	mg/kg	<0.004	<0.004	<0.004	<0.004	<0.006
Flusilazole	85509-19-9	0.004	mg/kg	<0.004	<0.004	<0.004	<0.004	<0.006
Hexaconazole	79983-71-4	0.004	mg/kg	<0.004	<0.004	<0.004	<0.004	<0.006
Paclobutrazole	76738-62-0	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.02
Propiconazole	60207-90-1	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.02
Tebuconazole	107534-96-3	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Cyprodinil	121552-61-2	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Pyrimethanil	53112-28-0	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides								
Diuron	330-54-1	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
Fluometuron	2164-17-2	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Tebuthiuron	34014-18-1	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
Bromacil	314-40-9	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
EP234G: Chloracetanilides								
Metolachlor	51218-45-2	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
EP234H: Triazine Herbicides								
Ametryn	834-12-8	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Atrazine	1912-24-9	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Cyanazine	21725-46-2	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
Prometryn	7287-19-6	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Propazine	139-40-2	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Simazine	122-34-9	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
Terbuthylazine	5915-41-3	0.002	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.003
Terbutryn	886-50-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA8 0-0.5	UA9 0-0.5	UA12 0-0.5	UA9 0.5-1.0	UA6 0.0-0.5
			Sampling date / time	28-Sep-2022 14:34	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:20	28-Sep-2022 11:59
Compound	CAS Number	LOR	Unit	EB2228615-006	EB2228615-007	EB2228615-008	EB2228615-010	EB2228615-011
				Result	Result	Result	Result	Result
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
Fenarimol	60168-88-9	0.005	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.006
Irgarol	28159-98-0	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**83.6**	**68.6**	**76.6**	**83.3**	**79.5**
Toluene-D8	2037-26-5	0.2	%	**78.6**	**55.4**	**67.3**	**72.9**	**66.2**
4-Bromofluorobenzene	460-00-4	0.2	%	**79.9**	**59.7**	**68.7**	**76.0**	**62.5**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	**107**	**88.6**	**85.2**	**93.8**	**83.7**
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	**58.7**	**76.5**	**57.8**	**48.0**	**87.2**
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	**56.9**	**86.8**	**48.8**	**49.9**	**66.3**
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	**89.5**	**80.7**	**69.5**	**105**	**73.1**
Anthracene-d10	1719-06-8	10	%	**98.1**	**91.4**	**79.1**	**116**	**87.3**
4-Terphenyl-d14	1718-51-0	10	%	**83.1**	**84.5**	**77.7**	**95.5**	**76.2**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	UA6 0.5-1.0	UA6 >1	UA6 1.0-1.5	UA6 1.5-2.0	Trip Blank
				Sampling date / time	28-Sep-2022 01:59	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00
					EB2228615-012	EB2228615-013	EB2228615-014	EB2228615-015	EB2228615-016
					Result	Result	Result	Result	Result
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		**8.7**	----	**8.7**	**8.6**	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	----	<2	<2	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	----	<0.02	<0.02	----
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.005	% S		**0.456**	----	**0.637**	**0.332**	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		**284**	----	**397**	**207**	----
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		**4.28**	----	**3.01**	**3.53**	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		**856**	----	**601**	**705**	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		**1.37**	----	**0.96**	**1.13**	----
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		**1.5**	----	**1.5**	**1.5**	----
Net Acidity (sulfur units)	----	0.02	% S		<0.02	----	<0.02	<0.02	----
Net Acidity (acidity units)	----	10	mole H+ / t		<10	----	<10	<10	----
Liming Rate	----	1	kg CaCO3/t		<1	----	<1	<1	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		**0.46**	----	**0.64**	**0.33**	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		**284**	----	**397**	**207**	----
Liming Rate excluding ANC	----	1	kg CaCO3/t		**21**	----	**30**	**16**	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**48.0**	**34.8**	----	----	----
EA150: Particle Sizing									
+75µm	----	1	%		**4**	**23**	----	----	----
+150µm	----	1	%		<1	**12**	----	----	----
+300µm	----	1	%		<1	**6**	----	----	----
+425µm	----	1	%		<1	**4**	----	----	----
+600µm	----	1	%		<1	**3**	----	----	----
+1180µm	----	1	%		<1	**2**	----	----	----
+2.36mm	----	1	%		<1	**1**	----	----	----
+4.75mm	----	1	%		<1	<1	----	----	----
+9.5mm	----	1	%		<1	<1	----	----	----
+19.0mm	----	1	%		<1	<1	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA6 0.5-1.0	UA6 >1	UA6 1.0-1.5	UA6 1.5-2.0	Trip Blank
			Sampling date / time	28-Sep-2022 01:59	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00
Compound	CAS Number	LOR	Unit	EB2228615-012	EB2228615-013	EB2228615-014	EB2228615-015	EB2228615-016
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+37.5mm	----	1	%	<1	<1	----	----	----
+75.0mm	----	1	%	<1	<1	----	----	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	**53**	**41**	----	----	----
Silt (2-60 µm)	----	1	%	**42**	**35**	----	----	----
Sand (0.06-2.00 mm)	----	1	%	**5**	**23**	----	----	----
Gravel (>2mm)	----	1	%	<1	**1**	----	----	----
Cobbles (>6cm)	----	1	%	<1	<1	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	**2.66**	**2.64**	----	----	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**9600**	**6140**	----	----	----
Iron	7439-89-6	50	mg/kg	**23000**	**17600**	----	----	----
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	**10.9**	**9.73**	----	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	----	----	----
Chromium	7440-47-3	1.0	mg/kg	**19.4**	**12.3**	----	----	----
Copper	7440-50-8	1.0	mg/kg	**22.7**	**17.1**	----	----	----
Cobalt	7440-48-4	0.5	mg/kg	**10.6**	**11.1**	----	----	----
Lead	7439-92-1	1.0	mg/kg	**10.5**	**7.6**	----	----	----
Manganese	7439-96-5	10	mg/kg	**204**	**308**	----	----	----
Nickel	7440-02-0	1.0	mg/kg	**11.2**	**8.4**	----	----	----
Selenium	7782-49-2	0.1	mg/kg	**1.0**	**0.6**	----	----	----
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	----	----	----
Vanadium	7440-62-2	2.0	mg/kg	**48.4**	**42.0**	----	----	----
Zinc	7440-66-6	1.0	mg/kg	**50.0**	**31.9**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	**0.02**	**0.02**	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<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								

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	UA6 0.5-1.0	UA6 >1	UA6 1.0-1.5	UA6 1.5-2.0	Trip Blank
				Sampling date / time	28-Sep-2022 01:59	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00
					EB2228615-012	EB2228615-013	EB2228615-014	EB2228615-015	EB2228615-016
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		**880**	**680**	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)									
^ **Total Nitrogen as N**	----	20	mg/kg		**880**	**680**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		**398**	**216**	----	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**1.14**	**0.68**	----	----	----
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
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		----	----	----	----	<10
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		**4**	<3	----	----	----
C29 - C36 Fraction	----	5	mg/kg		<5	<5	----	----	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		**4**	<3	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	----	----	----
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	----	----	----
>C16 - C34 Fraction	----	3	mg/kg		**6**	**3**	----	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	UA6 0.5-1.0	UA6 >1	UA6 1.0-1.5	UA6 1.5-2.0	Trip Blank
				Sampling date / time	28-Sep-2022 01:59	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00
					EB2228615-012	EB2228615-013	EB2228615-014	EB2228615-015	EB2228615-016
					Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons - Continued									
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	3	mg/kg		**6**	**3**	----	----	----
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									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg		**2**	<1	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg		**1.3**	**0.8**	----	----	----
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	----	----	----
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	----	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	UA6 0.5-1.0	UA6 >1	UA6 1.0-1.5	UA6 1.5-2.0	Trip Blank
				Sampling date / time	28-Sep-2022 01:59	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00
					EB2228615-012	EB2228615-013	EB2228615-014	EB2228615-015	EB2228615-016
					Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued									
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**	72-54-8/72-55-9/50-29-2	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	0.50	µg/kg		<0.50	<0.50	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	<0.50	----	----	----
^ **Total Chlordane (sum)**	----	0.50	µg/kg		<0.50	<0.50	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA6 0.5-1.0	UA6 >1	UA6 1.0-1.5	UA6 1.5-2.0	Trip Blank
			Sampling date / time	28-Sep-2022 01:59	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00
Compound	CAS Number	LOR	Unit	EB2228615-012	EB2228615-013	EB2228615-014	EB2228615-015	EB2228615-016
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Fluorene	86-73-7	4	µg/kg	<4	<4	----	----	----
Phenanthrene	85-01-8	4	µg/kg	7	8	----	----	----
Anthracene	120-12-7	4	µg/kg	<4	<4	----	----	----
Fluoranthene	206-44-0	4	µg/kg	12	26	----	----	----
Pyrene	129-00-0	4	µg/kg	13	20	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	8	19	----	----	----
Chrysene	218-01-9	4	µg/kg	10	26	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	10	21	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	5	11	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	7	13	----	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	10	20	----	----	----
Perylene	198-55-0	4	µg/kg	6	7	----	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	7	11	----	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	<4	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	6	10	----	----	----
Coronene	191-07-1	5	µg/kg	<5	<5	----	----	----
^ Sum of PAHs	----	4	µg/kg	101	192	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	13	26	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	15	28	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	17	30	----	----	----
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.005	mg/kg	<0.005	<0.005	----	----	----
Azinphos-methyl	86-50-0	0.005	mg/kg	<0.005	<0.005	----	----	----
Chlorfenvinphos	470-90-6	0.005	mg/kg	<0.005	<0.005	----	----	----
Coumaphos	56-72-4	0.002	mg/kg	<0.002	<0.002	----	----	----
Diazinon	333-41-5	0.002	mg/kg	<0.002	<0.002	----	----	----
Dimethoate	60-51-5	0.004	mg/kg	<0.004	<0.004	----	----	----
Disulfoton	298-04-4	0.01	mg/kg	<0.01	<0.01	----	----	----
Ethoprophos	13194-48-4	0.002	mg/kg	<0.002	<0.002	----	----	----
Fenamiphos	22224-92-6	0.002	mg/kg	<0.002	<0.002	----	----	----
Fenitrothion	122-14-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Fensulfothion	115-90-2	0.005	mg/kg	<0.005	<0.005	----	----	----
Fenthion	55-38-9	0.010	mg/kg	<0.010	<0.010	----	----	----
Malathion	121-75-5	0.005	mg/kg	<0.005	<0.005	----	----	----
^ Mevinphos	7786-34-7	0.005	mg/kg	<0.005	<0.005	----	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	UA6 0.5-1.0	UA6 >1	UA6 1.0-1.5	UA6 1.5-2.0	Trip Blank
				Sampling date / time	28-Sep-2022 01:59	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00
					EB2228615-012	EB2228615-013	EB2228615-014	EB2228615-015	EB2228615-016
					Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued									
Monocrotophos	6923-22-4	0.005	mg/kg		<0.005	<0.005	----	----	----
Omethoate	1113-02-6	0.002	mg/kg		<0.002	<0.002	----	----	----
Parathion	56-38-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Parathion-methyl	298-00-0	0.5	mg/kg		<0.5	<0.5	----	----	----
Phorate	298-02-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Pirimiphos-methyl	29232-93-7	0.002	mg/kg		<0.002	<0.002	----	----	----
Sulfotep	3689-24-5	0.001	mg/kg		<0.001	<0.001	----	----	----
Tetrachlorvinphos	22248-79-9	0.002	mg/kg		<0.002	<0.002	----	----	----
Triazophos	24017-47-8	0.001	mg/kg		<0.001	<0.001	----	----	----
EP234B: Thiocarbamates and Carbamates									
Aldicarb	116-06-3	0.01	mg/kg		<0.01	<0.01	----	----	----
Bendiocarb	22781-23-3	1	mg/kg		<1	<1	----	----	----
Benomyl	17804-35-2	0.005	mg/kg		<0.005	<0.005	----	----	----
Carbaryl	63-25-2	0.002	mg/kg		<0.002	<0.002	----	----	----
Carbofuran	1563-66-2	0.002	mg/kg		<0.002	<0.002	----	----	----
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg		<0.005	<0.005	----	----	----
Methiocarb	2032-65-7	0.002	mg/kg		<0.002	<0.002	----	----	----
Methomyl	16752-77-5	0.002	mg/kg		<0.002	<0.002	----	----	----
Molinate	2212-67-1	0.02	mg/kg		<0.02	<0.02	----	----	----
Oxamyl	23135-22-0	0.002	mg/kg		<0.002	<0.002	----	----	----
Thiobencarb	28249-77-6	0.002	mg/kg		<0.002	<0.002	----	----	----
Thiodicarb	59669-26-0	0.002	mg/kg		<0.002	<0.002	----	----	----
EP234D: Triazinone Herbicides									
Hexazinone	51235-04-2	0.004	mg/kg		<0.004	<0.004	----	----	----
Metribuzin	21087-64-9	0.004	mg/kg		<0.004	<0.004	----	----	----
EP234E: Conazole and Aminopyrimidine Fungicides									
Cyproconazole	94361-06-5	0.004	mg/kg		<0.004	<0.004	----	----	----
Flusilazole	85509-19-9	0.004	mg/kg		<0.004	<0.004	----	----	----
Hexaconazole	79983-71-4	0.004	mg/kg		<0.004	<0.004	----	----	----
Paclobutrazole	76738-62-0	0.01	mg/kg		<0.01	<0.01	----	----	----
Propiconazole	60207-90-1	0.01	mg/kg		<0.01	<0.01	----	----	----
Tebuconazole	107534-96-3	0.002	mg/kg		<0.002	<0.002	----	----	----
Cyprodinil	121552-61-2	0.002	mg/kg		<0.002	<0.002	----	----	----
Pyrimethanil	53112-28-0	0.005	mg/kg		<0.005	<0.005	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA6 0.5-1.0	UA6 >1	UA6 1.0-1.5	UA6 1.5-2.0	Trip Blank
			Sampling date / time	28-Sep-2022 01:59	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00
Compound	CAS Number	LOR	Unit	EB2228615-012	EB2228615-013	EB2228615-014	EB2228615-015	EB2228615-016
				Result	Result	Result	Result	Result
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides								
Diuron	330-54-1	0.005	mg/kg	<0.005	<0.005	----	----	----
Fluometuron	2164-17-2	0.002	mg/kg	<0.002	<0.002	----	----	----
Tebuthiuron	34014-18-1	0.005	mg/kg	<0.005	<0.005	----	----	----
Bromacil	314-40-9	0.005	mg/kg	<0.005	<0.005	----	----	----
EP234G: Chloracetanilides								
Metolachlor	51218-45-2	0.002	mg/kg	<0.002	<0.002	----	----	----
EP234H: Triazine Herbicides								
Ametryn	834-12-8	0.002	mg/kg	<0.002	<0.002	----	----	----
Atrazine	1912-24-9	0.002	mg/kg	<0.002	<0.002	----	----	----
Cyanazine	21725-46-2	0.005	mg/kg	<0.005	<0.005	----	----	----
Prometryn	7287-19-6	0.002	mg/kg	<0.002	<0.002	----	----	----
Propazine	139-40-2	0.002	mg/kg	<0.002	<0.002	----	----	----
Simazine	122-34-9	0.005	mg/kg	<0.005	<0.005	----	----	----
Terbuthylazine	5915-41-3	0.002	mg/kg	<0.002	<0.002	----	----	----
Terbutryn	886-50-0	0.1	mg/kg	<0.1	<0.1	----	----	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
Fenarimol	60168-88-9	0.005	mg/kg	<0.005	<0.005	----	----	----
Irgarol	28159-98-0	0.001	mg/kg	<0.001	<0.001	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	97.7
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	91.8
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	92.7
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	77.7	82.8	----	----	----
Toluene-D8	2037-26-5	0.2	%	70.6	72.0	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	70.8	72.6	----	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	89.6	95.7	----	----	----
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	57.8	53.9	----	----	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	55.4	46.9	----	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	98.6	97.4	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	UA6 0.5-1.0	UA6 >1	UA6 1.0-1.5	UA6 1.5-2.0	Trip Blank
				Sampling date / time	28-Sep-2022 01:59	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:00
Compound	CAS Number	LOR	Unit		EB2228615-012	EB2228615-013	EB2228615-014	EB2228615-015	EB2228615-016
					Result	Result	Result	Result	Result
EP132T: Base/Neutral Extractable Surrogates - Continued									
Anthracene-d10	1719-06-8	10	%		**109**	**106**	**----**	**----**	**----**
4-Terphenyl-d14	1718-51-0	10	%		**85.5**	**85.8**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	Trip Spike Blank	UA4 0-0.5	UA5 0-0.5	UA3 0-0.5	UA3 0.5-1.0
			Sampling date / time	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:35	28-Sep-2022 12:54	28-Sep-2022 12:54
Compound	CAS Number	LOR	Unit	EB2228615-017	EB2228615-018	EB2228615-019	EB2228615-020	EB2228615-021
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	8.6	8.8	8.8	8.9
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	0.394	0.225	0.257	0.257
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	246	140	160	160
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	2.88	4.17	3.75	19.9
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	576	833	749	3970
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	0.92	1.34	1.20	6.37
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	----	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	----	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	----	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	0.39	0.22	0.26	0.26
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	246	140	160	160
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	18	10	12	12
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	50.8	48.7	43.8	39.2
EA150: Particle Sizing								
+75µm	----	1	%	----	8	17	50	48
+150µm	----	1	%	----	2	4	37	44
+300µm	----	1	%	----	1	1	7	28
+425µm	----	1	%	----	<1	<1	3	21
+600µm	----	1	%	----	<1	<1	2	17
+1180µm	----	1	%	----	<1	<1	1	13
+2.36mm	----	1	%	----	<1	<1	<1	10
+4.75mm	----	1	%	----	<1	<1	<1	4
+9.5mm	----	1	%	----	<1	<1	<1	<1
+19.0mm	----	1	%	----	<1	<1	<1	<1

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	Trip Spike Blank	UA4 0-0.5	UA5 0-0.5	UA3 0-0.5	UA3 0.5-1.0
			Sampling date / time	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:35	28-Sep-2022 12:54	28-Sep-2022 12:54
Compound	CAS Number	LOR	Unit	EB2228615-017	EB2228615-018	EB2228615-019	EB2228615-020	EB2228615-021
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+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	%	----	49	46	26	27
Silt (2-60 µm)	----	1	%	----	42	35	22	24
Sand (0.06-2.00 mm)	----	1	%	----	9	19	51	38
Gravel (>2mm)	----	1	%	----	<1	<1	1	11
Cobbles (>6cm)	----	1	%	----	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	2.67	2.60	2.65	2.66
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	8580	8460	5420	6300
Iron	7439-89-6	50	mg/kg	----	22200	21600	17400	23500
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	----	11.7	10.6	11.6	18.1
Cadmium	7440-43-9	0.1	mg/kg	----	<0.1	<0.1	<0.1	0.2
Chromium	7440-47-3	1.0	mg/kg	----	18.5	18.0	12.3	15.8
Copper	7440-50-8	1.0	mg/kg	----	24.3	22.4	12.7	14.6
Cobalt	7440-48-4	0.5	mg/kg	----	10.6	10.7	7.4	12.4
Lead	7439-92-1	1.0	mg/kg	----	11.0	10.5	6.6	8.8
Manganese	7439-96-5	10	mg/kg	----	302	244	406	12300
Nickel	7440-02-0	1.0	mg/kg	----	10.9	10.4	6.4	10.5
Selenium	7782-49-2	0.1	mg/kg	----	0.9	0.9	0.6	0.8
Silver	7440-22-4	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg	----	47.1	46.1	34.5	50.9
Zinc	7440-66-6	1.0	mg/kg	----	55.8	50.8	32.8	31.9
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	----	0.03	0.02	0.01	0.02
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	<2	<1	<1	<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								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	Trip Spike Blank	UA4 0-0.5	UA5 0-0.5	UA3 0-0.5	UA3 0.5-1.0
				Sampling date / time	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:35	28-Sep-2022 12:54	28-Sep-2022 12:54
Compound	CAS Number	LOR	Unit		EB2228615-017	EB2228615-018	EB2228615-019	EB2228615-020	EB2228615-021
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		----	860	1100	600	520
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		----	860	1100	600	520
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		----	360	339	244	294
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		----	1.06	1.14	1.39	0.76
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		49	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		58	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		30	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		0.9	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		10.8	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		2.2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		10.0	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		3.9	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		27.8	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		13.9	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
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	4	<3
C29 - C36 Fraction	----	5	mg/kg		----	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		----	3	<3	4	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		----	<3	<3	<3	<3
>C10 - C16 Fraction	----	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
>C16 - C34 Fraction	----	3	mg/kg		----	5	<3	6	<3

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	Trip Spike Blank	UA4 0-0.5	UA5 0-0.5	UA3 0-0.5	UA3 0.5-1.0
				Sampling date / time	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:35	28-Sep-2022 12:54	28-Sep-2022 12:54
					EB2228615-017	EB2228615-018	EB2228615-019	EB2228615-020	EB2228615-021
					Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons - Continued									
>C34 - C40 Fraction	----	5	mg/kg		----	<5	<5	<5	<5
^ **>C10 - C40 Fraction (sum)**	----	3	mg/kg		----	**5**	<3	**6**	<3
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		----	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		----	<1	**1**	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg		----	<1	**23**	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg		----	**0.5**	**45.1**	**0.7**	<0.5
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		----	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		----	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		----	<10.0	<10.0	<10.0	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		----	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg		----	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		----	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg		----	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg		----	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg		----	<10	<10	<10	<10
Dimethoate	60-51-5	10	µg/kg		----	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg		----	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg		----	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg		----	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg		----	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg		----	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg		----	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg		----	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg		----	<10	<10	<10	<10

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	Trip Spike Blank	UA4 0-0.5	UA5 0-0.5	UA3 0-0.5	UA3 0.5-1.0
				Sampling date / time	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:35	28-Sep-2022 12:54	28-Sep-2022 12:54
					EB2228615-017	EB2228615-018	EB2228615-019	EB2228615-020	EB2228615-021
					Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued									
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	0.50	µg/kg		----	<0.50	<0.50	<0.50	<0.50
trans-Chlordane	5103-74-2	0.50	µg/kg		----	<0.50	<0.50	<0.50	<0.50
^ **Total Chlordane (sum)**	----	0.50	µg/kg		----	<0.50	<0.50	<0.50	<0.50
Oxychlordane	27304-13-8	0.50	µg/kg		----	<0.50	<0.50	<0.50	<0.50
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.50	µg/kg		----	<0.50	<0.50	<0.50	<0.50
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		----	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		----	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		----	<5	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg		----	<5	<4	<4	<4

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	Trip Spike Blank	UA4 0-0.5	UA5 0-0.5	UA3 0-0.5	UA3 0.5-1.0
				Sampling date / time	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:35	28-Sep-2022 12:54	28-Sep-2022 12:54
					EB2228615-017	EB2228615-018	EB2228615-019	EB2228615-020	EB2228615-021
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Fluorene	86-73-7	4	µg/kg		----	**6**	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg		----	**13**	**8**	<4	<4
Anthracene	120-12-7	4	µg/kg		----	**5**	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg		----	**33**	**24**	**6**	<4
Pyrene	129-00-0	4	µg/kg		----	**30**	**21**	**7**	<4
Benz(a)anthracene	56-55-3	4	µg/kg		----	**10**	**14**	<4	<4
Chrysene	218-01-9	4	µg/kg		----	**10**	**13**	**4**	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		----	**13**	**16**	**4**	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		----	<5	**6**	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		----	**8**	**10**	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		----	**8**	**14**	<4	<4
Perylene	198-55-0	4	µg/kg		----	**8**	**6**	<4	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		----	**7**	**10**	<4	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		----	<5	<4	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		----	**5**	**8**	<4	<4
Coronene	191-07-1	5	µg/kg		----	<5	<5	<5	<5
^ **Sum of PAHs**	----	4	µg/kg		----	**156**	**150**	**21**	<4
^ **Benzo(a)pyrene TEQ (zero)**	----	4	µg/kg		----	**11**	**19**	<4	<4
^ **Benzo(a)pyrene TEQ (half LOR)**	----	4	µg/kg		----	**13**	**21**	**5**	**5**
^ **Benzo(a)pyrene TEQ (LOR)**	----	4	µg/kg		----	**15**	**23**	**10**	**10**
EP234A: OP Pesticides									
Azinphos-ethyl	2642-71-9	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005
Azinphos-methyl	86-50-0	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005
Chlorfenvinphos	470-90-6	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005
Coumaphos	56-72-4	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Diazinon	333-41-5	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Dimethoate	60-51-5	0.004	mg/kg		----	<0.006	<0.004	<0.004	<0.004
Disulfoton	298-04-4	0.01	mg/kg		----	<0.02	<0.01	<0.01	<0.01
Ethoprophos	13194-48-4	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Fenamiphos	22224-92-6	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Fenitrothion	122-14-5	0.5	mg/kg		----	<0.6	<0.5	<0.5	<0.5
Fensulfothion	115-90-2	0.005	mg/kg		----	<0.005	<0.005	<0.005	<0.005
Fenthion	55-38-9	0.010	mg/kg		----	<0.016	<0.010	<0.010	<0.010
Malathion	121-75-5	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005
^ **Mevinphos**	7786-34-7	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	Trip Spike Blank	UA4 0-0.5	UA5 0-0.5	UA3 0-0.5	UA3 0.5-1.0
				Sampling date / time	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:35	28-Sep-2022 12:54	28-Sep-2022 12:54
					EB2228615-017	EB2228615-018	EB2228615-019	EB2228615-020	EB2228615-021
					Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued									
Monocrotophos	6923-22-4	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005
Omethoate	1113-02-6	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Parathion	56-38-2	0.05	mg/kg		----	<0.06	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.5	mg/kg		----	<0.6	<0.5	<0.5	<0.5
Phorate	298-02-2	0.02	mg/kg		----	<0.03	<0.02	<0.02	<0.02
Pirimiphos-methyl	29232-93-7	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Sulfotep	3689-24-5	0.001	mg/kg		----	<0.002	<0.001	<0.001	<0.001
Tetrachlorvinphos	22248-79-9	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Triazophos	24017-47-8	0.001	mg/kg		----	<0.002	<0.001	<0.001	<0.001
EP234B: Thiocarbamates and Carbamates									
Aldicarb	116-06-3	0.01	mg/kg		----	<0.02	<0.01	<0.01	<0.01
Bendiocarb	22781-23-3	1	mg/kg		----	<1	<1	<1	<1
Benomyl	17804-35-2	0.005	mg/kg		----	<0.005	<0.005	<0.005	<0.005
Carbaryl	63-25-2	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Carbofuran	1563-66-2	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005
Methiocarb	2032-65-7	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Methomyl	16752-77-5	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Molinate	2212-67-1	0.02	mg/kg		----	<0.03	<0.02	<0.02	<0.02
Oxamyl	23135-22-0	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Thiobencarb	28249-77-6	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Thiodicarb	59669-26-0	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
EP234D: Triazinone Herbicides									
Hexazinone	51235-04-2	0.004	mg/kg		----	<0.006	<0.004	<0.004	<0.004
Metribuzin	21087-64-9	0.004	mg/kg		----	<0.006	<0.004	<0.004	<0.004
EP234E: Conazole and Aminopyrimidine Fungicides									
Cyproconazole	94361-06-5	0.004	mg/kg		----	<0.006	<0.004	<0.004	<0.004
Flusilazole	85509-19-9	0.004	mg/kg		----	<0.006	<0.004	<0.004	<0.004
Hexaconazole	79983-71-4	0.004	mg/kg		----	<0.006	<0.004	<0.004	<0.004
Paclobutrazole	76738-62-0	0.01	mg/kg		----	<0.02	<0.01	<0.01	<0.01
Propiconazole	60207-90-1	0.01	mg/kg		----	<0.02	<0.01	<0.01	<0.01
Tebuconazole	107534-96-3	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Cyprodinil	121552-61-2	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Pyrimethanil	53112-28-0	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	Trip Spike Blank	UA4 0-0.5	UA5 0-0.5	UA3 0-0.5	UA3 0.5-1.0
				Sampling date / time	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:35	28-Sep-2022 12:54	28-Sep-2022 12:54
					EB2228615-017	EB2228615-018	EB2228615-019	EB2228615-020	EB2228615-021
					Result	Result	Result	Result	Result
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides									
Diuron	330-54-1	0.005	mg/kg		----	<0.006	**0.024**	<0.005	<0.005
Fluometuron	2164-17-2	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Tebuthiuron	34014-18-1	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005
Bromacil	314-40-9	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005
EP234G: Chloracetanilides									
Metolachlor	51218-45-2	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
EP234H: Triazine Herbicides									
Ametryn	834-12-8	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Atrazine	1912-24-9	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Cyanazine	21725-46-2	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005
Prometryn	7287-19-6	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Propazine	139-40-2	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Simazine	122-34-9	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005
Terbuthylazine	5915-41-3	0.002	mg/kg		----	<0.003	<0.002	<0.002	<0.002
Terbutryn	886-50-0	0.1	mg/kg		----	<0.1	<0.1	<0.1	<0.1
EP234I: Miscellaneous (ESI Positive Mode) Pesticides									
Fenarimol	60168-88-9	0.005	mg/kg		----	<0.006	<0.005	<0.005	<0.005
Irgarol	28159-98-0	0.001	mg/kg		----	<0.001	<0.001	<0.001	<0.001
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**102**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**100**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**104**	----	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	**68.7**	**77.7**	**78.9**	**83.7**
Toluene-D8	2037-26-5	0.2	%		----	**58.8**	**65.8**	**67.8**	**70.8**
4-Bromofluorobenzene	460-00-4	0.2	%		----	**62.8**	**68.9**	**68.2**	**69.4**
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		----	**96.8**	**50.3**	**89.0**	**98.2**
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		----	**42.4**	**49.4**	**72.5**	**94.9**
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		----	**37.6**	**64.0**	**73.1**	**78.7**
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		----	**74.4**	**69.0**	**90.0**	**81.1**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	Trip Spike Blank	UA4 0-0.5	UA5 0-0.5	UA3 0-0.5	UA3 0.5-1.0
				Sampling date / time	28-Sep-2022 12:00	28-Sep-2022 12:00	28-Sep-2022 12:35	28-Sep-2022 12:54	28-Sep-2022 12:54
Compound	CAS Number	LOR	Unit		EB2228615-017	EB2228615-018	EB2228615-019	EB2228615-020	EB2228615-021
					Result	Result	Result	Result	Result
EP132T: Base/Neutral Extractable Surrogates - Continued									
Anthracene-d10	1719-06-8	10	%		**----**	**106**	**82.4**	**106**	**95.5**
4-Terphenyl-d14	1718-51-0	10	%		**----**	**90.9**	**81.9**	**77.1**	**73.9**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA3 >1	UA3 1.0-1.5	----	----	----
			Sampling date / time	28-Sep-2022 12:54	28-Sep-2022 12:54	----	----	----
Compound	CAS Number	LOR	Unit	EB2228615-022	EB2228615-023	--------	--------	--------
				Result	Result	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	**9.0**	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	<2	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	<0.02	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	**0.286**	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	**179**	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	**16.6**	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	**3320**	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	**5.33**	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	**1.5**	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	<0.02	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	<10	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	<1	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	**0.29**	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	**179**	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	**13**	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**32.7**	----	----	----	----
EA150: Particle Sizing								
+75µm	----	1	%	**52**	----	----	----	----
+150µm	----	1	%	**49**	----	----	----	----
+300µm	----	1	%	**37**	----	----	----	----
+425µm	----	1	%	**28**	----	----	----	----
+600µm	----	1	%	**24**	----	----	----	----
+1180µm	----	1	%	**19**	----	----	----	----
+2.36mm	----	1	%	**14**	----	----	----	----
+4.75mm	----	1	%	**5**	----	----	----	----
+9.5mm	----	1	%	<1	----	----	----	----
+19.0mm	----	1	%	<1	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA3 >1	UA3 1.0-1.5	----	----	----
			Sampling date / time	28-Sep-2022 12:54	28-Sep-2022 12:54	----	----	----
Compound	CAS Number	LOR	Unit	EB2228615-022	EB2228615-023	--------	--------	--------
				Result	Result	----	----	----
EA150: Particle Sizing - Continued								
+37.5mm	----	1	%	<1	----	----	----	----
+75.0mm	----	1	%	<1	----	----	----	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	**25**	----	----	----	----
Silt (2-60 µm)	----	1	%	**22**	----	----	----	----
Sand (0.06-2.00 mm)	----	1	%	**37**	----	----	----	----
Gravel (>2mm)	----	1	%	**16**	----	----	----	----
Cobbles (>6cm)	----	1	%	<1	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	**2.71**	----	----	----	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**5720**	----	----	----	----
Iron	7439-89-6	50	mg/kg	**30300**	----	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	----	----	----	----
Arsenic	7440-38-2	1.00	mg/kg	**27.2**	----	----	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	----	----	----	----
Chromium	7440-47-3	1.0	mg/kg	**13.8**	----	----	----	----
Copper	7440-50-8	1.0	mg/kg	**10.7**	----	----	----	----
Cobalt	7440-48-4	0.5	mg/kg	**29.4**	----	----	----	----
Lead	7439-92-1	1.0	mg/kg	**10.4**	----	----	----	----
Manganese	7439-96-5	10	mg/kg	**9220**	----	----	----	----
Nickel	7440-02-0	1.0	mg/kg	**10.4**	----	----	----	----
Selenium	7782-49-2	0.1	mg/kg	**0.9**	----	----	----	----
Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
Vanadium	7440-62-2	2.0	mg/kg	**52.3**	----	----	----	----
Zinc	7440-66-6	1.0	mg/kg	**25.6**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<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								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA3 >1	UA3 1.0-1.5	----	----	----
			Sampling date / time	28-Sep-2022 12:54	28-Sep-2022 12:54	----	----	----
Compound	CAS Number	LOR	Unit	EB2228615-022	EB2228615-023	--------	--------	--------
				Result	Result	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	**300**	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	**300**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	**582**	----	----	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	**0.74**	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	----	----	----	----
C10 - C14 Fraction	----	3	mg/kg	<3	----	----	----	----
C15 - C28 Fraction	----	3	mg/kg	<3	----	----	----	----
C29 - C36 Fraction	----	5	mg/kg	<5	----	----	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	----	----	----	----
>C10 - C16 Fraction	----	3	mg/kg	<3	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	----	----	----	----
>C16 - C34 Fraction	----	3	mg/kg	<3	----	----	----	----
>C34 - C40 Fraction	----	5	mg/kg	<5	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	----	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	----	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
Naphthalene	91-20-3	0.2	mg/kg	<0.2	----	----	----	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	----	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg	<1	----	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA3 >1	UA3 1.0-1.5	----	----	----
			Sampling date / time	28-Sep-2022 12:54	28-Sep-2022 12:54	----	----	----
Compound	CAS Number	LOR	Unit	EB2228615-022	EB2228615-023	--------	--------	--------
				Result	Result	----	----	----
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	----	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA3 >1	UA3 1.0-1.5	----	----	----
			Sampling date / time	28-Sep-2022 12:54	28-Sep-2022 12:54	----	----	----
Compound	CAS Number	LOR	Unit	EB2228615-022	EB2228615-023	--------	--------	--------
				Result	Result	----	----	----
EP131A: Organochlorine Pesticides - Continued								
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	0.50	µg/kg	<0.50	----	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg	<0.50	----	----	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg	<0.50	----	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg	<0.50	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	----	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg	<5	----	----	----	----
Acenaphthylene	208-96-8	4	µg/kg	<4	----	----	----	----
Acenaphthene	83-32-9	4	µg/kg	<4	----	----	----	----
Fluorene	86-73-7	4	µg/kg	<4	----	----	----	----
Phenanthrene	85-01-8	4	µg/kg	<4	----	----	----	----
Anthracene	120-12-7	4	µg/kg	<4	----	----	----	----
Fluoranthene	206-44-0	4	µg/kg	<4	----	----	----	----
Pyrene	129-00-0	4	µg/kg	<4	----	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	<4	----	----	----	----
Chrysene	218-01-9	4	µg/kg	<4	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	----	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	----	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	----	----	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	<4	----	----	----	----
Perylene	198-55-0	4	µg/kg	<4	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<4	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	----	----	----	----
Coronene	191-07-1	5	µg/kg	<5	----	----	----	----
^ Sum of PAHs	----	4	µg/kg	<4	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA3 >1	UA3 1.0-1.5	----	----	----
			Sampling date / time	28-Sep-2022 12:54	28-Sep-2022 12:54	----	----	----
Compound	CAS Number	LOR	Unit	EB2228615-022	EB2228615-023	--------	--------	--------
				Result	Result	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ 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**	----	----	----	----
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.005	mg/kg	<0.005	----	----	----	----
Azinphos-methyl	86-50-0	0.005	mg/kg	<0.005	----	----	----	----
Chlorfenvinphos	470-90-6	0.005	mg/kg	<0.005	----	----	----	----
Coumaphos	56-72-4	0.002	mg/kg	<0.002	----	----	----	----
Diazinon	333-41-5	0.002	mg/kg	<0.002	----	----	----	----
Dimethoate	60-51-5	0.004	mg/kg	<0.004	----	----	----	----
Disulfoton	298-04-4	0.01	mg/kg	<0.01	----	----	----	----
Ethoprophos	13194-48-4	0.002	mg/kg	<0.002	----	----	----	----
Fenamiphos	22224-92-6	0.002	mg/kg	<0.002	----	----	----	----
Fenitrothion	122-14-5	0.5	mg/kg	<0.5	----	----	----	----
Fensulfothion	115-90-2	0.005	mg/kg	<0.005	----	----	----	----
Fenthion	55-38-9	0.010	mg/kg	<0.010	----	----	----	----
Malathion	121-75-5	0.005	mg/kg	<0.005	----	----	----	----
^ Mevinphos	7786-34-7	0.005	mg/kg	<0.005	----	----	----	----
Monocrotophos	6923-22-4	0.005	mg/kg	<0.005	----	----	----	----
Omethoate	1113-02-6	0.002	mg/kg	<0.002	----	----	----	----
Parathion	56-38-2	0.05	mg/kg	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.5	mg/kg	<0.5	----	----	----	----
Phorate	298-02-2	0.02	mg/kg	<0.02	----	----	----	----
Pirimiphos-methyl	29232-93-7	0.002	mg/kg	<0.002	----	----	----	----
Sulfotep	3689-24-5	0.001	mg/kg	<0.001	----	----	----	----
Tetrachlorvinphos	22248-79-9	0.002	mg/kg	<0.002	----	----	----	----
Triazophos	24017-47-8	0.001	mg/kg	<0.001	----	----	----	----
EP234B: Thiocarbamates and Carbamates								
Aldicarb	116-06-3	0.01	mg/kg	<0.01	----	----	----	----
Bendiocarb	22781-23-3	1	mg/kg	<1	----	----	----	----
Benomyl	17804-35-2	0.005	mg/kg	<0.005	----	----	----	----
Carbaryl	63-25-2	0.002	mg/kg	<0.002	----	----	----	----
Carbofuran	1563-66-2	0.002	mg/kg	<0.002	----	----	----	----
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg	<0.005	----	----	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	UA3 >1	UA3 1.0-1.5	----	----	----
				Sampling date / time	28-Sep-2022 12:54	28-Sep-2022 12:54	----	----	----
					EB2228615-022	EB2228615-023	--------	--------	--------
					Result	Result	----	----	----
EP234B: Thiocarbamates and Carbamates - Continued									
Methiocarb	2032-65-7	0.002	mg/kg		<0.002	----	----	----	----
Methomyl	16752-77-5	0.002	mg/kg		<0.002	----	----	----	----
Molinate	2212-67-1	0.02	mg/kg		<0.02	----	----	----	----
Oxamyl	23135-22-0	0.002	mg/kg		<0.002	----	----	----	----
Thiobencarb	28249-77-6	0.002	mg/kg		<0.002	----	----	----	----
Thiodicarb	59669-26-0	0.002	mg/kg		<0.002	----	----	----	----
EP234D: Triazinone Herbicides									
Hexazinone	51235-04-2	0.004	mg/kg		<0.004	----	----	----	----
Metribuzin	21087-64-9	0.004	mg/kg		<0.004	----	----	----	----
EP234E: Conazole and Aminopyrimidine Fungicides									
Cyproconazole	94361-06-5	0.004	mg/kg		<0.004	----	----	----	----
Flusilazole	85509-19-9	0.004	mg/kg		<0.004	----	----	----	----
Hexaconazole	79983-71-4	0.004	mg/kg		<0.004	----	----	----	----
Paclobutrazole	76738-62-0	0.01	mg/kg		<0.01	----	----	----	----
Propiconazole	60207-90-1	0.01	mg/kg		<0.01	----	----	----	----
Tebuconazole	107534-96-3	0.002	mg/kg		<0.002	----	----	----	----
Cyprodinil	121552-61-2	0.002	mg/kg		<0.002	----	----	----	----
Pyrimethanil	53112-28-0	0.005	mg/kg		<0.005	----	----	----	----
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides									
Diuron	330-54-1	0.005	mg/kg		<0.005	----	----	----	----
Fluometuron	2164-17-2	0.002	mg/kg		<0.002	----	----	----	----
Tebuthiuron	34014-18-1	0.005	mg/kg		<0.005	----	----	----	----
Bromacil	314-40-9	0.005	mg/kg		<0.005	----	----	----	----
EP234G: Chloracetanilides									
Metolachlor	51218-45-2	0.002	mg/kg		<0.002	----	----	----	----
EP234H: Triazine Herbicides									
Ametryn	834-12-8	0.002	mg/kg		<0.002	----	----	----	----
Atrazine	1912-24-9	0.002	mg/kg		<0.002	----	----	----	----
Cyanazine	21725-46-2	0.005	mg/kg		<0.005	----	----	----	----
Prometryn	7287-19-6	0.002	mg/kg		<0.002	----	----	----	----
Propazine	139-40-2	0.002	mg/kg		<0.002	----	----	----	----
Simazine	122-34-9	0.005	mg/kg		<0.005	----	----	----	----
Terbuthylazine	5915-41-3	0.002	mg/kg		<0.002	----	----	----	----
Terbutryn	886-50-0	0.1	mg/kg		<0.1	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	UA3 >1	UA3 1.0-1.5	----	----	----
			Sampling date / time	28-Sep-2022 12:54	28-Sep-2022 12:54	----	----	----
Compound	CAS Number	LOR	Unit	EB2228615-022	EB2228615-023	--------	--------	--------
				Result	Result	----	----	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
Fenarimol	60168-88-9	0.005	mg/kg	<0.005	----	----	----	----
Irgarol	28159-98-0	0.001	mg/kg	<0.001	----	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**83.2**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**70.5**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**70.5**	----	----	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	**77.8**	----	----	----	----
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	**78.0**	----	----	----	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	**59.1**	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	**91.1**	----	----	----	----
Anthracene-d10	1719-06-8	10	%	**102**	----	----	----	----
4-Terphenyl-d14	1718-51-0	10	%	**79.7**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	ALS CONTROL SPIKE	----	----	----	----
			Sampling date / time	28-Sep-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2228615-024	--------	--------	--------	--------
				Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	**54**	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	**59**	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	**31**	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	**1.0**	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	**11.1**	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	**2.1**	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	**9.9**	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	**3.8**	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg	**27.9**	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg	**13.7**	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**97.6**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**93.0**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**100**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	145
Toluene-D8	2037-26-5	42	144
4-Bromofluorobenzene	460-00-4	58	142
EP090S: Organotin Surrogate			
Tripropyltin	----	35	130
EP130S: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	14	102
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	119
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
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(SOIL) EP130A: Organophosphorus Pesticides (Ultra-trace)
(SOIL) EP130S: Organophosphorus Pesticide Surrogate
(SOIL) EP131A: Organochlorine Pesticides
(SOIL) EP131S: OC Pesticide Surrogate
(SOIL) EP132B: Polynuclear Aromatic Hydrocarbons
(SOIL) EP132T: Base/Neutral Extractable Surrogates
(SOIL) EP234A: OP Pesticides
(SOIL) EP234B: Thiocarbamates and Carbamates
(SOIL) EP234E: Conazole and Aminopyrimidine Fungicides
(SOIL) EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides
(SOIL) EP234H: Triazine Herbicides
(SOIL) EP234G: Chloracetanilides
(SOIL) EP234I: Miscellaneous (ESI Positive Mode) Pesticides
(SOIL) EP234D: Triazinone Herbicides

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2228795**	Page	: 1 of 27
Client	: **BMT COMMERCIAL AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: CRAIG HEATHERINGTON	Contact	: Kimberly Hilton-Barber
Address	: PO BOX 203 SPRING HILL BRISBANE QLD 4004	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 7 3831 6744	Telephone	: +61-7-3243 7222
Project	: A11367 Gladstone - Sediment Quality	Date Samples Received	: 05-Oct-2022 10:30
Order number	: A11367	Date Analysis Commenced	: 06-Oct-2022
C-O-C number	: ----	Issue Date	: 19-Oct-2022 12:08
Sampler	: BRAD HILES		
Site	: ----		
Quote number	: BN/523/22		
No. of samples received	: 20		
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, unless the sampling was conducted by ALS. 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
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Inorganics, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Layla Hafner	Acid Sulphate Soils - Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP090-Organotin: Sample 'MC25' shows poor MBT matrix spike recovery due to matrix interference.
- EP231X PFAS: Sample EB2229018_011 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EA150H: Soil particle density results fell outside the scope of AS1289.3.6.3. Results should be scrutinised accordingly.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP080-SD: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- **Specialty Organics analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- EG020-SD (Total Metals in Sediments by ICP-MS): Some samples show poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EG005T (Total Metals by ICP-AES): MC19 (EB2228795-011) shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC24	MC25	MC23	MC27	MC28
			Sampling date / time	29-Sep-2022 08:30	29-Sep-2022 08:30	29-Sep-2022 09:00	29-Sep-2022 09:20	29-Sep-2022 09:20
Compound	CAS Number	LOR	Unit	EB2228795-001	EB2228795-002	EB2228795-003	EB2228795-004	EB2228795-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	64.7	57.5	31.4	64.8	57.0
EA150: Particle Sizing								
+75µm	----	1	%	14	14	52	5	4
+150µm	----	1	%	10	10	46	2	2
+300µm	----	1	%	5	4	38	<1	<1
+425µm	----	1	%	3	3	34	<1	<1
+600µm	----	1	%	2	2	32	<1	<1
+1180µm	----	1	%	<1	<1	26	<1	<1
+2.36mm	----	1	%	<1	<1	18	<1	<1
+4.75mm	----	1	%	<1	<1	6	<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	%	55	53	21	56	56
Silt (2-60 µm)	----	1	%	30	32	27	38	38
Sand (0.06-2.00 mm)	----	1	%	15	15	32	6	6
Gravel (>2mm)	----	1	%	<1	<1	20	<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	2.67	2.66	2.87	2.44
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	8840	6550	2680	7980	7700
Iron	7439-89-6	50	mg/kg	20400	14900	14100	17200	16900
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	1.00	mg/kg	13.7	12.3	11.4	12.5	11.8
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg	16.9	13.6	3.5	16.3	15.6
Copper	7440-50-8	1.0	mg/kg	19.3	15.8	12.7	17.3	16.5
Cobalt	7440-48-4	0.5	mg/kg	9.1	7.5	4.0	8.7	8.1
Lead	7439-92-1	1.0	mg/kg	7.7	7.9	7.6	7.0	7.4
Manganese	7439-96-5	10	mg/kg	260	229	80	332	311

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC24	MC25	MC23	MC27	MC28
				Sampling date / time	29-Sep-2022 08:30	29-Sep-2022 08:30	29-Sep-2022 09:00	29-Sep-2022 09:20	29-Sep-2022 09:20
Compound	CAS Number	LOR	Unit		EB2228795-001	EB2228795-002	EB2228795-003	EB2228795-004	EB2228795-005
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		8.9	7.3	3.9	8.8	8.3
Selenium	7782-49-2	0.1	mg/kg		1.0	0.8	1.2	0.9	0.7
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		41.0	34.7	10.8	38.5	36.8
Zinc	7440-66-6	1.0	mg/kg		34.9	29.3	35.6	33.3	31.8
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		0.02	0.02	<0.01	0.02	0.02
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		0.2	0.2	<0.1	0.1	0.2
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		1280	1080	380	1110	910
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		1280	1080	380	1110	910
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		436	302	500	357	281
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		1.81	1.75	0.25	1.59	1.61
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg		4	<3	<3	3	<3
C15 - C28 Fraction	----	3	mg/kg		5	3	<3	<3	<3
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		9	3	<3	3	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<3
>C10 - C16 Fraction	----	3	mg/kg		4	<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
>C16 - C34 Fraction	----	3	mg/kg		7	5	<3	4	<3
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
^ >C10 - C40 Fraction (sum)	----	3	mg/kg		11	5	<3	7	<3
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC24	MC25	MC23	MC27	MC28
				Sampling date / time	29-Sep-2022 08:30	29-Sep-2022 08:30	29-Sep-2022 09:00	29-Sep-2022 09:20	29-Sep-2022 09:20
Compound	CAS Number	LOR	Unit		EB2228795-001	EB2228795-002	EB2228795-003	EB2228795-004	EB2228795-005
					Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued									
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	<0.5	<0.5
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	<5	<4	<5	<5
Acenaphthene	83-32-9	4	µg/kg		<5	<5	<4	<5	<5
Fluorene	86-73-7	4	µg/kg		<5	<5	<4	<5	<5
Phenanthrene	85-01-8	4	µg/kg		<5	<5	<4	<5	<5
Anthracene	120-12-7	4	µg/kg		<5	<5	<4	<5	<5
Fluoranthene	206-44-0	4	µg/kg		**6**	<5	<4	<5	**6**
Pyrene	129-00-0	4	µg/kg		**6**	<5	<4	<5	**5**
Benz(a)anthracene	56-55-3	4	µg/kg		<5	<5	<4	<5	<5
Chrysene	218-01-9	4	µg/kg		**5**	<5	<4	<5	<5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		**6**	<5	<4	<5	**5**
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<5	<5	<4	<5	<5
Benzo(e)pyrene	192-97-2	4	µg/kg		**5**	<5	<4	<5	<5
Benzo(a)pyrene	50-32-8	4	µg/kg		<5	<5	<4	<5	<5
Perylene	198-55-0	4	µg/kg		**9**	<5	<4	<5	**7**
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		**6**	<5	<4	<5	<5
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<5	<5	<4	<5	<5
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<5	<5	<4	<5	<5
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		**43**	<5	<4	<5	**23**
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<5	<5	<4	<5	<5
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		**5**	<5	**5**	<5	**5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC24	MC25	MC23	MC27	MC28
			Sampling date / time	29-Sep-2022 08:30	29-Sep-2022 08:30	29-Sep-2022 09:00	29-Sep-2022 09:20	29-Sep-2022 09:20
Compound	CAS Number	LOR	Unit	EB2228795-001	EB2228795-002	EB2228795-003	EB2228795-004	EB2228795-005
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	**10**	**10**	**10**	**10**	**10**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	<0.0005	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC24	MC25	MC23	MC27	MC28
				Sampling date / time	29-Sep-2022 08:30	29-Sep-2022 08:30	29-Sep-2022 09:00	29-Sep-2022 09:20	29-Sep-2022 09:20
Compound	CAS Number	LOR	Unit		EB2228795-001	EB2228795-002	EB2228795-003	EB2228795-004	EB2228795-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		----	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		----	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		----	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		----	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		----	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		----	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		----	<0.0005	<0.0005	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		81.5	83.3	120	96.8	111
Toluene-D8	2037-26-5	0.2	%		69.9	68.2	80.8	75.9	74.4
4-Bromofluorobenzene	460-00-4	0.2	%		69.8	84.8	102	89.4	86.8
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		94.9	89.2	95.4	96.6	96.5
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		102	79.1	81.9	96.7	82.2
Anthracene-d10	1719-06-8	10	%		90.4	92.8	81.1	83.3	84.9

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC24	MC25	MC23	MC27	MC28
				Sampling date / time	29-Sep-2022 08:30	29-Sep-2022 08:30	29-Sep-2022 09:00	29-Sep-2022 09:20	29-Sep-2022 09:20
Compound	CAS Number	LOR	Unit		EB2228795-001	EB2228795-002	EB2228795-003	EB2228795-004	EB2228795-005
					Result	Result	Result	Result	Result
EP132T: Base/Neutral Extractable Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	10	%		81.3	85.0	83.7	78.1	77.5
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	114	107	----	----
13C8-PFOA	----	0.0002	%		----	102	102	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC22	MC17	MC15	MC21	MC20
			Sampling date / time	29-Sep-2022 09:00	29-Sep-2022 09:53	29-Sep-2022 10:00	29-Sep-2022 10:21	29-Sep-2022 10:48
Compound	CAS Number	LOR	Unit	EB2228795-006	EB2228795-007	EB2228795-008	EB2228795-009	EB2228795-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	66.8	27.0	36.3	53.3	28.8
EA150: Particle Sizing								
+75µm	----	1	%	4	77	60	30	71
+150µm	----	1	%	2	75	51	20	67
+300µm	----	1	%	<1	72	30	10	49
+425µm	----	1	%	<1	68	20	7	40
+600µm	----	1	%	<1	62	12	4	31
+1180µm	----	1	%	<1	48	4	2	20
+2.36mm	----	1	%	<1	38	2	<1	12
+4.75mm	----	1	%	<1	29	<1	<1	4
+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	%	57	14	25	41	19
Silt (2-60 µm)	----	1	%	37	8	15	27	9
Sand (0.06-2.00 mm)	----	1	%	6	37	57	31	58
Gravel (>2mm)	----	1	%	<1	41	3	1	14
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.65	2.60	2.66	2.57	2.68
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	8920	3230	4920	9070	3800
Iron	7439-89-6	50	mg/kg	18600	10400	16000	23100	14000
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	14.5	8.78	9.06	12.1	8.79
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg	18.9	6.7	10.1	18.2	10.1
Copper	7440-50-8	1.0	mg/kg	20.2	9.8	12.0	21.2	7.8
Cobalt	7440-48-4	0.5	mg/kg	10.1	9.1	7.5	11.5	8.4
Lead	7439-92-1	1.0	mg/kg	8.5	2.9	4.7	7.6	3.8
Manganese	7439-96-5	10	mg/kg	429	1130	473	370	377

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC22	MC17	MC15	MC21	MC20
			Sampling date / time	29-Sep-2022 09:00	29-Sep-2022 09:53	29-Sep-2022 10:00	29-Sep-2022 10:21	29-Sep-2022 10:48
Compound	CAS Number	LOR	Unit	EB2228795-006	EB2228795-007	EB2228795-008	EB2228795-009	EB2228795-010
				Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued								
Nickel	7440-02-0	1.0	mg/kg	10.1	4.5	5.7	9.8	5.0
Selenium	7782-49-2	0.1	mg/kg	0.9	0.4	0.6	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	44.6	29.0	34.4	49.3	33.8
Zinc	7440-66-6	1.0	mg/kg	38.6	17.0	22.6	37.8	17.8
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.02	<0.01	0.01	0.02	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.3	0.2	0.2	0.2	0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	1200	270	410	650	170
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	1200	270	410	650	170
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	384	197	249	275	232
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	1.55	0.22	0.70	1.19	0.21
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	4	<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	7	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
>C10 - C16 Fraction	----	3	mg/kg	4	<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
>C16 - C34 Fraction	----	3	mg/kg	4	4	<3	<3	<3
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	8	4	<3	<3	<3
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC22	MC17	MC15	MC21	MC20
			Sampling date / time	29-Sep-2022 09:00	29-Sep-2022 09:53	29-Sep-2022 10:00	29-Sep-2022 10:21	29-Sep-2022 10:48
Compound	CAS Number	LOR	Unit	EB2228795-006	EB2228795-007	EB2228795-008	EB2228795-009	EB2228795-010
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	<5	<4
Acenaphthene	83-32-9	4	µg/kg	<5	<4	<4	<5	<4
Fluorene	86-73-7	4	µg/kg	<5	<4	<4	<5	<4
Phenanthrene	85-01-8	4	µg/kg	6	<4	<4	<5	<4
Anthracene	120-12-7	4	µg/kg	<5	<4	<4	<5	<4
Fluoranthene	206-44-0	4	µg/kg	6	<4	<4	<5	<4
Pyrene	129-00-0	4	µg/kg	6	<4	<4	<5	<4
Benz(a)anthracene	56-55-3	4	µg/kg	<5	<4	<4	<5	<4
Chrysene	218-01-9	4	µg/kg	<5	<4	<4	<5	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<5	<4	<4	<5	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<5	<4	<4	<5	<4
Benzo(e)pyrene	192-97-2	4	µg/kg	<5	<4	<4	<5	<4
Benzo(a)pyrene	50-32-8	4	µg/kg	<5	<4	<4	<5	<4
Perylene	198-55-0	4	µg/kg	<5	<4	6	<5	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<5	<4	<4	<5	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<5	<4	<4	<5	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<5	<4	<4	<5	<4
Coronene	191-07-1	5	µg/kg	<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg	18	<4	6	<5	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<5	<4	<4	<5	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	<5	5	5	<5	5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC22	MC17	MC15	MC21	MC20
			Sampling date / time	29-Sep-2022 09:00	29-Sep-2022 09:53	29-Sep-2022 10:00	29-Sep-2022 10:21	29-Sep-2022 10:48
Compound	CAS Number	LOR	Unit	EB2228795-006	EB2228795-007	EB2228795-008	EB2228795-009	EB2228795-010
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	10	10	10	10	10
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC22	MC17	MC15	MC21	MC20
				Sampling date / time	29-Sep-2022 09:00	29-Sep-2022 09:53	29-Sep-2022 10:00	29-Sep-2022 10:21	29-Sep-2022 10:48
Compound	CAS Number	LOR	Unit		EB2228795-006	EB2228795-007	EB2228795-008	EB2228795-009	EB2228795-010
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**100**	**113**	**107**	**102**	**127**
Toluene-D8	2037-26-5	0.2	%		**75.8**	**93.5**	**81.1**	**80.9**	**85.9**
4-Bromofluorobenzene	460-00-4	0.2	%		**93.2**	**107**	**93.9**	**96.4**	**104**
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		**93.4**	**88.0**	**83.0**	**69.4**	**76.0**
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		**84.6**	**79.9**	**89.2**	**76.6**	**85.3**
Anthracene-d10	1719-06-8	10	%		**91.7**	**85.5**	**92.6**	**87.0**	**96.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC22	MC17	MC15	MC21	MC20
				Sampling date / time	29-Sep-2022 09:00	29-Sep-2022 09:53	29-Sep-2022 10:00	29-Sep-2022 10:21	29-Sep-2022 10:48
Compound	CAS Number	LOR	Unit		EB2228795-006	EB2228795-007	EB2228795-008	EB2228795-009	EB2228795-010
					Result	Result	Result	Result	Result
EP132T: Base/Neutral Extractable Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	10	%		83.0	85.1	83.4	76.9	94.6
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		109	91.0	----	----	----
13C8-PFOA	----	0.0002	%		108	102	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC19	MC18	MC16	MC13	MC10
			Sampling date / time	29-Sep-2022 11:00	29-Sep-2022 11:20	29-Sep-2022 11:56	29-Sep-2022 12:18	29-Sep-2022 14:18
Compound	CAS Number	LOR	Unit	EB2228795-011	EB2228795-012	EB2228795-013	EB2228795-014	EB2228795-015
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	36.8	38.3	33.6	25.0	8.8
EA150: Particle Sizing								
+75µm	----	1	%	83	93	72	90	98
+150µm	----	1	%	78	92	69	86	98
+300µm	----	1	%	59	83	58	53	96
+425µm	----	1	%	51	76	51	51	92
+600µm	----	1	%	44	72	44	50	85
+1180µm	----	1	%	32	65	30	47	48
+2.36mm	----	1	%	24	56	20	44	12
+4.75mm	----	1	%	13	45	10	38	2
+9.5mm	----	1	%	<1	28	<1	24	<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	%	9	4	12	5	<1
Silt (2-60 µm)	----	1	%	6	3	15	5	2
Sand (0.06-2.00 mm)	----	1	%	59	34	50	45	75
Gravel (>2mm)	----	1	%	26	59	23	45	23
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.64	2.67	2.56	2.75	2.62
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	2160	4070	3430	2830	1250
Iron	7439-89-6	50	mg/kg	7960	15000	14000	12000	5950
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	6.28	7.57	10.4	7.76	7.25
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	5.5	8.6	8.6	8.6	2.8
Copper	7440-50-8	1.0	mg/kg	4.0	8.3	8.4	6.9	3.6
Cobalt	7440-48-4	0.5	mg/kg	5.8	12.3	8.5	7.2	4.7
Lead	7439-92-1	1.0	mg/kg	2.1	4.1	4.3	3.1	1.4
Manganese	7439-96-5	10	mg/kg	411	496	421	381	220

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC19	MC18	MC16	MC13	MC10
			Sampling date / time	29-Sep-2022 11:00	29-Sep-2022 11:20	29-Sep-2022 11:56	29-Sep-2022 12:18	29-Sep-2022 14:18
Compound	CAS Number	LOR	Unit	EB2228795-011	EB2228795-012	EB2228795-013	EB2228795-014	EB2228795-015
				Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued								
Nickel	7440-02-0	1.0	mg/kg	2.9	7.1	4.9	4.0	2.9
Selenium	7782-49-2	0.1	mg/kg	0.3	0.4	0.5	0.3	0.2
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	17.8	51.9	33.4	32.5	16.4
Zinc	7440-66-6	1.0	mg/kg	11.8	21.2	18.7	19.3	8.9
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.2	0.1	<0.1	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	180	260	280	320	40
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	180	260	280	320	40
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	209	208	412	193	121
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.32	0.18	0.23	0.41	0.07
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	7	<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
>C10 - C16 Fraction	----	3	mg/kg	<3	<3	<3	4	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	<3.0	<3.0	<3.0	<3.0
>C16 - C34 Fraction	----	3	mg/kg	<3	<3	<3	6	<3
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	<3	<3	10	<3
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC19	MC18	MC16	MC13	MC10
			Sampling date / time	29-Sep-2022 11:00	29-Sep-2022 11:20	29-Sep-2022 11:56	29-Sep-2022 12:18	29-Sep-2022 14:18
Compound	CAS Number	LOR	Unit	EB2228795-011	EB2228795-012	EB2228795-013	EB2228795-014	EB2228795-015
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
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	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	5	5	5	5	5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC19	MC18	MC16	MC13	MC10
			Sampling date / time	29-Sep-2022 11:00	29-Sep-2022 11:20	29-Sep-2022 11:56	29-Sep-2022 12:18	29-Sep-2022 14:18
Compound	CAS Number	LOR	Unit	EB2228795-011	EB2228795-012	EB2228795-013	EB2228795-014	EB2228795-015
				Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	10	10	10	10	10
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	----	----	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	<0.0005	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC19	MC18	MC16	MC13	MC10
			Sampling date / time	29-Sep-2022 11:00	29-Sep-2022 11:20	29-Sep-2022 11:56	29-Sep-2022 12:18	29-Sep-2022 14:18
Compound	CAS Number	LOR	Unit	EB2228795-011	EB2228795-012	EB2228795-013	EB2228795-014	EB2228795-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	----	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	<0.0002	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	----	----	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	<0.0002	----	----
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	123	117	122	116	126
Toluene-D8	2037-26-5	0.2	%	80.4	88.4	92.0	99.8	85.8
4-Bromofluorobenzene	460-00-4	0.2	%	93.6	102	110	114	106
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	80.2	69.8	105	103	91.8
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	90.7	76.2	72.4	71.2	73.4
Anthracene-d10	1719-06-8	10	%	81.8	81.2	76.7	82.5	83.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC19	MC18	MC16	MC13	MC10
				Sampling date / time	29-Sep-2022 11:00	29-Sep-2022 11:20	29-Sep-2022 11:56	29-Sep-2022 12:18	29-Sep-2022 14:18
Compound	CAS Number	LOR	Unit		EB2228795-011	EB2228795-012	EB2228795-013	EB2228795-014	EB2228795-015
					Result	Result	Result	Result	Result
EP132T: Base/Neutral Extractable Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	10	%		76.5	79.0	73.1	77.4	79.3
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	----	97.0	----	----
13C8-PFOA	----	0.0002	%		----	----	100	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC11	Trip Blank	Trip Spike	MC14	ALS CONTROL SPIKE
			Sampling date / time	29-Sep-2022 15:14	29-Sep-2022 00:00	29-Sep-2022 00:00	28-Sep-2022 17:00	29-Sep-2022 00:00
Compound	CAS Number	LOR	Unit	EB2228795-016	EB2228795-017	EB2228795-018	EB2228795-019	EB2228795-020
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	19.5	----	----	31.0	----
EA150: Particle Sizing								
+75µm	----	1	%	92	----	----	58	----
+150µm	----	1	%	85	----	----	54	----
+300µm	----	1	%	44	----	----	47	----
+425µm	----	1	%	34	----	----	39	----
+600µm	----	1	%	31	----	----	32	----
+1180µm	----	1	%	28	----	----	19	----
+2.36mm	----	1	%	25	----	----	14	----
+4.75mm	----	1	%	22	----	----	12	----
+9.5mm	----	1	%	16	----	----	9	----
+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	%	3	----	----	18	----
Silt (2-60 µm)	----	1	%	2	----	----	21	----
Sand (0.06-2.00 mm)	----	1	%	69	----	----	46	----
Gravel (>2mm)	----	1	%	26	----	----	15	----
Cobbles (>6cm)	----	1	%	<1	----	----	<1	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.66	----	----	2.63	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	2770	----	----	5130	----
Iron	7439-89-6	50	mg/kg	9360	----	----	13100	----
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	10.7	----	----	6.36	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	----	----	<0.1	----
Chromium	7440-47-3	1.0	mg/kg	7.2	----	----	9.5	----
Copper	7440-50-8	1.0	mg/kg	5.2	----	----	12.9	----
Cobalt	7440-48-4	0.5	mg/kg	5.6	----	----	7.1	----
Lead	7439-92-1	1.0	mg/kg	3.3	----	----	4.2	----
Manganese	7439-96-5	10	mg/kg	269	----	----	286	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC11	Trip Blank	Trip Spike	MC14	ALS CONTROL SPIKE
				Sampling date / time	29-Sep-2022 15:14	29-Sep-2022 00:00	29-Sep-2022 00:00	28-Sep-2022 17:00	29-Sep-2022 00:00
Compound	CAS Number	LOR	Unit		EB2228795-016	EB2228795-017	EB2228795-018	EB2228795-019	EB2228795-020
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		**3.7**	----	----	**5.2**	----
Selenium	7782-49-2	0.1	mg/kg		**0.3**	----	----	**0.5**	----
Silver	7440-22-4	0.1	mg/kg		<0.1	----	----	<0.1	----
Vanadium	7440-62-2	2.0	mg/kg		**23.6**	----	----	**31.2**	----
Zinc	7440-66-6	1.0	mg/kg		**16.8**	----	----	**22.7**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	----	----	**0.01**	----
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		**210**	----	----	**330**	----
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		**210**	----	----	**330**	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		**216**	----	----	**245**	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**0.28**	----	----	**0.53**	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	**55**	----	**48**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	**66**	----	**60**
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	**36**	----	**32**
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	**0.8**	----	**0.6**
Toluene	108-88-3	0.5	mg/kg		----	<0.5	**11.9**	----	**11.0**
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	**2.5**	----	**2.4**
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	**10.2**	----	**10.0**
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	**4.5**	----	**4.5**
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	**29.9**	----	**28.5**
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	**14.7**	----	**14.5**
Naphthalene	91-20-3	1	mg/kg		----	<1	<1	----	<1
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	----	----	<3	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC11	Trip Blank	Trip Spike	MC14	ALS CONTROL SPIKE
				Sampling date / time	29-Sep-2022 15:14	29-Sep-2022 00:00	29-Sep-2022 00:00	28-Sep-2022 17:00	29-Sep-2022 00:00
Compound	CAS Number	LOR	Unit		EB2228795-016	EB2228795-017	EB2228795-018	EB2228795-019	EB2228795-020
					Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	3	mg/kg		<3	----	----	<3	----
C15 - C28 Fraction	----	3	mg/kg		<3	----	----	<3	----
C29 - C36 Fraction	----	5	mg/kg		<5	----	----	<5	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	----	----	<3	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	----	----	<3	----
>C10 - C16 Fraction	----	3	mg/kg		<3	----	----	<3	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	----	----	<3.0	----
>C16 - C34 Fraction	----	3	mg/kg		3	----	----	4	----
>C34 - C40 Fraction	----	5	mg/kg		<5	----	----	<5	----
^ >C10 - C40 Fraction (sum)	----	3	mg/kg		3	----	----	4	----
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									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	----	----	<1	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	----	----	<1	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	----	<0.5	----
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		5	----	----	4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC11	Trip Blank	Trip Spike	MC14	ALS CONTROL SPIKE
				Sampling date / time	29-Sep-2022 15:14	29-Sep-2022 00:00	29-Sep-2022 00:00	28-Sep-2022 17:00	29-Sep-2022 00:00
Compound	CAS Number	LOR	Unit		EB2228795-016	EB2228795-017	EB2228795-018	EB2228795-019	EB2228795-020
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Pyrene	129-00-0	4	µg/kg		<4	----	----	**4**	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	----	----	<4	----
Chrysene	218-01-9	4	µg/kg		<4	----	----	<4	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	----	----	<4	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	----	----	<4	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	----	----	<4	----
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	----	----	<4	----
Perylene	198-55-0	4	µg/kg		<4	----	----	**7**	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	----	----	<4	----
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	----	----	<4	----
Coronene	191-07-1	5	µg/kg		<5	----	----	<5	----
^ Sum of PAHs	----	4	µg/kg		**5**	----	----	**15**	----
^ 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**	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		----	----	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		----	----	----	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		----	----	----	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC11	Trip Blank	Trip Spike	MC14	ALS CONTROL SPIKE
				Sampling date / time	29-Sep-2022 15:14	29-Sep-2022 00:00	29-Sep-2022 00:00	28-Sep-2022 17:00	29-Sep-2022 00:00
Compound	CAS Number	LOR	Unit		EB2228795-016	EB2228795-017	EB2228795-018	EB2228795-019	EB2228795-020
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		----	----	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		----	----	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		----	----	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		----	----	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		----	----	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		----	----	----	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		----	----	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		----	----	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC11	Trip Blank	Trip Spike	MC14	ALS CONTROL SPIKE
				Sampling date / time	29-Sep-2022 15:14	29-Sep-2022 00:00	29-Sep-2022 00:00	28-Sep-2022 17:00	29-Sep-2022 00:00
Compound	CAS Number	LOR	Unit		EB2228795-016	EB2228795-017	EB2228795-018	EB2228795-019	EB2228795-020
					Result	Result	Result	Result	Result
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		----	----	----	<0.0002	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		----	----	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		----	----	----	<0.0002	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	94.9	88.9	----	86.3
Toluene-D8	2037-26-5	0.2	%		----	86.9	84.3	----	84.2
4-Bromofluorobenzene	460-00-4	0.2	%		----	95.1	82.6	----	83.7
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		87.6	----	----	86.2	----
Toluene-D8	2037-26-5	0.2	%		77.3	----	----	77.2	----
4-Bromofluorobenzene	460-00-4	0.2	%		86.5	----	----	86.8	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		91.8	----	----	80.0	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		90.1	----	----	90.6	----
Anthracene-d10	1719-06-8	10	%		101	----	----	86.2	----
4-Terphenyl-d14	1718-51-0	10	%		95.4	----	----	85.2	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	----	----	110	----
13C8-PFOA	----	0.0002	%		----	----	----	102	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	145
Toluene-D8	2037-26-5	42	144
4-Bromofluorobenzene	460-00-4	58	142
EP090S: Organotin Surrogate			
Tripropyltin	----	35	130
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
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(SOIL) EP132B: Polynuclear Aromatic Hydrocarbons

(SOIL) EP132T: Base/Neutral Extractable Surrogates

Addendum A to Certificate of Analysis for Workorder EB2228839

Laboratory Sample ID: EB2228839-001
Client Sample ID: UA7 0-0.5
QC Lot Number: 4637753:4637752

Sample Matrix: SEDIMENT
Test Type: EP300B:EP300A

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	89.7
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.49	0.5	0.00	0.62	1.24	78.9
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	79.2
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	79.7
123789-HxCDD	2.7	2.5	0.1	0.27	0.27	0.27	0.1	0.27	0.27	0.27	-
1234678-HpCDD	46.4	2.5	0.01	0.46	0.46	0.46	0.01	0.46	0.46	0.46	67.1
OCDD	840	10.0	0.0003	0.25	0.25	0.25	0.001	0.84	0.84	0.84	48.2
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	83.3
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	91.2
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.75	0.5	0.00	0.62	1.24	81.8
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	78.9
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	75.9
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	80.8
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	74.8
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	66.5
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	80.3
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	0.99	3.69	6.39	**Σ TEQ**	1.57	3.93	6.28	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	8.0	6.0	12
Penta-dioxins	<22.4	22.4	9
Hexa-dioxins	97.5	19.9	8
Hepta-dioxins	172	5.0	2
Octa-dioxin	840	10.0	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<5.0	5.0	1
Σ PCDD/Fs	1118		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Addendum A to Certificate of Analysis for Workorder EB2228839

Laboratory Sample ID: EB2228839-002
Client Sample ID: UA7 0.5-1.0
QC Lot Number: 4637753:4637752

Sample Matrix: SEDIMENT
Test Type: EP300B:EP300A

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	95.5
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.49	0.5	0.00	0.62	1.25	74.8
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	82.4
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	74.1
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	43.6	2.5	0.01	0.44	0.44	0.44	0.01	0.44	0.44	0.44	61.4
OCDD	1480	10.0	0.0003	0.44	0.44	0.44	0.001	1.48	1.48	1.48	43.2
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	91.1
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	87.7
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.75	0.5	0.00	0.62	1.25	78.4
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	90.2
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.9
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	84.4
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	78.4
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	54.8
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	77.6
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	0.88	3.71	6.53	**Σ TEQ**	1.92	4.40	6.88	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	7.1	6.0	12
Penta-dioxins	<19.9	19.9	8
Hexa-dioxins	89.1	19.9	8
Hepta-dioxins	171	5.0	2
Octa-dioxin	1480	10.0	1
Tetra-furans	<9.0	9.0	18
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<10.0	10.0	4
Octa-furan	<5.0	5.0	1
Σ PCDD/Fs	1747		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Addendum A to Certificate of Analysis for Workorder EB2228839

Laboratory Sample ID: EB2228839-003
Client Sample ID: UA7 >1
QC Lot Number: 4637753:4637752

Sample Matrix: SEDIMENT
Test Type: EP300B:EP300A

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	77.3
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.47	0.5	0.00	0.62	1.24	69.5
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	72.8
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	75.7
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	13.2	2.5	0.01	0.13	0.13	0.13	0.01	0.13	0.13	0.13	67.0
OCDD	314	9.9	0.0003	0.09	0.09	0.09	0.001	0.31	0.31	0.31	72.6
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	77.7
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	75.4
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.24	71.2
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	78.0
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	77.9
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	80.2
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	71.5
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	71.7
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	71.1
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	0.23	3.03	5.84	**Σ TEQ**	0.45	2.91	5.37	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	<5.4	5.4	11
Penta-dioxins	<17.3	17.3	7
Hexa-dioxins	42.0	19.8	8
Hepta-dioxins	55.7	4.9	2
Octa-dioxin	314	9.9	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<4.9	4.9	1
Σ PCDD/Fs	412		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2229101**	Page	: 1 of 7
Client	: **BMT COMMERCIAL AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: CRAIG HEATHERINGTON	Contact	: Kimberly Hilton-Barber
Address	: PO BOX 203 SPRING HILL BRISBANE QLD 4004	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 7 3831 6744	Telephone	: +61-7-3243 7222
Project	: A11367 Gladstone - Sediment Quality	Date Samples Received	: 05-Oct-2022 10:30
Order number	: ----	Date Analysis Commenced	: 14-Oct-2022
C-O-C number	: ----	Issue Date	: 17-Oct-2022 08:20
Sampler	: BRAD HILES		
Site	: ----		
Quote number	: BN/523/22		
No. of samples received	: 6		
No. of samples analysed	: 6		

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, unless the sampling was conducted by ALS. 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*
Peter Blow	HRMS Chemist	GCMSMS, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- EP300: T = tetra, Pe = penta, Hx = hexa, Hp = hepta, O = octa, CDD dioxin = chlorinated dibenzo-p-dioxin, CDF furan = chlorinated dibenzofuran
- EP300L: The absolute recovery of 13C12 isotopically labelled compounds added by the Laboratory to both quantitate and measure extraction efficiency.
- EP300: LORs for Totals are calculated by multiplying the number of peaks by the individual LOR per compound.
- EP300: Refer to supplementary reports for individual analyte TEQs, sample-specific limits of reporting (LOR) and Quality Control results.
- EP300: I-TEQ = International toxic equivalence
  WHO-TEQ = World Health Organisation toxic equivalence
  I-TEQ1 (zero) and WHO-TEQ1 (zero) calculated treating <LOR as zero concentration
  I-TEQ2 (0.5 LOR) and WHO-TEQ2 (0.5 LOR) calculated treating <LOR as half LOR concentration
  I-TEQ3 (LOR) and WHO-TEQ3 (LOR) calculated treating <LOR as LOR concentration
- EP300: Samples dried prior to analysis. Results reported on a dry weight basis.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC25	MC23	MC22	MC17	MC16
			Sampling date / time	29-Sep-2022 08:30	29-Sep-2022 09:00	29-Sep-2022 09:00	29-Sep-2022 09:53	29-Sep-2022 11:56
Compound	CAS Number	LOR	Unit	EB2229101-002	EB2229101-003	EB2229101-006	EB2229101-007	EB2229101-013
				Result	Result	Result	Result	Result
EP300A: Dioxins and Furans								
2378-TCDD	1746-01-6	-	pg/g	<0.5	<0.5	<0.5	<0.5	<0.5
12378-PeCDD	40321-76-4	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
123478-HxCDD	39227-28-6	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
123678-HxCDD	57653-85-7	-	pg/g	**2.9**	<2.5	**3.8**	<2.5	<2.5
123789-HxCDD	19408-74-3	-	pg/g	**4.9**	<2.5	**6.1**	<2.5	<2.5
1234678-HpCDD	35822-46-9	-	pg/g	**69.6**	**6.8**	**88.4**	**21.4**	**17.2**
OCDD	3268-87-9	-	pg/g	**1080**	**122**	**1150**	**300**	**255**
2378-TCDF	51207-31-9	-	pg/g	<0.5	<0.5	<0.5	<0.5	<0.5
12378-PeCDF	57117-41-6	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
23478-PeCDF	57117-31-4	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
123478-HxCDF	70648-26-9	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
123678-HxCDF	57117-44-9	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
234678-HxCDF	60851-34-5	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
123789-HxCDF	72918-21-9	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
1234678-HpCDF	67562-39-4	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
1234789-HpCDF	55673-89-7	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
OCDF	39001-02-0	-	pg/g	<5.0	<5.0	<4.9	<4.9	<4.9
EP300B: Dioxins and Furans - Group Totals								
Tetra-Dioxins	----	-	pg/g	**11.6**	<0.5	**15.2**	<5.9	<1.5
Penta-Dioxins	----	-	pg/g	**33.4**	<17.4	**40.6**	<19.6	<17.3
Hexa-Dioxins	----	-	pg/g	**162**	<19.9	**221**	**44.3**	**31.8**
Hepta-Dioxins	----	-	pg/g	**250**	**25.7**	**312**	**80.7**	**72.5**
Octa-Dioxin	----	-	pg/g	**1080**	**122**	**1150**	**300**	**255**
Tetra-Furans	----	-	pg/g	<0.5	<0.5	<0.5	<0.5	<0.5
Penta-Furans	----	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
Hexa-Furans	----	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
Hepta-Furans	----	-	pg/g	<2.5	<2.5	<2.4	<2.5	<2.5
Octa-Furan	----	-	pg/g	<5.0	<5.0	<4.9	<4.9	<4.9
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ)								
Total WHO-TEQ1 (zero)	----	-	pg/g	**1.80**	**0.10**	**2.22**	**0.30**	**0.25**
Total WHO-TEQ2 (0.5 LOR)	----	-	pg/g	**4.38**	**2.92**	**4.75**	**3.09**	**3.05**
Total WHO-TEQ3 (LOR)	----	-	pg/g	**6.96**	**5.74**	**7.29**	**5.88**	**5.85**
Total I-TEQ1 (zero)	----	-	pg/g	**2.56**	**0.19**	**3.02**	**0.51**	**0.43**
Total I-TEQ2 (0.5 LOR)	----	-	pg/g	**4.79**	**2.66**	**5.22**	**2.96**	**2.88**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC25	MC23	MC22	MC17	MC16
			Sampling date / time	29-Sep-2022 08:30	29-Sep-2022 09:00	29-Sep-2022 09:00	29-Sep-2022 09:53	29-Sep-2022 11:56
Compound	CAS Number	LOR	Unit	EB2229101-002	EB2229101-003	EB2229101-006	EB2229101-007	EB2229101-013
				Result	Result	Result	Result	Result
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ) - Continued								
Total I-TEQ3 (LOR)	----	-	pg/g	**7.02**	**5.14**	**7.41**	**5.41**	**5.34**
EP300L: Dioxins and Furans - Isotopically Labelled Standards								
2378-TCDD (13C12)	76523-40-5	0.25	%	**85.2**	**93.4**	**91.7**	**89.7**	**95.7**
12378-PeCDD (13C12)	109719-79-1	0.25	%	**82.5**	**84.3**	**87.0**	**86.5**	**86.7**
123478-HxCDD (13C12)	109719-80-4	0.25	%	**75.1**	**86.4**	**78.2**	**87.2**	**88.0**
123678-HxCDD (13C12)	109719-81-5	0.25	%	**77.0**	**81.7**	**80.9**	**86.0**	**88.5**
1234678-HpCDD (13C12)	109719-83-7	0.25	%	**57.3**	**67.3**	**80.6**	**75.2**	**76.6**
OCDD (13C12)	114423-97-1	0.25	%	**30.8**	**51.4**	**64.7**	**85.9**	**86.0**
2378-TCDF (13C12)	89059-46-1	0.25	%	**87.6**	**89.9**	**92.3**	**94.0**	**95.4**
12378-PeCDF (13C12)	109719-77-9	0.25	%	**90.0**	**88.1**	**98.4**	**92.7**	**87.5**
23478-PeCDF (13C12)	116843-02-8	0.25	%	**84.1**	**92.0**	**92.4**	**82.6**	**90.6**
123478-HxCDF (13C12)	114423-98-2	0.25	%	**79.5**	**87.9**	**89.7**	**90.1**	**83.7**
123678-HxCDF (13C12)	116843-03-9	0.25	%	**78.1**	**78.8**	**84.6**	**88.2**	**86.4**
234678-HxCDF (13C12)	116843-05-1	0.25	%	**75.3**	**86.2**	**87.2**	**90.2**	**92.5**
123789-HxCDF (13C12)	116843-04-0	0.25	%	**71.4**	**81.9**	**85.8**	**85.2**	**86.6**
1234678-HpCDF (13C12)	109719-84-8	0.25	%	**51.5**	**68.6**	**76.7**	**81.3**	**80.6**
1234789-HpCDF (13C12)	109719-94-0	0.25	%	**65.2**	**77.1**	**81.2**	**88.3**	**90.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC14	----	----	----	----
			Sampling date / time	28-Sep-2022 17:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2229101-019	--------	--------	--------	--------
				Result	----	----	----	----
EP300A: Dioxins and Furans								
2378-TCDD	1746-01-6	-	pg/g	<0.5	----	----	----	----
12378-PeCDD	40321-76-4	-	pg/g	<2.5	----	----	----	----
123478-HxCDD	39227-28-6	-	pg/g	<2.5	----	----	----	----
123678-HxCDD	57653-85-7	-	pg/g	<2.5	----	----	----	----
123789-HxCDD	19408-74-3	-	pg/g	<2.5	----	----	----	----
1234678-HpCDD	35822-46-9	-	pg/g	**27.9**	----	----	----	----
OCDD	3268-87-9	-	pg/g	**530**	----	----	----	----
2378-TCDF	51207-31-9	-	pg/g	<0.5	----	----	----	----
12378-PeCDF	57117-41-6	-	pg/g	<2.5	----	----	----	----
23478-PeCDF	57117-31-4	-	pg/g	<2.5	----	----	----	----
123478-HxCDF	70648-26-9	-	pg/g	<2.5	----	----	----	----
123678-HxCDF	57117-44-9	-	pg/g	<2.5	----	----	----	----
234678-HxCDF	60851-34-5	-	pg/g	<2.5	----	----	----	----
123789-HxCDF	72918-21-9	-	pg/g	<2.5	----	----	----	----
1234678-HpCDF	67562-39-4	-	pg/g	<2.5	----	----	----	----
1234789-HpCDF	55673-89-7	-	pg/g	<2.5	----	----	----	----
OCDF	39001-02-0	-	pg/g	<4.9	----	----	----	----
EP300B: Dioxins and Furans - Group Totals								
Tetra-Dioxins	----	-	pg/g	<5.4	----	----	----	----
Penta-Dioxins	----	-	pg/g	<19.7	----	----	----	----
Hexa-Dioxins	----	-	pg/g	**52.4**	----	----	----	----
Hepta-Dioxins	----	-	pg/g	**101**	----	----	----	----
Octa-Dioxin	----	-	pg/g	**530**	----	----	----	----
Tetra-Furans	----	-	pg/g	<0.5	----	----	----	----
Penta-Furans	----	-	pg/g	<2.5	----	----	----	----
Hexa-Furans	----	-	pg/g	<2.5	----	----	----	----
Hepta-Furans	----	-	pg/g	<2.5	----	----	----	----
Octa-Furan	----	-	pg/g	<4.9	----	----	----	----
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ)								
Total WHO-TEQ1 (zero)	----	-	pg/g	**0.44**	----	----	----	----
Total WHO-TEQ2 (0.5 LOR)	----	-	pg/g	**3.24**	----	----	----	----
Total WHO-TEQ3 (LOR)	----	-	pg/g	**6.04**	----	----	----	----
Total I-TEQ1 (zero)	----	-	pg/g	**0.81**	----	----	----	----
Total I-TEQ2 (0.5 LOR)	----	-	pg/g	**3.27**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC14	----	----	----	----
				Sampling date / time	28-Sep-2022 17:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2229101-019	--------	--------	--------	--------
					Result	----	----	----	----
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ) - Continued									
Total I-TEQ3 (LOR)	----	-	pg/g		**5.73**	----	----	----	----
EP300L: Dioxins and Furans - Isotopically Labelled Standards									
2378-TCDD (13C12)	76523-40-5	0.25	%		**103**	----	----	----	----
12378-PeCDD (13C12)	109719-79-1	0.25	%		**88.1**	----	----	----	----
123478-HxCDD (13C12)	109719-80-4	0.25	%		**85.7**	----	----	----	----
123678-HxCDD (13C12)	109719-81-5	0.25	%		**87.7**	----	----	----	----
1234678-HpCDD (13C12)	109719-83-7	0.25	%		**76.9**	----	----	----	----
OCDD (13C12)	114423-97-1	0.25	%		**80.8**	----	----	----	----
2378-TCDF (13C12)	89059-46-1	0.25	%		**96.0**	----	----	----	----
12378-PeCDF (13C12)	109719-77-9	0.25	%		**102**	----	----	----	----
23478-PeCDF (13C12)	116843-02-8	0.25	%		**95.1**	----	----	----	----
123478-HxCDF (13C12)	114423-98-2	0.25	%		**89.2**	----	----	----	----
123678-HxCDF (13C12)	116843-03-9	0.25	%		**83.2**	----	----	----	----
234678-HxCDF (13C12)	116843-05-1	0.25	%		**94.8**	----	----	----	----
123789-HxCDF (13C12)	116843-04-0	0.25	%		**92.4**	----	----	----	----
1234678-HpCDF (13C12)	109719-84-8	0.25	%		**82.5**	----	----	----	----
1234789-HpCDF (13C12)	109719-94-0	0.25	%		**90.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP300L: Dioxins and Furans - Isotopically Labelled Standards			
2378-TCDD (13C12)	76523-40-5	25	164
12378-PeCDD (13C12)	109719-79-1	25	181
123478-HxCDD (13C12)	109719-80-4	32	141
123678-HxCDD (13C12)	109719-81-5	28	130
1234678-HpCDD (13C12)	109719-83-7	23	140
OCDD (13C12)	114423-97-1	17	157
2378-TCDF (13C12)	89059-46-1	24	169
12378-PeCDF (13C12)	109719-77-9	24	185
23478-PeCDF (13C12)	116843-02-8	21	178
123478-HxCDF (13C12)	114423-98-2	26	152
123678-HxCDF (13C12)	116843-03-9	26	123
234678-HxCDF (13C12)	116843-05-1	28	136
123789-HxCDF (13C12)	116843-04-0	29	147
1234678-HpCDF (13C12)	109719-84-8	28	143
1234789-HpCDF (13C12)	109719-94-0	26	138

Addendum A to Certificate of Analysis for Workorder EB2229101

Laboratory Sample ID: EB2229101-002
Client Sample ID: MC25
QC Lot Number: 4637753:4637752

Sample Matrix: SOIL
Test Type: EP300B:EP300A

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	85.2
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.49	0.5	0.00	0.62	1.25	82.5
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	75.1
123678-HxCDD	2.9	2.5	0.1	0.29	0.29	0.29	0.1	0.29	0.29	0.29	77.0
123789-HxCDD	4.9	2.5	0.1	0.49	0.49	0.49	0.1	0.49	0.49	0.49	-
1234678-HpCDD	69.6	2.5	0.01	0.70	0.70	0.70	0.01	0.70	0.70	0.70	57.3
OCDD	1080	10.0	0.0003	0.32	0.32	0.32	0.001	1.08	1.08	1.08	30.8
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	87.6
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	90.0
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.75	0.5	0.00	0.62	1.25	84.1
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	79.5
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	78.1
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	75.3
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	71.4
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	51.5
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	65.2
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	1.80	4.38	6.96	**Σ TEQ**	2.56	4.79	7.02	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	11.6	5.5	11
Penta-dioxins	33.4	24.9	10
Hexa-dioxins	162	19.9	8
Hepta-dioxins	250	5.0	2
Octa-dioxin	1080	10.0	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<5.0	5.0	1
Σ PCDD/Fs	1537		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Laboratory Sample ID: EB2229101-003
Client Sample ID: MC23
QC Lot Number: 4637753:4637752

Sample Matrix: SOIL
Test Type: EP300B:EP300A

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ [1] (zero)	WHO-TEQ [2] (0.5 LOR)	WHO-TEQ [3] (LOR)	I-TEF	I-TEQ [1] (zero)	I-TEQ [2] (0.5 LOR)	I-TEQ [3] (LOR)	$^{13}C_{12}$ [5] Rec (%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	93.4
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.48	0.5	0.00	0.62	1.24	84.3
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	86.4
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.7
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	6.8	2.5	0.01	0.07	0.07	0.07	0.01	0.07	0.07	0.07	67.3
OCDD	122	9.9	0.0003	0.04	0.04	0.04	0.001	0.12	0.12	0.12	51.4
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	89.9
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	88.1
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.24	92.0
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	87.9
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	78.8
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	86.2
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.9
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	68.6
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	77.1
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	0.10	2.92	5.74	**Σ TEQ**	0.19	2.66	5.14	

Group Totals	Conc pg/g	LOR [4] pg/g	No. of peaks
Tetra-dioxins	<0.5	0.5	1
Penta-dioxins	<17.4	17.4	7
Hexa-dioxins	<19.9	19.9	8
Hepta-dioxins	25.7	5.0	2
Octa-dioxin	122	9.9	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<5.0	5.0	1
Σ PCDD/Fs	148		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Laboratory Sample ID: EB2229101-006
Client Sample ID: MC22
QC Lot Number: 4637753:4637752

Sample Matrix: SOIL
Test Type: EP300B:EP300A

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.24	0.49	1	0.00	0.24	0.49	91.7
12378-PeCDD	<2.4	2.4	1	0.00	1.22	2.45	0.5	0.00	0.61	1.22	87.0
123478-HxCDD	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	78.2
123678-HxCDD	3.8	2.4	0.1	0.38	0.38	0.38	0.1	0.38	0.38	0.38	80.9
123789-HxCDD	6.1	2.4	0.1	0.61	0.61	0.61	0.1	0.61	0.61	0.61	-
1234678-HpCDD	88.4	2.4	0.01	0.88	0.88	0.88	0.01	0.88	0.88	0.88	80.6
OCDD	1150	9.8	0.0003	0.35	0.35	0.35	0.001	1.15	1.15	1.15	64.7
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	92.3
12378-PeCDF	<2.4	2.4	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	98.4
23478-PeCDF	<2.4	2.4	0.3	0.00	0.37	0.73	0.5	0.00	0.61	1.22	92.4
123478-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	89.7
123678-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	84.6
234678-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	87.2
123789-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	85.8
1234678-HpCDF	<2.4	2.4	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	76.7
1234789-HpCDF	<2.4	2.4	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	81.2
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	2.22	4.75	7.29	**Σ TEQ**	3.02	5.22	7.41	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	15.2	7.3	15
Penta-dioxins	40.6	22.0	9
Hexa-dioxins	221	19.6	8
Hepta-dioxins	312	4.9	2
Octa-dioxin	1150	9.8	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.4	2.4	1
Hexa-furans	<2.4	2.4	1
Hepta-furans	<2.4	2.4	1
Octa-furan	<4.9	4.9	1
Σ PCDD/Fs	1739		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Laboratory Sample ID: EB2229101-007
Client Sample ID: MC17
QC Lot Number: 4637753:4637752

Sample Matrix: SOIL
Test Type: EP300B:EP300A

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	89.7
12378-PeCDD	<2.5	2.5	1	0.00	1.23	2.46	0.5	0.00	0.61	1.23	86.5
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	87.2
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	86.0
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	21.4	2.5	0.01	0.21	0.21	0.21	0.01	0.21	0.21	0.21	75.2
OCDD	300	9.8	0.0003	0.09	0.09	0.09	0.001	0.30	0.30	0.30	85.9
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	94.0
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	92.7
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.61	1.23	82.6
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	90.1
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	88.2
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	90.2
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	85.2
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	81.3
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	88.3
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	0.30	3.09	5.88	**Σ TEQ**	0.51	2.96	5.41	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	<5.9	5.9	12
Penta-dioxins	<19.6	19.6	8
Hexa-dioxins	44.3	19.6	8
Hepta-dioxins	80.7	4.9	2
Octa-dioxin	300	9.8	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<4.9	4.9	1
Σ PCDD/Fs	425		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Laboratory Sample ID: EB2229101-013
Client Sample ID: MC16
QC Lot Number: 4637753:4637752

Sample Matrix: SOIL
Test Type: EP300B:EP300A

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	95.7
12378-PeCDD	<2.5	2.5	1	0.00	1.23	2.47	0.5	0.00	0.62	1.23	86.7
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	88.0
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	88.5
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	17.2	2.5	0.01	0.17	0.17	0.17	0.01	0.17	0.17	0.17	76.6
OCDD	255	9.9	0.0003	0.08	0.08	0.08	0.001	0.26	0.26	0.26	86.0
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	95.4
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	87.5
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.23	90.6
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	83.7
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	86.4
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	92.5
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	86.6
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	80.6
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	90.0
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	0.25	3.05	5.85	**Σ TEQ**	0.43	2.88	5.34	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	<1.5	1.5	3
Penta-dioxins	<17.3	17.3	7
Hexa-dioxins	31.8	19.7	8
Hepta-dioxins	72.5	4.9	2
Octa-dioxin	255	9.9	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<4.9	4.9	1
Σ PCDD/Fs	359		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

Addendum A to Certificate of Analysis for Workorder EB2229101

Laboratory Sample ID: EB2229101-019 **Sample Matrix:** SOIL
Client Sample ID: MC14 **Test Type:** EP300B:EP300A
QC Lot Number: 4637753:4637752

Compound	*Conc pg/g*	*LOR pg/g*	*WHO-TEF*	*WHO-TEQ [1] (zero)*	*WHO-TEQ [2] (0.5 LOR)*	*WHO-TEQ [3] (LOR)*	*I-TEF*	*I-TEQ [1] (zero)*	*I-TEQ [2] (0.5 LOR)*	*I-TEQ [3] (LOR)*	*$^{13}C_{12}$ [5] Rec (%)*
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	103
12378-PeCDD	<2.5	2.5	1	0.00	1.23	2.47	0.5	0.00	0.62	1.23	88.1
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	85.7
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	87.7
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	27.9	2.5	0.01	0.28	0.28	0.28	0.01	0.28	0.28	0.28	76.9
OCDD	530	9.9	0.0003	0.16	0.16	0.16	0.001	0.53	0.53	0.53	80.8
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	96.0
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	102
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.23	95.1
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	89.2
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	83.2
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	94.8
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	92.4
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	82.5
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	90.9
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
			Σ TEQ	0.44	3.24	6.04	**Σ TEQ**	0.81	3.27	5.73	

Group Totals	*Conc pg/g*	*LOR [4] pg/g*	*No. of peaks*
Tetra-dioxins	<5.4	5.4	11
Penta-dioxins	<19.7	19.7	8
Hexa-dioxins	52.4	19.7	8
Hepta-dioxins	101	4.9	2
Octa-dioxin	530	9.9	1
Tetra-furans	<0.5	0.5	1
Penta-furans	<2.5	2.5	1
Hexa-furans	<2.5	2.5	1
Hepta-furans	<2.5	2.5	1
Octa-furan	<4.9	4.9	1
Σ PCDD/Fs	683		

Comment: Refer to CoA for any sample or analysis related comments

Notes:

LOR = Limit of reporting

WHO-TEF = World Health Organisation toxic equivalency factor

WHO-TEQ = World Health Organisation toxic equivalence

I-TEF = International toxic equivalency factor

I-TEQ = International toxic equivalence

T = tetra

Pe = penta

Hx = hexa

Hp = hepta

O = octa

CDD, dioxin = chlorinated dibenzo-p-dioxin

CDF, furan = chlorinated dibenzofuran

[1] $I\text{-}TEQ_{(zero)}$ and WHO-TEQ(zero) calculated treating <LOR as zero concentration

[2] $I\text{-}TEQ_{(0.5\ LOR)}$ and $WHO\text{-}TEQ_{(0.5\ LOR)}$ calculated treating <LOR as 0.5 LOR concentration

[3] $I\text{-}TEQ_{(LOR)}$ and $WHO\text{-}TEQ_{(LOR)}$ calculated treating <LOR as LOR concentration

[4] Totals LORs are calculated by mutliplying the number of peaks by the indivdual LOR per compound

[5] $^{13}C_{12}$ Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency

Sample results reported on 'dry weight' basis.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2229107**	Page	: 1 of 47
Client	: **BMT COMMERCIAL AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: CRAIG HEATHERINGTON	Contact	: Kimberly Hilton-Barber
Address	: PO BOX 203 SPRING HILL BRISBANE QLD 4004	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 7 3831 6744	Telephone	: +61-7-3243 7222
Project	: A11367 Gladstone - Sediment Quality	Date Samples Received	: 05-Oct-2022 10:30
Order number	: ----	Date Analysis Commenced	: 06-Oct-2022
C-O-C number	: ----	Issue Date	: 25-Oct-2022 12:09
Sampler	: BRAD HILES		
Site	: ----		
Quote number	: BN/523/22		
No. of samples received	: 29		
No. of samples analysed	: 29		

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, unless the sampling was conducted by ALS. 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
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Inorganics, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Keegan Mullane	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Layla Hafner	Acid Sulphate Soils - Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- TKN conducted by ALS Melbourne, NATA accreditation no. 825, site no 13778
- EG020-SD (Total Metals in Sediments by ICP-MS): Sample MC7 (EB2229107-024) shows poor matrix spike recovery due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- EP090-Organotin: High surrogate recovery for samples 'BE3' and 'RB2' deemed acceptable as all associated analyte results are less than LOR.
- EA150H: Soil particle density results fell outside the scope of AS1289.3.6.3. Results should be scrutinised accordingly.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP080-SD: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP131A: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP234: Poor matrix spike recovery for compounds due to matrix interferences and high matrix spike recovery has been noted for compounds due to ion enhancement.
- **Specialty Organics analysis is 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: EM2229107 #23 Poor duplicate precision for Total phosphorus due to sample heterogeneity.
- EP080-SD TRH Volatiles/BTEX in Sediments: High LCS recovery deemed acceptable as all associated analyte results are less than LOR
- EP231X PFAS: Sample EB2228909-002 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EP231X PFAS: Sample EB2228909-003 shows poor matrix spike recovery due to sample heterogeneity. Confirmed by visual inspection.
- EG020SD-Total Metals in Sediments by ICP-MS: Sample 'MC8' (EB2229107-023) shows poor duplicate results due to sample matrix interference. Confirmed by visual inspection.
- EG005T (Total Metals by ICP-AES): MC8 (EB2229107-023) shows poor duplicate results due to sample heterogeneity. This has been 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'.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BE1	BE2	BE3	BE4	BE7
			Sampling date / time	30-Sep-2022 08:30	30-Sep-2022 08:40	30-Sep-2022 09:00	30-Sep-2022 09:34	30-Sep-2022 09:34
Compound	CAS Number	LOR	Unit	EB2229107-001	EB2229107-002	EB2229107-003	EB2229107-004	EB2229107-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.7	9.7	9.6	9.6	9.5
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	0.013	0.018	0.050	0.043	0.041
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	11	31	27	26
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	8.85	23.1	14.9	12.2	13.1
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1770	4620	2970	2430	2620
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.83	7.40	4.77	3.89	4.21
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	<0.02	<0.02	0.05	0.04	0.04
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	11	31	27	26
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	<1	2	2	2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	21.4	24.7	20.4	31.9	31.4
EA150: Particle Sizing								
+75µm	----	1	%	98	98	96	91	90
+150µm	----	1	%	97	95	77	7	6
+300µm	----	1	%	56	77	60	<1	<1
+425µm	----	1	%	21	58	56	<1	<1
+600µm	----	1	%	8	42	48	<1	<1
+1180µm	----	1	%	3	21	31	<1	<1
+2.36mm	----	1	%	2	13	20	<1	<1
+4.75mm	----	1	%	2	8	14	<1	<1
+9.5mm	----	1	%	<1	5	6	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE1	BE2	BE3	BE4	BE7
				Sampling date / time	30-Sep-2022 08:30	30-Sep-2022 08:40	30-Sep-2022 09:00	30-Sep-2022 09:34	30-Sep-2022 09:34
Compound	CAS Number	LOR	Unit		EB2229107-001	EB2229107-002	EB2229107-003	EB2229107-004	EB2229107-005
					Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued									
+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	%		2	2	3	7	9
Silt (2-60 µm)	----	1	%		<1	<1	1	1	<1
Sand (0.06-2.00 mm)	----	1	%		96	83	72	92	91
Gravel (>2mm)	----	1	%		2	15	24	<1	<1
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.67	2.66	2.66	2.59	2.55
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		1140	930	1950	2670	2650
Iron	7439-89-6	50	mg/kg		4940	4310	7040	7990	7940
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	1.00	mg/kg		13.0	13.3	9.68	14.3	13.8
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		3.1	2.9	5.4	8.1	8.3
Copper	7440-50-8	1.0	mg/kg		<1.0	<1.0	1.5	1.4	1.5
Cobalt	7440-48-4	0.5	mg/kg		2.1	1.8	2.8	4.4	4.4
Lead	7439-92-1	1.0	mg/kg		1.1	<1.0	1.8	2.4	2.5
Manganese	7439-96-5	10	mg/kg		215	267	150	269	259
Nickel	7440-02-0	1.0	mg/kg		1.5	1.2	2.4	3.2	3.2
Selenium	7782-49-2	0.1	mg/kg		0.1	0.2	0.2	0.4	0.4
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg		11.1	9.9	13.3	15.6	16.1
Zinc	7440-66-6	1.0	mg/kg		4.3	3.4	8.2	9.6	9.7
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.1	<0.1	1.8	<0.1	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		120	150	160	450	280
EK062: Total Nitrogen as N (TKN + NOx)									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BE1	BE2	BE3	BE4	BE7
			Sampling date / time	30-Sep-2022 08:30	30-Sep-2022 08:40	30-Sep-2022 09:00	30-Sep-2022 09:34	30-Sep-2022 09:34
Compound	CAS Number	LOR	Unit	EB2229107-001	EB2229107-002	EB2229107-003	EB2229107-004	EB2229107-005
				Result	Result	Result	Result	Result
EK062: Total Nitrogen as N (TKN + NOx) - Continued								
^ Total Nitrogen as N	----	20	mg/kg	120	150	160	450	280
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	158	158	189	239	208
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.10	0.10	0.15	0.21	0.20
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	6	8	8	6	6
C29 - C36 Fraction	----	5	mg/kg	<5	7	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg	6	15	8	6	6
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
>C10 - C16 Fraction	----	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
>C16 - C34 Fraction	----	3	mg/kg	7	12	9	8	8
>C34 - C40 Fraction	----	5	mg/kg	<5	6	<5	<5	<5
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	7	18	9	8	8
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP132B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	5	µg/kg	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE1	BE2	BE3	BE4	BE7
				Sampling date / time	30-Sep-2022 08:30	30-Sep-2022 08:40	30-Sep-2022 09:00	30-Sep-2022 09:34	30-Sep-2022 09:34
Compound	CAS Number	LOR	Unit		EB2229107-001	EB2229107-002	EB2229107-003	EB2229107-004	EB2229107-005
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
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	<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**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		----	----	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		----	----	----	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BE1	BE2	BE3	BE4	BE7
			Sampling date / time	30-Sep-2022 08:30	30-Sep-2022 08:40	30-Sep-2022 09:00	30-Sep-2022 09:34	30-Sep-2022 09:34
Compound	CAS Number	LOR	Unit	EB2229107-001	EB2229107-002	EB2229107-003	EB2229107-004	EB2229107-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	----	----	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE1	BE2	BE3	BE4	BE7
				Sampling date / time	30-Sep-2022 08:30	30-Sep-2022 08:40	30-Sep-2022 09:00	30-Sep-2022 09:34	30-Sep-2022 09:34
Compound	CAS Number	LOR	Unit		EB2229107-001	EB2229107-002	EB2229107-003	EB2229107-004	EB2229107-005
					Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		----	----	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		----	----	----	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		----	----	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		----	----	----	<0.0005	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		----	----	----	<0.0002	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		----	----	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		----	----	----	<0.0002	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		83.4	74.7	66.8	68.3	75.5
Toluene-D8	2037-26-5	0.2	%		74.3	64.9	57.3	56.8	63.0
4-Bromofluorobenzene	460-00-4	0.2	%		83.3	76.1	72.3	68.9	72.5
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		85.6	102	133	76.5	83.6
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		107	95.4	100	106	92.7
Anthracene-d10	1719-06-8	10	%		88.6	111	93.2	93.6	82.5
4-Terphenyl-d14	1718-51-0	10	%		85.2	114	87.8	88.0	78.1
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	----	----	92.0	----
13C8-PFOA	----	0.0002	%		----	----	----	108	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BE5	BE9	BE10	BE6	RB2
			Sampling date / time	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 10:20	30-Sep-2022 11:32
Compound	CAS Number	LOR	Unit	EB2229107-006	EB2229107-007	EB2229107-008	EB2229107-009	EB2229107-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.6	9.5	9.6	9.6	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.038	0.054	0.039	0.050	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	24	33	24	31	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	15.6	15.1	18.4	16.6	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3120	3020	3680	3320	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	5.01	4.85	5.90	5.33	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	0.05	0.04	0.05	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	24	33	24	31	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	2	2	2	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	33.1	32.6	34.5	33.2	31.8
EA150: Particle Sizing								
+75µm	----	1	%	86	89	87	83	88
+150µm	----	1	%	5	12	9	5	78
+300µm	----	1	%	2	9	6	2	48
+425µm	----	1	%	2	8	6	2	35
+600µm	----	1	%	1	8	5	2	28
+1180µm	----	1	%	<1	4	4	1	16
+2.36mm	----	1	%	<1	<1	1	<1	6
+4.75mm	----	1	%	<1	<1	<1	<1	2
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE5	BE9	BE10	BE6	RB2
				Sampling date / time	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 10:20	30-Sep-2022 11:32
Compound	CAS Number	LOR	Unit		EB2229107-006	EB2229107-007	EB2229107-008	EB2229107-009	EB2229107-010
					Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued									
+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	%		9	7	8	10	9
Silt (2-60 µm)	----	1	%		4	3	4	5	2
Sand (0.06-2.00 mm)	----	1	%		87	88	86	84	80
Gravel (>2mm)	----	1	%		<1	2	2	1	9
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.62	2.62	2.64	2.64	2.73
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		2650	2590	3050	2970	3400
Iron	7439-89-6	50	mg/kg		7850	7800	9070	8730	25600
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	7440-38-2	1.00	mg/kg		13.3	13.3	14.4	14.4	30.8
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		8.9	8.5	9.3	9.2	11.5
Copper	7440-50-8	1.0	mg/kg		1.5	1.4	1.7	1.9	1.3
Cobalt	7440-48-4	0.5	mg/kg		4.6	4.5	4.7	4.6	8.6
Lead	7439-92-1	1.0	mg/kg		2.6	2.6	2.8	3.0	3.9
Manganese	7439-96-5	10	mg/kg		316	369	325	333	386
Nickel	7440-02-0	1.0	mg/kg		3.4	3.3	3.7	3.7	4.0
Selenium	7782-49-2	0.1	mg/kg		0.4	0.4	0.4	0.4	0.4
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg		16.3	16.3	17.6	17.4	38.7
Zinc	7440-66-6	1.0	mg/kg		10.6	10.1	11.6	11.6	14.3
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	----	----	----	<1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.1	<0.1	<0.1	0.1	0.6
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE5	BE9	BE10	BE6	RB2
				Sampling date / time	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 10:20	30-Sep-2022 11:32
Compound	CAS Number	LOR	Unit		EB2229107-006	EB2229107-007	EB2229107-008	EB2229107-009	EB2229107-010
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		310	300	410	440	360
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		310	300	410	440	360
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		224	221	272	255	487
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.20	0.22	0.26	0.26	0.24
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	4	<3	<3
C15 - C28 Fraction	----	3	mg/kg		4	6	16	6	<3
C29 - C36 Fraction	----	5	mg/kg		<5	<5	6	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		4	9	26	6	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<3
>C10 - C16 Fraction	----	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
>C16 - C34 Fraction	----	3	mg/kg		4	7	19	7	<3
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
^ >C10 - C40 Fraction (sum)	----	3	mg/kg		4	7	22	7	<3
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE5	BE9	BE10	BE6	RB2
				Sampling date / time	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 10:20	30-Sep-2022 11:32
Compound	CAS Number	LOR	Unit		EB2229107-006	EB2229107-007	EB2229107-008	EB2229107-009	EB2229107-010
					Result	Result	Result	Result	Result
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**	72-54-8/72-55-9/50-29-3	0.50	µg/kg		----	----	----	----	<0.50
Dieldrin	60-57-1	0.50	µg/kg		----	----	----	----	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg		----	----	----	----	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg		----	----	----	----	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg		----	----	----	----	<0.50
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg		----	----	----	----	<0.50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE5	BE9	BE10	BE6	RB2
				Sampling date / time	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 10:20	30-Sep-2022 11:32
Compound	CAS Number	LOR	Unit		EB2229107-006	EB2229107-007	EB2229107-008	EB2229107-009	EB2229107-010
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
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	0.50	µg/kg		----	----	----	----	<0.50
trans-Chlordane	5103-74-2	0.50	µg/kg		----	----	----	----	<0.50
^ Total Chlordane (sum)	----	0.50	µg/kg		----	----	----	----	<0.50
Oxychlordane	27304-13-8	0.50	µg/kg		----	----	----	----	<0.50
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		----	----	----	----	<0.50
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	**10**	<4	<4
Phenanthrene	85-01-8	4	µg/kg		<4	<4	**16**	<4	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	**14**	<4	<4
Fluoranthene	206-44-0	4	µg/kg		<4	<4	**9**	<4	<4
Pyrene	129-00-0	4	µg/kg		<4	<4	**8**	<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	**57**	<4	<4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE5	BE9	BE10	BE6	RB2
				Sampling date / time	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 10:20	30-Sep-2022 11:32
Compound	CAS Number	LOR	Unit		EB2229107-006	EB2229107-007	EB2229107-008	EB2229107-009	EB2229107-010
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
^ **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**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		----	----	----	----	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE5	BE9	BE10	BE6	RB2
				Sampling date / time	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 10:20	30-Sep-2022 11:32
Compound	CAS Number	LOR	Unit		EB2229107-006	EB2229107-007	EB2229107-008	EB2229107-009	EB2229107-010
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		----	----	----	----	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		----	----	----	----	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		----	----	----	----	<0.0002
EP234A: OP Pesticides									
Azinphos-ethyl	2642-71-9	0.005	mg/kg		----	----	----	----	<0.005
Azinphos-methyl	86-50-0	0.005	mg/kg		----	----	----	----	<0.005
Chlorfenvinphos	470-90-6	0.005	mg/kg		----	----	----	----	<0.005
Coumaphos	56-72-4	0.002	mg/kg		----	----	----	----	<0.002
Diazinon	333-41-5	0.002	mg/kg		----	----	----	----	<0.002
Dimethoate	60-51-5	0.004	mg/kg		----	----	----	----	<0.004

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE5	BE9	BE10	BE6	RB2
				Sampling date / time	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 10:20	30-Sep-2022 11:32
Compound	CAS Number	LOR	Unit		EB2229107-006	EB2229107-007	EB2229107-008	EB2229107-009	EB2229107-010
					Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued									
Disulfoton	298-04-4	0.01	mg/kg		----	----	----	----	<0.01
Ethoprophos	13194-48-4	0.002	mg/kg		----	----	----	----	<0.002
Fenamiphos	22224-92-6	0.002	mg/kg		----	----	----	----	<0.002
Fenitrothion	122-14-5	0.5	mg/kg		----	----	----	----	<0.5
Fensulfothion	115-90-2	0.005	mg/kg		----	----	----	----	<0.005
Fenthion	55-38-9	0.010	mg/kg		----	----	----	----	<0.010
Malathion	121-75-5	0.005	mg/kg		----	----	----	----	<0.005
^ Mevinphos	7786-34-7	0.005	mg/kg		----	----	----	----	<0.005
Monocrotophos	6923-22-4	0.005	mg/kg		----	----	----	----	<0.005
Omethoate	1113-02-6	0.002	mg/kg		----	----	----	----	<0.002
Parathion	56-38-2	0.05	mg/kg		----	----	----	----	<0.05
Parathion-methyl	298-00-0	0.5	mg/kg		----	----	----	----	<0.5
Phorate	298-02-2	0.02	mg/kg		----	----	----	----	<0.02
Pirimiphos-methyl	29232-93-7	0.002	mg/kg		----	----	----	----	<0.002
Sulfotep	3689-24-5	0.001	mg/kg		----	----	----	----	<0.001
Tetrachlorvinphos	22248-79-9	0.002	mg/kg		----	----	----	----	<0.002
Triazophos	24017-47-8	0.001	mg/kg		----	----	----	----	<0.001
EP234B: Thiocarbamates and Carbamates									
Aldicarb	116-06-3	0.01	mg/kg		----	----	----	----	<0.01
Bendiocarb	22781-23-3	1	mg/kg		----	----	----	----	<1
Benomyl	17804-35-2	0.005	mg/kg		----	----	----	----	<0.005
Carbaryl	63-25-2	0.002	mg/kg		----	----	----	----	<0.002
Carbofuran	1563-66-2	0.002	mg/kg		----	----	----	----	<0.002
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg		----	----	----	----	<0.005
Methiocarb	2032-65-7	0.002	mg/kg		----	----	----	----	<0.002
Methomyl	16752-77-5	0.002	mg/kg		----	----	----	----	<0.002
Molinate	2212-67-1	0.02	mg/kg		----	----	----	----	<0.02
Oxamyl	23135-22-0	0.002	mg/kg		----	----	----	----	<0.002
Thiobencarb	28249-77-6	0.002	mg/kg		----	----	----	----	<0.002
Thiodicarb	59669-26-0	0.002	mg/kg		----	----	----	----	<0.002
EP234D: Triazinone Herbicides									
Hexazinone	51235-04-2	0.004	mg/kg		----	----	----	----	<0.004
Metribuzin	21087-64-9	0.004	mg/kg		----	----	----	----	<0.004
EP234E: Conazole and Aminopyrimidine Fungicides									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE5	BE9	BE10	BE6	RB2
				Sampling date / time	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 10:20	30-Sep-2022 11:32
Compound	CAS Number	LOR	Unit		EB2229107-006	EB2229107-007	EB2229107-008	EB2229107-009	EB2229107-010
					Result	Result	Result	Result	Result
EP234E: Conazole and Aminopyrimidine Fungicides - Continued									
Cyproconazole	94361-06-5	0.004	mg/kg		----	----	----	----	<0.004
Flusilazole	85509-19-9	0.004	mg/kg		----	----	----	----	<0.004
Hexaconazole	79983-71-4	0.004	mg/kg		----	----	----	----	<0.004
Paclobutrazole	76738-62-0	0.01	mg/kg		----	----	----	----	<0.01
Propiconazole	60207-90-1	0.01	mg/kg		----	----	----	----	<0.01
Tebuconazole	107534-96-3	0.002	mg/kg		----	----	----	----	<0.002
Cyprodinil	121552-61-2	0.002	mg/kg		----	----	----	----	<0.002
Pyrimethanil	53112-28-0	0.005	mg/kg		----	----	----	----	<0.005
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides									
Diuron	330-54-1	0.005	mg/kg		----	----	----	----	<0.005
Fluometuron	2164-17-2	0.002	mg/kg		----	----	----	----	<0.002
Tebuthiuron	34014-18-1	0.005	mg/kg		----	----	----	----	<0.005
Bromacil	314-40-9	0.005	mg/kg		----	----	----	----	<0.005
EP234G: Chloracetanilides									
Metolachlor	51218-45-2	0.002	mg/kg		----	----	----	----	<0.002
EP234H: Triazine Herbicides									
Ametryn	834-12-8	0.002	mg/kg		----	----	----	----	<0.002
Atrazine	1912-24-9	0.002	mg/kg		----	----	----	----	<0.002
Cyanazine	21725-46-2	0.005	mg/kg		----	----	----	----	<0.005
Prometryn	7287-19-6	0.002	mg/kg		----	----	----	----	<0.002
Propazine	139-40-2	0.002	mg/kg		----	----	----	----	<0.002
Simazine	122-34-9	0.005	mg/kg		----	----	----	----	<0.005
Terbuthylazine	5915-41-3	0.002	mg/kg		----	----	----	----	<0.002
Terbutryn	886-50-0	0.1	mg/kg		----	----	----	----	<0.1
EP234I: Miscellaneous (ESI Positive Mode) Pesticides									
Fenarimol	60168-88-9	0.005	mg/kg		----	----	----	----	<0.005
Irgarol	28159-98-0	0.001	mg/kg		----	----	----	----	<0.001
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**79.8**	**74.3**	**63.0**	**62.3**	**73.9**
Toluene-D8	2037-26-5	0.2	%		**69.8**	**69.9**	**53.6**	**65.5**	**63.7**
4-Bromofluorobenzene	460-00-4	0.2	%		**81.2**	**80.2**	**61.7**	**72.3**	**73.2**
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		**80.1**	**83.9**	**72.8**	**93.3**	**131**
EP130S: Organophosphorus Pesticide Surrogate									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE5	BE9	BE10	BE6	RB2
				Sampling date / time	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 09:54	30-Sep-2022 10:20	30-Sep-2022 11:32
Compound	CAS Number	LOR	Unit		EB2229107-006	EB2229107-007	EB2229107-008	EB2229107-009	EB2229107-010
					Result	Result	Result	Result	Result
EP130S: Organophosphorus Pesticide Surrogate - Continued									
DEF	78-48-8	10	%		----	----	----	----	50.9
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		----	----	----	----	75.0
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		111	105	110	103	103
Anthracene-d10	1719-06-8	10	%		95.4	91.7	100	92.6	88.5
4-Terphenyl-d14	1718-51-0	10	%		88.5	85.1	100	86.7	82.8
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	----	----	----	106
13C8-PFOA	----	0.0002	%		----	----	----	----	110

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	RB1	CS	MC1	MC29	MC30
			Sampling date / time	30-Sep-2022 12:00	30-Sep-2022 12:32	30-Sep-2022 13:00	30-Sep-2022 13:00	30-Sep-2022 13:00
Compound	CAS Number	LOR	Unit	EB2229107-011	EB2229107-012	EB2229107-013	EB2229107-014	EB2229107-015
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	27.9	27.1	35.6	42.4	30.4
EA150: Particle Sizing								
+75µm	----	1	%	96	96	83	75	82
+150µm	----	1	%	24	55	9	8	9
+300µm	----	1	%	3	13	1	2	2
+425µm	----	1	%	<1	6	<1	2	1
+600µm	----	1	%	<1	3	<1	1	<1
+1180µm	----	1	%	<1	2	<1	<1	<1
+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	%	4	4	12	17	11
Silt (2-60 µm)	----	1	%	<1	<1	4	7	5
Sand (0.06-2.00 mm)	----	1	%	96	95	84	75	84
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	2.65	2.66	2.52	2.36	2.56
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	1890	2410	3740	4950	3190
Iron	7439-89-6	50	mg/kg	6250	11100	9840	11800	8150
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	11.4	16.4	13.2	14.6	10.0
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg	6.5	8.8	9.9	11.7	8.0
Copper	7440-50-8	1.0	mg/kg	<1.0	1.2	3.5	4.3	3.8
Cobalt	7440-48-4	0.5	mg/kg	3.7	5.7	5.3	5.5	4.3
Lead	7439-92-1	1.0	mg/kg	2.5	3.1	3.5	4.2	3.2
Manganese	7439-96-5	10	mg/kg	210	359	311	299	198

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	RB1	CS	MC1	MC29	MC30
			Sampling date / time	30-Sep-2022 12:00	30-Sep-2022 12:32	30-Sep-2022 13:00	30-Sep-2022 13:00	30-Sep-2022 13:00
Compound	CAS Number	LOR	Unit	EB2229107-011	EB2229107-012	EB2229107-013	EB2229107-014	EB2229107-015
				Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued								
Nickel	7440-02-0	1.0	mg/kg	2.5	3.3	4.4	5.5	3.8
Selenium	7782-49-2	0.1	mg/kg	0.2	0.4	0.4	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	13.3	17.4	20.3	22.9	17.4
Zinc	7440-66-6	1.0	mg/kg	6.9	8.8	13.5	15.2	11.5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<1	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.3	0.2	0.3	1.5	0.2
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	170	220	460	810	450
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	170	220	460	810	450
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	210	224	291	377	282
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	0.13	0.13	0.38	0.61	0.45
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg	4	<3	<3	<3	<3
C15 - C28 Fraction	----	3	mg/kg	10	4	7	10	4
C29 - C36 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg	14	4	7	10	4
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	<3	<3	<3
>C10 - C16 Fraction	----	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
>C16 - C34 Fraction	----	3	mg/kg	11	4	9	13	5
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
^ >C10 - C40 Fraction (sum)	----	3	mg/kg	11	4	9	13	5
EP080-SD: BTEXN								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	RB1	CS	MC1	MC29	MC30
			Sampling date / time	30-Sep-2022 12:00	30-Sep-2022 12:32	30-Sep-2022 13:00	30-Sep-2022 13:00	30-Sep-2022 13:00
Compound	CAS Number	LOR	Unit	EB2229107-011	EB2229107-012	EB2229107-013	EB2229107-014	EB2229107-015
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	----	----	----
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	----	----	----
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								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	RB1	CS	MC1	MC29	MC30
			Sampling date / time	30-Sep-2022 12:00	30-Sep-2022 12:32	30-Sep-2022 13:00	30-Sep-2022 13:00	30-Sep-2022 13:00
Compound	CAS Number	LOR	Unit	EB2229107-011	EB2229107-012	EB2229107-013	EB2229107-014	EB2229107-015
				Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued								
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	72-54-8/72-55-9/50-29-2	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	0.50	µg/kg	<0.50	<0.50	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg	<0.50	<0.50	----	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg	<0.50	<0.50	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg	<0.50	<0.50	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg	<0.50	<0.50	----	----	----
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	RB1	CS	MC1	MC29	MC30
				Sampling date / time	30-Sep-2022 12:00	30-Sep-2022 12:32	30-Sep-2022 13:00	30-Sep-2022 13:00	30-Sep-2022 13:00
Compound	CAS Number	LOR	Unit		EB2229107-011	EB2229107-012	EB2229107-013	EB2229107-014	EB2229107-015
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
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	<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
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	RB1	CS	MC1	MC29	MC30
			Sampling date / time	30-Sep-2022 12:00	30-Sep-2022 12:32	30-Sep-2022 13:00	30-Sep-2022 13:00	30-Sep-2022 13:00
Compound	CAS Number	LOR	Unit	EB2229107-011	EB2229107-012	EB2229107-013	EB2229107-014	EB2229107-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	RB1	CS	MC1	MC29	MC30
			Sampling date / time	30-Sep-2022 12:00	30-Sep-2022 12:32	30-Sep-2022 13:00	30-Sep-2022 13:00	30-Sep-2022 13:00
Compound	CAS Number	LOR	Unit	EB2229107-011	EB2229107-012	EB2229107-013	EB2229107-014	EB2229107-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.005	mg/kg	<0.005	<0.005	----	----	----
Azinphos-methyl	86-50-0	0.005	mg/kg	<0.005	<0.005	----	----	----
Chlorfenvinphos	470-90-6	0.005	mg/kg	<0.005	<0.005	----	----	----
Coumaphos	56-72-4	0.002	mg/kg	<0.002	<0.002	----	----	----
Diazinon	333-41-5	0.002	mg/kg	<0.002	<0.002	----	----	----
Dimethoate	60-51-5	0.004	mg/kg	<0.004	<0.004	----	----	----
Disulfoton	298-04-4	0.01	mg/kg	<0.01	<0.01	----	----	----
Ethoprophos	13194-48-4	0.002	mg/kg	<0.002	<0.002	----	----	----
Fenamiphos	22224-92-6	0.002	mg/kg	<0.002	<0.002	----	----	----
Fenitrothion	122-14-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Fensulfothion	115-90-2	0.005	mg/kg	<0.005	<0.005	----	----	----
Fenthion	55-38-9	0.010	mg/kg	<0.010	<0.010	----	----	----
Malathion	121-75-5	0.005	mg/kg	<0.005	<0.005	----	----	----
^ Mevinphos	7786-34-7	0.005	mg/kg	<0.005	<0.005	----	----	----
Monocrotophos	6923-22-4	0.005	mg/kg	<0.005	<0.005	----	----	----
Omethoate	1113-02-6	0.002	mg/kg	<0.002	<0.002	----	----	----
Parathion	56-38-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Parathion-methyl	298-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Phorate	298-02-2	0.02	mg/kg	<0.02	<0.02	----	----	----
Pirimiphos-methyl	29232-93-7	0.002	mg/kg	<0.002	<0.002	----	----	----
Sulfotep	3689-24-5	0.001	mg/kg	<0.001	<0.001	----	----	----
Tetrachlorvinphos	22248-79-9	0.002	mg/kg	<0.002	<0.002	----	----	----
Triazophos	24017-47-8	0.001	mg/kg	<0.001	<0.001	----	----	----
EP234B: Thiocarbamates and Carbamates								
Aldicarb	116-06-3	0.01	mg/kg	<0.01	<0.01	----	----	----
Bendiocarb	22781-23-3	1	mg/kg	<1	<1	----	----	----
Benomyl	17804-35-2	0.005	mg/kg	<0.005	<0.005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	RB1	CS	MC1	MC29	MC30
			Sampling date / time	30-Sep-2022 12:00	30-Sep-2022 12:32	30-Sep-2022 13:00	30-Sep-2022 13:00	30-Sep-2022 13:00
Compound	CAS Number	LOR	Unit	EB2229107-011	EB2229107-012	EB2229107-013	EB2229107-014	EB2229107-015
				Result	Result	Result	Result	Result
EP234B: Thiocarbamates and Carbamates - Continued								
Carbaryl	63-25-2	0.002	mg/kg	<0.002	<0.002	----	----	----
Carbofuran	1563-66-2	0.002	mg/kg	<0.002	<0.002	----	----	----
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg	<0.005	<0.005	----	----	----
Methiocarb	2032-65-7	0.002	mg/kg	<0.002	<0.002	----	----	----
Methomyl	16752-77-5	0.002	mg/kg	<0.002	<0.002	----	----	----
Molinate	2212-67-1	0.02	mg/kg	<0.02	<0.02	----	----	----
Oxamyl	23135-22-0	0.002	mg/kg	<0.002	<0.002	----	----	----
Thiobencarb	28249-77-6	0.002	mg/kg	<0.002	<0.002	----	----	----
Thiodicarb	59669-26-0	0.002	mg/kg	<0.002	<0.002	----	----	----
EP234D: Triazinone Herbicides								
Hexazinone	51235-04-2	0.004	mg/kg	<0.004	<0.004	----	----	----
Metribuzin	21087-64-9	0.004	mg/kg	<0.004	<0.004	----	----	----
EP234E: Conazole and Aminopyrimidine Fungicides								
Cyproconazole	94361-06-5	0.004	mg/kg	<0.004	<0.004	----	----	----
Flusilazole	85509-19-9	0.004	mg/kg	<0.004	<0.004	----	----	----
Hexaconazole	79983-71-4	0.004	mg/kg	<0.004	<0.004	----	----	----
Paclobutrazole	76738-62-0	0.01	mg/kg	<0.01	<0.01	----	----	----
Propiconazole	60207-90-1	0.01	mg/kg	<0.01	<0.01	----	----	----
Tebuconazole	107534-96-3	0.002	mg/kg	<0.002	<0.002	----	----	----
Cyprodinil	121552-61-2	0.002	mg/kg	<0.002	<0.002	----	----	----
Pyrimethanil	53112-28-0	0.005	mg/kg	<0.005	<0.005	----	----	----
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides								
Diuron	330-54-1	0.005	mg/kg	<0.005	<0.005	----	----	----
Fluometuron	2164-17-2	0.002	mg/kg	<0.002	<0.002	----	----	----
Tebuthiuron	34014-18-1	0.005	mg/kg	<0.005	<0.005	----	----	----
Bromacil	314-40-9	0.005	mg/kg	<0.005	<0.005	----	----	----
EP234G: Chloracetanilides								
Metolachlor	51218-45-2	0.002	mg/kg	<0.002	<0.002	----	----	----
EP234H: Triazine Herbicides								
Ametryn	834-12-8	0.002	mg/kg	<0.002	<0.002	----	----	----
Atrazine	1912-24-9	0.002	mg/kg	<0.002	<0.002	----	----	----
Cyanazine	21725-46-2	0.005	mg/kg	<0.005	<0.005	----	----	----
Prometryn	7287-19-6	0.002	mg/kg	<0.002	<0.002	----	----	----
Propazine	139-40-2	0.002	mg/kg	<0.002	<0.002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	RB1	CS	MC1	MC29	MC30
			Sampling date / time	30-Sep-2022 12:00	30-Sep-2022 12:32	30-Sep-2022 13:00	30-Sep-2022 13:00	30-Sep-2022 13:00
Compound	CAS Number	LOR	Unit	EB2229107-011	EB2229107-012	EB2229107-013	EB2229107-014	EB2229107-015
				Result	Result	Result	Result	Result
EP234H: Triazine Herbicides - Continued								
Simazine	122-34-9	0.005	mg/kg	<0.005	<0.005	----	----	----
Terbuthylazine	5915-41-3	0.002	mg/kg	<0.002	<0.002	----	----	----
Terbutryn	886-50-0	0.1	mg/kg	<0.1	<0.1	----	----	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
Fenarimol	60168-88-9	0.005	mg/kg	<0.005	<0.005	----	----	----
Irgarol	28159-98-0	0.001	mg/kg	<0.001	<0.001	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**70.6**	**83.3**	**72.8**	**71.6**	**81.9**
Toluene-D8	2037-26-5	0.2	%	**57.1**	**74.6**	**71.5**	**59.5**	**71.6**
4-Bromofluorobenzene	460-00-4	0.2	%	**68.3**	**83.4**	**80.2**	**69.0**	**82.5**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	**98.8**	**86.4**	**81.5**	**87.8**	**87.7**
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	**48.9**	**61.9**	----	----	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	**77.6**	**78.0**	----	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	**99.2**	**114**	**98.7**	**100**	**102**
Anthracene-d10	1719-06-8	10	%	**81.6**	**95.0**	**75.4**	**95.7**	**91.5**
4-Terphenyl-d14	1718-51-0	10	%	**76.4**	**90.0**	**72.5**	**88.4**	**85.8**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**103**	**106**	----	----	----
13C8-PFOA	----	0.0002	%	**102**	**104**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC2	DMB	DMA	CN	Trip Blank
			Sampling date / time	30-Sep-2022 13:21	30-Sep-2022 13:46	30-Sep-2022 14:00	30-Sep-2022 14:38	30-Sep-2022 16:28
Compound	CAS Number	LOR	Unit	EB2229107-016	EB2229107-017	EB2229107-018	EB2229107-019	EB2229107-020
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	25.1	18.4	17.8	18.2	----
EA150: Particle Sizing								
+75µm	----	1	%	84	82	94	97	----
+150µm	----	1	%	67	76	91	76	----
+300µm	----	1	%	40	61	79	39	----
+425µm	----	1	%	31	47	66	14	----
+600µm	----	1	%	28	38	46	5	----
+1180µm	----	1	%	23	31	16	1	----
+2.36mm	----	1	%	15	27	5	<1	----
+4.75mm	----	1	%	6	21	<1	<1	----
+9.5mm	----	1	%	<1	12	<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	%	11	8	4	3	----
Silt (2-60 µm)	----	1	%	5	10	2	<1	----
Sand (0.06-2.00 mm)	----	1	%	66	54	86	96	----
Gravel (>2mm)	----	1	%	18	28	8	1	----
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.65	2.66	2.66	2.69	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	3930	1570	1230	2100	----
Iron	7439-89-6	50	mg/kg	16900	7220	5970	10800	----
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	19.2	9.24	9.08	20.0	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
Chromium	7440-47-3	1.0	mg/kg	8.3	3.3	3.5	8.0	----
Copper	7440-50-8	1.0	mg/kg	7.7	2.8	3.1	1.4	----
Cobalt	7440-48-4	0.5	mg/kg	7.4	3.8	3.2	4.7	----
Lead	7439-92-1	1.0	mg/kg	8.6	2.3	1.2	2.8	----
Manganese	7439-96-5	10	mg/kg	624	234	346	502	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC2	DMB	DMA	CN	Trip Blank
			Sampling date / time	30-Sep-2022 13:21	30-Sep-2022 13:46	30-Sep-2022 14:00	30-Sep-2022 14:38	30-Sep-2022 16:28
Compound	CAS Number	LOR	Unit	EB2229107-016	EB2229107-017	EB2229107-018	EB2229107-019	EB2229107-020
				Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued								
Nickel	7440-02-0	1.0	mg/kg	**5.8**	**3.1**	**2.4**	**3.2**	----
Selenium	7782-49-2	0.1	mg/kg	**1.0**	**0.2**	**0.2**	**0.2**	----
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
Vanadium	7440-62-2	2.0	mg/kg	**39.4**	**15.3**	**15.2**	**22.3**	----
Zinc	7440-66-6	1.0	mg/kg	**14.1**	**11.6**	**6.4**	**7.8**	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	<1	<1	<1	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	**0.2**	**0.1**	**0.1**	<0.1	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	**270**	**150**	**100**	**110**	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	**270**	**150**	**100**	**110**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	**547**	**174**	**157**	**351**	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	**0.26**	**0.07**	**0.05**	**0.07**	----
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
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC2	DMB	DMA	CN	Trip Blank
				Sampling date / time	30-Sep-2022 13:21	30-Sep-2022 13:46	30-Sep-2022 14:00	30-Sep-2022 14:38	30-Sep-2022 16:28
Compound	CAS Number	LOR	Unit		EB2229107-016	EB2229107-017	EB2229107-018	EB2229107-019	EB2229107-020
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
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		4	6	3	3	----
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	<5	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		4	6	3	3	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	----
>C10 - C16 Fraction	----	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	----
>C16 - C34 Fraction	----	3	mg/kg		5	8	4	4	----
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	----
^ >C10 - C40 Fraction (sum)	----	3	mg/kg		5	8	4	4	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	<1	<1	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	<1	<1	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	<0.5	----
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		----	<10	<10	<10	----
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	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC2	DMB	DMA	CN	Trip Blank
			Sampling date / time	30-Sep-2022 13:21	30-Sep-2022 13:46	30-Sep-2022 14:00	30-Sep-2022 14:38	30-Sep-2022 16:28
Compound	CAS Number	LOR	Unit	EB2229107-016	EB2229107-017	EB2229107-018	EB2229107-019	EB2229107-020
				Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
Demeton-S-methyl	919-86-8	10	µg/kg	----	<10	<10	<10	----
Diazinon	333-41-5	10	µg/kg	----	<10	<10	<10	----
Dichlorvos	62-73-7	10	µg/kg	----	<10	<10	<10	----
Dimethoate	60-51-5	10	µg/kg	----	<10	<10	<10	----
Ethion	563-12-2	10	µg/kg	----	<10	<10	<10	----
Fenamiphos	22224-92-6	10	µg/kg	----	<10	<10	<10	----
Fenthion	55-38-9	10	µg/kg	----	<10	<10	<10	----
Malathion	121-75-5	10	µg/kg	----	<10	<10	<10	----
Azinphos Methyl	86-50-0	10	µg/kg	----	<10	<10	<10	----
Monocrotophos	6923-22-4	10	µg/kg	----	<10	<10	<10	----
Parathion	56-38-2	10	µg/kg	----	<10	<10	<10	----
Parathion-methyl	298-00-0	10	µg/kg	----	<10	<10	<10	----
Pirimphos-ethyl	23505-41-1	10	µg/kg	----	<10	<10	<10	----
Prothiofos	34643-46-4	10	µg/kg	----	<10	<10	<10	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	----	<0.50	<0.50	<0.50	----
alpha-BHC	319-84-6	0.50	µg/kg	----	<0.50	<0.50	<0.50	----
beta-BHC	319-85-7	0.50	µg/kg	----	<0.50	<0.50	<0.50	----
delta-BHC	319-86-8	0.50	µg/kg	----	<0.50	<0.50	<0.50	----
4.4`-DDD	72-54-8	0.50	µg/kg	----	<0.50	<0.50	<0.50	----
4.4`-DDE	72-55-9	0.50	µg/kg	----	<0.50	<0.50	<0.50	----
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	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC2	DMB	DMA	CN	Trip Blank
				Sampling date / time	30-Sep-2022 13:21	30-Sep-2022 13:46	30-Sep-2022 14:00	30-Sep-2022 14:38	30-Sep-2022 16:28
Compound	CAS Number	LOR	Unit		EB2229107-016	EB2229107-017	EB2229107-018	EB2229107-019	EB2229107-020
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
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	0.50	µg/kg		----	<0.50	<0.50	<0.50	----
trans-Chlordane	5103-74-2	0.50	µg/kg		----	<0.50	<0.50	<0.50	----
^ Total Chlordane (sum)	----	0.50	µg/kg		----	<0.50	<0.50	<0.50	----
Oxychlordane	27304-13-8	0.50	µg/kg		----	<0.50	<0.50	<0.50	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		----	<0.50	<0.50	<0.50	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	<5	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	<5	----
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<4	<4	----
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	<4	----
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	<4	----
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	<4	----
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	<4	----
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<4	<4	----
Pyrene	129-00-0	4	µg/kg		<4	<4	<4	<4	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	<4	----
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	<4	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	<4	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	<4	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	<4	----
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	----
Perylene	198-55-0	4	µg/kg		<4	<4	<4	<4	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	----
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	----
^ Sum of PAHs	----	4	µg/kg		<4	<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	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC2	DMB	DMA	CN	Trip Blank
				Sampling date / time	30-Sep-2022 13:21	30-Sep-2022 13:46	30-Sep-2022 14:00	30-Sep-2022 14:38	30-Sep-2022 16:28
Compound	CAS Number	LOR	Unit		EB2229107-016	EB2229107-017	EB2229107-018	EB2229107-019	EB2229107-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		----	<0.001	<0.001	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		----	<0.0005	<0.0005	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		----	<0.0005	<0.0005	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		----	<0.0005	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		----	<0.0005	<0.0005	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC2	DMB	DMA	CN	Trip Blank
				Sampling date / time	30-Sep-2022 13:21	30-Sep-2022 13:46	30-Sep-2022 14:00	30-Sep-2022 14:38	30-Sep-2022 16:28
Compound	CAS Number	LOR	Unit		EB2229107-016	EB2229107-017	EB2229107-018	EB2229107-019	EB2229107-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		----	<0.0005	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		----	<0.0005	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		----	<0.0005	<0.0005	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		----	<0.0005	<0.0005	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		----	<0.0005	<0.0005	<0.0005	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		----	<0.0002	<0.0002	<0.0002	----
EP234A: OP Pesticides									
Azinphos-ethyl	2642-71-9	0.005	mg/kg		----	<0.005	<0.005	<0.005	----
Azinphos-methyl	86-50-0	0.005	mg/kg		----	<0.005	<0.005	<0.005	----
Chlorfenvinphos	470-90-6	0.005	mg/kg		----	<0.005	<0.005	<0.005	----
Coumaphos	56-72-4	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
Diazinon	333-41-5	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
Dimethoate	60-51-5	0.004	mg/kg		----	<0.004	<0.004	<0.004	----
Disulfoton	298-04-4	0.01	mg/kg		----	<0.01	<0.01	<0.01	----
Ethoprophos	13194-48-4	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
Fenamiphos	22224-92-6	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
Fenitrothion	122-14-5	0.5	mg/kg		----	<0.5	<0.5	<0.5	----
Fensulfothion	115-90-2	0.005	mg/kg		----	<0.005	<0.005	<0.005	----
Fenthion	55-38-9	0.010	mg/kg		----	<0.010	<0.010	<0.010	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC2	DMB	DMA	CN	Trip Blank
			Sampling date / time	30-Sep-2022 13:21	30-Sep-2022 13:46	30-Sep-2022 14:00	30-Sep-2022 14:38	30-Sep-2022 16:28
Compound	CAS Number	LOR	Unit	EB2229107-016	EB2229107-017	EB2229107-018	EB2229107-019	EB2229107-020
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Malathion	121-75-5	0.005	mg/kg	----	<0.005	<0.005	<0.005	----
^ Mevinphos	7786-34-7	0.005	mg/kg	----	<0.005	<0.005	<0.005	----
Monocrotophos	6923-22-4	0.005	mg/kg	----	<0.005	<0.005	<0.005	----
Omethoate	1113-02-6	0.002	mg/kg	----	<0.002	<0.002	<0.002	----
Parathion	56-38-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	----
Parathion-methyl	298-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Phorate	298-02-2	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
Pirimiphos-methyl	29232-93-7	0.002	mg/kg	----	<0.002	<0.002	<0.002	----
Sulfotep	3689-24-5	0.001	mg/kg	----	<0.001	<0.001	<0.001	----
Tetrachlorvinphos	22248-79-9	0.002	mg/kg	----	<0.002	<0.002	<0.002	----
Triazophos	24017-47-8	0.001	mg/kg	----	<0.001	<0.001	<0.001	----
EP234B: Thiocarbamates and Carbamates								
Aldicarb	116-06-3	0.01	mg/kg	----	<0.01	<0.01	<0.01	----
Bendiocarb	22781-23-3	1	mg/kg	----	<1	<1	<1	----
Benomyl	17804-35-2	0.005	mg/kg	----	<0.005	<0.005	<0.005	----
Carbaryl	63-25-2	0.002	mg/kg	----	<0.002	<0.002	<0.002	----
Carbofuran	1563-66-2	0.002	mg/kg	----	<0.002	<0.002	<0.002	----
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg	----	<0.005	<0.005	<0.005	----
Methiocarb	2032-65-7	0.002	mg/kg	----	<0.002	<0.002	<0.002	----
Methomyl	16752-77-5	0.002	mg/kg	----	<0.002	<0.002	<0.002	----
Molinate	2212-67-1	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
Oxamyl	23135-22-0	0.002	mg/kg	----	<0.002	<0.002	<0.002	----
Thiobencarb	28249-77-6	0.002	mg/kg	----	<0.002	<0.002	<0.002	----
Thiodicarb	59669-26-0	0.002	mg/kg	----	<0.002	<0.002	<0.002	----
EP234D: Triazinone Herbicides								
Hexazinone	51235-04-2	0.004	mg/kg	----	<0.004	<0.004	<0.004	----
Metribuzin	21087-64-9	0.004	mg/kg	----	<0.004	<0.004	<0.004	----
EP234E: Conazole and Aminopyrimidine Fungicides								
Cyproconazole	94361-06-5	0.004	mg/kg	----	<0.004	<0.004	<0.004	----
Flusilazole	85509-19-9	0.004	mg/kg	----	<0.004	<0.004	<0.004	----
Hexaconazole	79983-71-4	0.004	mg/kg	----	<0.004	<0.004	<0.004	----
Paclobutrazole	76738-62-0	0.01	mg/kg	----	<0.01	<0.01	<0.01	----
Propiconazole	60207-90-1	0.01	mg/kg	----	<0.01	<0.01	<0.01	----
Tebuconazole	107534-96-3	0.002	mg/kg	----	<0.002	<0.002	<0.002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC2	DMB	DMA	CN	Trip Blank
				Sampling date / time	30-Sep-2022 13:21	30-Sep-2022 13:46	30-Sep-2022 14:00	30-Sep-2022 14:38	30-Sep-2022 16:28
Compound	CAS Number	LOR	Unit		EB2229107-016	EB2229107-017	EB2229107-018	EB2229107-019	EB2229107-020
					Result	Result	Result	Result	Result
EP234E: Conazole and Aminopyrimidine Fungicides - Continued									
Cyprodinil	121552-61-2	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
Pyrimethanil	53112-28-0	0.005	mg/kg		----	<0.005	<0.005	<0.005	----
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides									
Diuron	330-54-1	0.005	mg/kg		----	<0.005	<0.005	<0.005	----
Fluometuron	2164-17-2	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
Tebuthiuron	34014-18-1	0.005	mg/kg		----	<0.005	<0.005	<0.005	----
Bromacil	314-40-9	0.005	mg/kg		----	<0.005	<0.005	<0.005	----
EP234G: Chloracetanilides									
Metolachlor	51218-45-2	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
EP234H: Triazine Herbicides									
Ametryn	834-12-8	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
Atrazine	1912-24-9	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
Cyanazine	21725-46-2	0.005	mg/kg		----	<0.005	<0.005	<0.005	----
Prometryn	7287-19-6	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
Propazine	139-40-2	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
Simazine	122-34-9	0.005	mg/kg		----	<0.005	<0.005	<0.005	----
Terbuthylazine	5915-41-3	0.002	mg/kg		----	<0.002	<0.002	<0.002	----
Terbutryn	886-50-0	0.1	mg/kg		----	<0.1	<0.1	<0.1	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides									
Fenarimol	60168-88-9	0.005	mg/kg		----	<0.005	<0.005	<0.005	----
Irgarol	28159-98-0	0.001	mg/kg		----	<0.001	<0.001	<0.001	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	----	91.1
Toluene-D8	2037-26-5	0.2	%		----	----	----	----	72.4
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	----	84.7
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		83.8	84.1	81.3	89.6	----
Toluene-D8	2037-26-5	0.2	%		70.5	72.3	69.8	74.7	----
4-Bromofluorobenzene	460-00-4	0.2	%		82.2	84.3	80.2	87.4	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		100	117	98.7	105	----
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		----	56.7	44.4	46.5	----
EP131S: OC Pesticide Surrogate									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC2	DMB	DMA	CN	Trip Blank
			Sampling date / time	30-Sep-2022 13:21	30-Sep-2022 13:46	30-Sep-2022 14:00	30-Sep-2022 14:38	30-Sep-2022 16:28
Compound	CAS Number	LOR	Unit	EB2229107-016	EB2229107-017	EB2229107-018	EB2229107-019	EB2229107-020
				Result	Result	Result	Result	Result
EP131S: OC Pesticide Surrogate - Continued								
Dibromo-DDE	21655-73-2	0.50	%	----	48.9	63.1	65.6	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	102	116	113	107	----
Anthracene-d10	1719-06-8	10	%	77.4	87.5	90.8	81.5	----
4-Terphenyl-d14	1718-51-0	10	%	81.4	84.7	87.9	87.9	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	91.0	99.5	88.5	----
13C8-PFOA	----	0.0002	%	----	96.5	104	103	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Trip Spike	MC9	MC8	MC7	MC3
			Sampling date / time	30-Sep-2022 16:28	01-Oct-2022 08:30	01-Oct-2022 09:00	01-Oct-2022 09:21	01-Oct-2022 10:07
Compound	CAS Number	LOR	Unit	EB2229107-021	EB2229107-022	EB2229107-023	EB2229107-024	EB2229107-025
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	22.5	18.0	30.5	21.0
EA150: Particle Sizing								
+75µm	----	1	%	----	93	89	78	85
+150µm	----	1	%	----	92	87	68	72
+300µm	----	1	%	----	86	79	42	28
+425µm	----	1	%	----	76	69	27	13
+600µm	----	1	%	----	63	62	18	8
+1180µm	----	1	%	----	50	50	10	5
+2.36mm	----	1	%	----	38	37	5	3
+4.75mm	----	1	%	----	23	23	2	1
+9.5mm	----	1	%	----	4	<1	<1	<1
+19.0mm	----	1	%	----	<1	<1	<1	<1
+37.5mm	----	1	%	----	<1	<1	<1	<1
+75.0mm	----	1	%	----	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	5	6	15	9
Silt (2-60 µm)	----	1	%	----	2	5	7	5
Sand (0.06-2.00 mm)	----	1	%	----	51	48	71	82
Gravel (>2mm)	----	1	%	----	42	41	7	4
Cobbles (>6cm)	----	1	%	----	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	2.67	2.67	2.64	2.59
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	2660	2400	4400	2760
Iron	7439-89-6	50	mg/kg	----	13300	11700	13700	11400
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	----	12.7	7.36	8.59	24.9
Cadmium	7440-43-9	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg	----	5.9	6.6	9.8	7.8
Copper	7440-50-8	1.0	mg/kg	----	4.3	3.6	8.2	2.4
Cobalt	7440-48-4	0.5	mg/kg	----	8.0	4.5	5.6	5.8
Lead	7439-92-1	1.0	mg/kg	----	2.6	5.8	3.9	2.5
Manganese	7439-96-5	10	mg/kg	----	396	192	280	848

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	Trip Spike	MC9	MC8	MC7	MC3
			Sampling date / time	30-Sep-2022 16:28	01-Oct-2022 08:30	01-Oct-2022 09:00	01-Oct-2022 09:21	01-Oct-2022 10:07
Compound	CAS Number	LOR	Unit	EB2229107-021	EB2229107-022	EB2229107-023	EB2229107-024	EB2229107-025
				Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued								
Nickel	7440-02-0	1.0	mg/kg	----	5.5	4.2	5.5	4.2
Selenium	7782-49-2	0.1	mg/kg	----	0.2	0.2	0.4	0.3
Silver	7440-22-4	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg	----	29.8	27.9	31.0	23.8
Zinc	7440-66-6	1.0	mg/kg	----	13.5	12.1	18.6	10.1
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	----	<0.01	<0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	0.3	0.4	<0.1	0.3
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	160	140	330	150
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	160	140	330	150
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	242	134	238	244
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	----	0.06	0.14	0.55	0.13
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	56	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	62	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	36	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	0.8	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	10.7	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	2.0	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	8.8	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	3.8	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	26.1	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	12.6	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	----	<3	<3	<3	<3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Trip Spike	MC9	MC8	MC7	MC3
				Sampling date / time	30-Sep-2022 16:28	01-Oct-2022 08:30	01-Oct-2022 09:00	01-Oct-2022 09:21	01-Oct-2022 10:07
Compound	CAS Number	LOR	Unit		EB2229107-021	EB2229107-022	EB2229107-023	EB2229107-024	EB2229107-025
					Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	3	mg/kg		----	<3	<3	<3	<3
C15 - C28 Fraction	----	3	mg/kg		----	4	<3	3	<3
C29 - C36 Fraction	----	5	mg/kg		----	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		----	4	<3	3	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		----	<3	<3	<3	<3
>C10 - C16 Fraction	----	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
>C16 - C34 Fraction	----	3	mg/kg		----	5	<3	5	4
>C34 - C40 Fraction	----	5	mg/kg		----	<5	<5	<5	<5
^ >C10 - C40 Fraction (sum)	----	3	mg/kg		----	5	<3	5	4
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		----	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg		----	<1	<1	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg		----	<0.5	<0.5	<0.5	<0.5
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		----	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		----	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		----	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg		----	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg		----	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg		----	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg		----	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg		----	<4	<4	<4	<4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Trip Spike	MC9	MC8	MC7	MC3
				Sampling date / time	30-Sep-2022 16:28	01-Oct-2022 08:30	01-Oct-2022 09:00	01-Oct-2022 09:21	01-Oct-2022 10:07
Compound	CAS Number	LOR	Unit		EB2229107-021	EB2229107-022	EB2229107-023	EB2229107-024	EB2229107-025
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Pyrene	129-00-0	4	µg/kg		----	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg		----	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg		----	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		----	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		----	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		----	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		----	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg		----	<4	<4	<4	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		----	<4	<4	<4	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		----	<4	<4	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		----	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg		----	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		----	<4	<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
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		96.3	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		87.4	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		92.7	----	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	86.0	80.2	80.4	83.8
Toluene-D8	2037-26-5	0.2	%		----	76.4	70.0	74.1	75.1
4-Bromofluorobenzene	460-00-4	0.2	%		----	85.0	79.1	83.5	87.3
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		----	74.9	92.3	85.4	92.6
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		----	104	74.3	82.6	79.0
Anthracene-d10	1719-06-8	10	%		----	80.0	79.2	85.7	84.0
4-Terphenyl-d14	1718-51-0	10	%		----	77.4	77.5	88.7	82.4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC4	MC5	MC6	ALS CONTROL SPIKE	----
			Sampling date / time	01-Oct-2022 10:22	01-Oct-2022 10:32	01-Oct-2022 10:47	30-Sep-2022 00:00	----
Compound	CAS Number	LOR	Unit	EB2229107-026	EB2229107-027	EB2229107-028	EB2229107-029	--------
				Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	45.2	37.4	51.3	----	----
EA150: Particle Sizing								
+75µm	----	1	%	57	52	70	----	----
+150µm	----	1	%	14	6	16	----	----
+300µm	----	1	%	4	2	4	----	----
+425µm	----	1	%	2	1	2	----	----
+600µm	----	1	%	2	<1	<1	----	----
+1180µm	----	1	%	<1	<1	<1	----	----
+2.36mm	----	1	%	<1	<1	<1	----	----
+4.75mm	----	1	%	<1	<1	<1	----	----
+9.5mm	----	1	%	<1	<1	<1	----	----
+19.0mm	----	1	%	<1	<1	<1	----	----
+37.5mm	----	1	%	<1	<1	<1	----	----
+75.0mm	----	1	%	<1	<1	<1	----	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	27	29	21	----	----
Silt (2-60 µm)	----	1	%	15	17	9	----	----
Sand (0.06-2.00 mm)	----	1	%	58	54	70	----	----
Gravel (>2mm)	----	1	%	<1	<1	<1	----	----
Cobbles (>6cm)	----	1	%	<1	<1	<1	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.63	2.53	2.65	----	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	5490	5230	6830	----	----
Iron	7439-89-6	50	mg/kg	12700	12400	14600	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	<0.50	----	----
Arsenic	7440-38-2	1.00	mg/kg	12.7	10.0	15.6	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
Chromium	7440-47-3	1.0	mg/kg	12.5	11.5	14.5	----	----
Copper	7440-50-8	1.0	mg/kg	6.9	6.8	8.6	----	----
Cobalt	7440-48-4	0.5	mg/kg	6.2	6.0	7.3	----	----
Lead	7439-92-1	1.0	mg/kg	5.0	4.7	5.7	----	----
Manganese	7439-96-5	10	mg/kg	252	228	348	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC4	MC5	MC6	ALS CONTROL SPIKE	----
			Sampling date / time	01-Oct-2022 10:22	01-Oct-2022 10:32	01-Oct-2022 10:47	30-Sep-2022 00:00	----
Compound	CAS Number	LOR	Unit	EB2229107-026	EB2229107-027	EB2229107-028	EB2229107-029	--------
				Result	Result	Result	Result	----
EG020-SD: Total Metals in Sediments by ICPMS - Continued								
Nickel	7440-02-0	1.0	mg/kg	**6.3**	**5.8**	**7.5**	----	----
Selenium	7782-49-2	0.1	mg/kg	**0.6**	**0.6**	**0.7**	----	----
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
Vanadium	7440-62-2	2.0	mg/kg	**27.7**	**26.3**	**31.2**	----	----
Zinc	7440-66-6	1.0	mg/kg	**19.4**	**18.3**	**23.8**	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	**0.1**	**0.1**	**0.2**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	**780**	**520**	**760**	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	**780**	**520**	**760**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	**318**	**264**	**312**	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	**0.65**	**0.64**	**0.84**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	**58**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	**66**	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	**39**	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	**0.8**	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	**11.3**	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	**2.1**	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	**9.2**	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	**4.0**	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	**27.4**	----
^ Total Xylenes	----	0.5	mg/kg	----	----	----	**13.2**	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	<3	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MC4	MC5	MC6	ALS CONTROL SPIKE	----
				Sampling date / time	01-Oct-2022 10:22	01-Oct-2022 10:32	01-Oct-2022 10:47	30-Sep-2022 00:00	----
Compound	CAS Number	LOR	Unit		EB2229107-026	EB2229107-027	EB2229107-028	EB2229107-029	--------
					Result	Result	Result	Result	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	3	mg/kg		<3	<3	3	----	----
C15 - C28 Fraction	----	3	mg/kg		3	<3	5	----	----
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		3	<3	8	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	----	----
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	----	----
>C16 - C34 Fraction	----	3	mg/kg		4	3	6	----	----
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	----	----
^ >C10 - C40 Fraction (sum)	----	3	mg/kg		4	3	6	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	<1	----	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	<1	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		7	<5	7	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	----	----
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<5	----	----
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<5	----	----
Fluorene	86-73-7	4	µg/kg		<4	<4	<5	----	----
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<5	----	----
Anthracene	120-12-7	4	µg/kg		<4	<4	<5	----	----
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MC4	MC5	MC6	ALS CONTROL SPIKE	----
			Sampling date / time	01-Oct-2022 10:22	01-Oct-2022 10:32	01-Oct-2022 10:47	30-Sep-2022 00:00	----
Compound	CAS Number	LOR	Unit	EB2229107-026	EB2229107-027	EB2229107-028	EB2229107-029	--------
				Result	Result	Result	Result	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	4	µg/kg	<4	<4	<5	----	----
Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	<5	----	----
Chrysene	218-01-9	4	µg/kg	<4	<4	<5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	<4	<5	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	<5	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	<5	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	<5	----	----
Perylene	198-55-0	4	µg/kg	<4	<4	<5	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<4	<4	<5	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	<4	<5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	<5	----	----
Coronene	191-07-1	5	µg/kg	<5	<5	<5	----	----
^ Sum of PAHs	----	4	µg/kg	**7**	<4	**7**	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg	<4	<4	<5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg	**5**	**5**	<5	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg	**10**	**10**	**10**	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	**91.1**	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	**82.3**	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	**87.3**	----
EP080-SD: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**72.7**	**78.3**	**70.0**	----	----
Toluene-D8	2037-26-5	0.2	%	**63.7**	**68.9**	**62.0**	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**71.9**	**78.2**	**70.6**	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	**105**	**97.2**	**89.4**	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	**79.8**	**76.0**	**81.0**	----	----
Anthracene-d10	1719-06-8	10	%	**84.5**	**82.1**	**85.1**	----	----
4-Terphenyl-d14	1718-51-0	10	%	**76.2**	**77.3**	**87.1**	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	145
Toluene-D8	2037-26-5	42	144
4-Bromofluorobenzene	460-00-4	58	142
EP090S: Organotin Surrogate			
Tripropyltin	----	35	130
EP130S: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	14	102
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	119
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
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Inter-Laboratory Testing

Analysis conducted by ALS Melbourne, NATA accreditation no. 825, site no. 13778 (Chemistry).

(SOIL) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser

(SOIL) EK062: Total Nitrogen as N (TKN + NOx)

(SOIL) EK067G: Total Phosphorus as P by Discrete Analyser

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(SOIL) EP132B: Polynuclear Aromatic Hydrocarbons

(SOIL) EP132T: Base/Neutral Extractable Surrogates

(SOIL) EP130A: Organophosphorus Pesticides (Ultra-trace)

(SOIL) EP130S: Organophosphorus Pesticide Surrogate

(SOIL) EP131A: Organochlorine Pesticides

(SOIL) EP131S: OC Pesticide Surrogate

(SOIL) EP234A: OP Pesticides

(SOIL) EP234H: Triazine Herbicides

(SOIL) EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides

(SOIL) EP234G: Chloracetanilides

(SOIL) EP234E: Conazole and Aminopyrimidine Fungicides

(SOIL) EP234I: Miscellaneous (ESI Positive Mode) Pesticides

(SOIL) EP234B: Thiocarbamates and Carbamates

(SOIL) EP234D: Triazinone Herbicides

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2229166**	Page	: 1 of 7
Client	: **BMT COMMERCIAL AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: CRAIG HEATHERINGTON	Contact	: Kimberly Hilton-Barber
Address	: PO BOX 203 SPRING HILL BRISBANE QLD 4004	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 7 3831 6744	Telephone	: +61-7-3243 7222
Project	: A11367 Gladstone - Sediment Quality	Date Samples Received	: 05-Oct-2022 10:30
Order number	: ----	Date Analysis Commenced	: 14-Oct-2022
C-O-C number	: ----	Issue Date	: 26-Oct-2022 08:35
Sampler	: BRAD HILES		
Site	: ----		
Quote number	: BN/523/22		
No. of samples received	: 7		
No. of samples analysed	: 7		

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, unless the sampling was conducted by ALS. 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*
Peter Blow	HRMS Chemist	GCMSMS, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- EP300: T = tetra, Pe = penta, Hx = hexa, Hp = hepta, O = octa, CDD dioxin = chlorinated dibenzo-p-dioxin, CDF furan = chlorinated dibenzofuran
- EP300L: The absolute recovery of 13C12 isotopically labelled compounds added by the Laboratory to both quantitate and measure extraction efficiency.
- EP300: LORs for Totals are calculated by multiplying the number of peaks by the individual LOR per compound.
- EP300: Refer to supplementary reports for individual analyte TEQs, sample-specific limits of reporting (LOR) and Quality Control results.
- EP300: I-TEQ = International toxic equivalence
  WHO-TEQ = World Health Organisation toxic equivalence
  I-TEQ1 (zero) and WHO-TEQ1 (zero) calculated treating <LOR as zero concentration
  I-TEQ2 (0.5 LOR) and WHO-TEQ2 (0.5 LOR) calculated treating <LOR as half LOR concentration
  I-TEQ3 (LOR) and WHO-TEQ3 (LOR) calculated treating <LOR as LOR concentration
- EP300: Samples dried prior to analysis. Results reported on a dry weight basis.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE4	RB1	RB2	CS	CN
				Sampling date / time	30-Sep-2022 00:00	30-Sep-2022 00:00	30-Sep-2022 00:00	30-Sep-2022 00:00	30-Sep-2022 00:00
Compound	CAS Number	LOR	Unit		EB2229166-004	EB2229166-005	EB2229166-006	EB2229166-007	EB2229166-008
					Result	Result	Result	Result	Result
EP300A: Dioxins and Furans									
2378-TCDD	1746-01-6	-	pg/g		<0.5	<0.5	<0.5	<0.5	<0.5
12378-PeCDD	40321-76-4	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
123478-HxCDD	39227-28-6	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
123678-HxCDD	57653-85-7	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
123789-HxCDD	19408-74-3	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
1234678-HpCDD	35822-46-9	-	pg/g		**9.3**	**4.3**	**18.0**	**5.1**	<2.5
OCDD	3268-87-9	-	pg/g		**120**	**63.5**	**350**	**132**	**41.7**
2378-TCDF	51207-31-9	-	pg/g		<0.5	<0.5	<0.5	<0.5	<0.5
12378-PeCDF	57117-41-6	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
23478-PeCDF	57117-31-4	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
123478-HxCDF	70648-26-9	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
123678-HxCDF	57117-44-9	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
234678-HxCDF	60851-34-5	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
123789-HxCDF	72918-21-9	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
1234678-HpCDF	67562-39-4	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
1234789-HpCDF	55673-89-7	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
OCDF	39001-02-0	-	pg/g		<5.0	<5.0	<4.9	<5.0	<4.9
EP300B: Dioxins and Furans - Group Totals									
Tetra-Dioxins	----	-	pg/g		<0.5	<0.5	<0.5	<0.5	<0.5
Penta-Dioxins	----	-	pg/g		<2.5	<2.5	<24.7	<2.5	<2.5
Hexa-Dioxins	----	-	pg/g		<17.4	<14.9	**42.9**	<14.9	<2.5
Hepta-Dioxins	----	-	pg/g		**26.3**	**16.1**	**66.8**	**18.7**	**8.6**
Octa-Dioxin	----	-	pg/g		**120**	**63.5**	**350**	**132**	**41.7**
Tetra-Furans	----	-	pg/g		<0.5	<0.5	<0.5	<0.5	<0.5
Penta-Furans	----	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
Hexa-Furans	----	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
Hepta-Furans	----	-	pg/g		<2.5	<2.5	<2.5	<2.5	<2.5
Octa-Furan	----	-	pg/g		<5.0	<5.0	<4.9	<5.0	<4.9
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ)									
Total WHO-TEQ1 (zero)	----	-	pg/g		**0.13**	**0.06**	**0.29**	**0.09**	**0.01**
Total WHO-TEQ2 (0.5 LOR)	----	-	pg/g		**2.95**	**2.89**	**3.08**	**2.91**	**2.83**
Total WHO-TEQ3 (LOR)	----	-	pg/g		**5.77**	**5.71**	**5.88**	**5.73**	**5.65**
Total I-TEQ1 (zero)	----	-	pg/g		**0.21**	**0.11**	**0.53**	**0.18**	**0.04**
Total I-TEQ2 (0.5 LOR)	----	-	pg/g		**2.69**	**2.58**	**2.99**	**2.66**	**2.52**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BE4	RB1	RB2	CS	CN
				Sampling date / time	30-Sep-2022 00:00	30-Sep-2022 00:00	30-Sep-2022 00:00	30-Sep-2022 00:00	30-Sep-2022 00:00
Compound	CAS Number	LOR	Unit		EB2229166-004	EB2229166-005	EB2229166-006	EB2229166-007	EB2229166-008
					Result	Result	Result	Result	Result
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ) - Continued									
Total I-TEQ3 (LOR)	----	-	pg/g		**5.16**	**5.06**	**5.44**	**5.13**	**4.99**
EP300L: Dioxins and Furans - Isotopically Labelled Standards									
2378-TCDD (13C12)	76523-40-5	0.25	%		**91.8**	**100**	**114**	**91.6**	**74.3**
12378-PeCDD (13C12)	109719-79-1	0.25	%		**89.9**	**97.4**	**95.2**	**95.4**	**86.8**
123478-HxCDD (13C12)	109719-80-4	0.25	%		**78.7**	**64.3**	**76.9**	**68.4**	**76.8**
123678-HxCDD (13C12)	109719-81-5	0.25	%		**77.4**	**77.4**	**89.3**	**66.4**	**82.9**
1234678-HpCDD (13C12)	109719-83-7	0.25	%		**69.1**	**91.3**	**91.1**	**87.1**	**98.2**
OCDD (13C12)	114423-97-1	0.25	%		**59.6**	**89.8**	**76.6**	**71.9**	**80.6**
2378-TCDF (13C12)	89059-46-1	0.25	%		**80.8**	**74.3**	**91.0**	**66.6**	**100**
12378-PeCDF (13C12)	109719-77-9	0.25	%		**90.4**	**80.6**	**98.7**	**68.7**	**82.0**
23478-PeCDF (13C12)	116843-02-8	0.25	%		**87.7**	**82.2**	**88.6**	**75.6**	**82.1**
123478-HxCDF (13C12)	114423-98-2	0.25	%		**80.7**	**77.0**	**83.1**	**67.9**	**80.2**
123678-HxCDF (13C12)	116843-03-9	0.25	%		**81.5**	**80.9**	**86.8**	**63.6**	**78.5**
234678-HxCDF (13C12)	116843-05-1	0.25	%		**89.5**	**75.8**	**89.9**	**80.1**	**88.7**
123789-HxCDF (13C12)	116843-04-0	0.25	%		**74.8**	**84.4**	**81.7**	**79.2**	**101**
1234678-HpCDF (13C12)	109719-84-8	0.25	%		**69.8**	**69.5**	**84.5**	**71.3**	**79.4**
1234789-HpCDF (13C12)	109719-94-0	0.25	%		**77.6**	**89.2**	**106**	**90.6**	**117**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	DMB	DMA	----	----	----
			Sampling date / time	30-Sep-2022 00:00	30-Sep-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2229166-009	EB2229166-010	--------	--------	--------
				Result	Result	----	----	----
EP300A: Dioxins and Furans								
2378-TCDD	1746-01-6	-	pg/g	<0.5	<0.5	----	----	----
12378-PeCDD	40321-76-4	-	pg/g	<2.5	<2.5	----	----	----
123478-HxCDD	39227-28-6	-	pg/g	<2.5	<2.5	----	----	----
123678-HxCDD	57653-85-7	-	pg/g	<2.5	<2.5	----	----	----
123789-HxCDD	19408-74-3	-	pg/g	<2.5	<2.5	----	----	----
1234678-HpCDD	35822-46-9	-	pg/g	**2.9**	**3.5**	----	----	----
OCDD	3268-87-9	-	pg/g	**60.2**	**57.5**	----	----	----
2378-TCDF	51207-31-9	-	pg/g	<0.5	<0.5	----	----	----
12378-PeCDF	57117-41-6	-	pg/g	<2.5	<2.5	----	----	----
23478-PeCDF	57117-31-4	-	pg/g	<2.5	<2.5	----	----	----
123478-HxCDF	70648-26-9	-	pg/g	<2.5	<2.5	----	----	----
123678-HxCDF	57117-44-9	-	pg/g	<2.5	<2.5	----	----	----
234678-HxCDF	60851-34-5	-	pg/g	<2.5	<2.5	----	----	----
123789-HxCDF	72918-21-9	-	pg/g	<2.5	<2.5	----	----	----
1234678-HpCDF	67562-39-4	-	pg/g	<2.5	<2.5	----	----	----
1234789-HpCDF	55673-89-7	-	pg/g	<2.5	<2.5	----	----	----
OCDF	39001-02-0	-	pg/g	<5.0	<5.0	----	----	----
EP300B: Dioxins and Furans - Group Totals								
Tetra-Dioxins	----	-	pg/g	<0.5	<0.5	----	----	----
Penta-Dioxins	----	-	pg/g	<2.5	<2.5	----	----	----
Hexa-Dioxins	----	-	pg/g	<2.5	<2.5	----	----	----
Hepta-Dioxins	----	-	pg/g	**9.5**	**11.0**	----	----	----
Octa-Dioxin	----	-	pg/g	**60.2**	**57.5**	----	----	----
Tetra-Furans	----	-	pg/g	<0.5	<0.5	----	----	----
Penta-Furans	----	-	pg/g	<2.5	<2.5	----	----	----
Hexa-Furans	----	-	pg/g	<2.5	<2.5	----	----	----
Hepta-Furans	----	-	pg/g	<2.5	<2.5	----	----	----
Octa-Furan	----	-	pg/g	<5.0	<5.0	----	----	----
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ)								
Total WHO-TEQ1 (zero)	----	-	pg/g	**0.05**	**0.05**	----	----	----
Total WHO-TEQ2 (0.5 LOR)	----	-	pg/g	**2.86**	**2.88**	----	----	----
Total WHO-TEQ3 (LOR)	----	-	pg/g	**5.67**	**5.70**	----	----	----
Total I-TEQ1 (zero)	----	-	pg/g	**0.09**	**0.09**	----	----	----
Total I-TEQ2 (0.5 LOR)	----	-	pg/g	**2.56**	**2.57**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	DMB	DMA	----	----	----
			Sampling date / time	30-Sep-2022 00:00	30-Sep-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2229166-009	EB2229166-010	--------	--------	--------
				Result	Result	----	----	----
EP300C: Dioxins and Furans - Total Toxic Equivalency (TEQ) - Continued								
Total I-TEQ3 (LOR)	----	-	pg/g	**5.02**	**5.05**	**----**	**----**	**----**
EP300L: Dioxins and Furans - Isotopically Labelled Standards								
2378-TCDD (13C12)	76523-40-5	0.25	%	**108**	**96.8**	**----**	**----**	**----**
12378-PeCDD (13C12)	109719-79-1	0.25	%	**93.8**	**107**	**----**	**----**	**----**
123478-HxCDD (13C12)	109719-80-4	0.25	%	**84.3**	**72.9**	**----**	**----**	**----**
123678-HxCDD (13C12)	109719-81-5	0.25	%	**77.2**	**98.0**	**----**	**----**	**----**
1234678-HpCDD (13C12)	109719-83-7	0.25	%	**91.3**	**92.8**	**----**	**----**	**----**
OCDD (13C12)	114423-97-1	0.25	%	**67.3**	**84.1**	**----**	**----**	**----**
2378-TCDF (13C12)	89059-46-1	0.25	%	**83.1**	**97.3**	**----**	**----**	**----**
12378-PeCDF (13C12)	109719-77-9	0.25	%	**96.8**	**99.6**	**----**	**----**	**----**
23478-PeCDF (13C12)	116843-02-8	0.25	%	**89.2**	**108**	**----**	**----**	**----**
123478-HxCDF (13C12)	114423-98-2	0.25	%	**78.2**	**87.3**	**----**	**----**	**----**
123678-HxCDF (13C12)	116843-03-9	0.25	%	**76.7**	**95.6**	**----**	**----**	**----**
234678-HxCDF (13C12)	116843-05-1	0.25	%	**90.7**	**94.8**	**----**	**----**	**----**
123789-HxCDF (13C12)	116843-04-0	0.25	%	**89.9**	**104**	**----**	**----**	**----**
1234678-HpCDF (13C12)	109719-84-8	0.25	%	**82.9**	**109**	**----**	**----**	**----**
1234789-HpCDF (13C12)	109719-94-0	0.25	%	**101**	**117**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP300L: Dioxins and Furans - Isotopically Labelled Standards			
2378-TCDD (13C12)	76523-40-5	25	164
12378-PeCDD (13C12)	109719-79-1	25	181
123478-HxCDD (13C12)	109719-80-4	32	141
123678-HxCDD (13C12)	109719-81-5	28	130
1234678-HpCDD (13C12)	109719-83-7	23	140
OCDD (13C12)	114423-97-1	17	157
2378-TCDF (13C12)	89059-46-1	24	169
12378-PeCDF (13C12)	109719-77-9	24	185
23478-PeCDF (13C12)	116843-02-8	21	178
123478-HxCDF (13C12)	114423-98-2	26	152
123678-HxCDF (13C12)	116843-03-9	26	123
234678-HxCDF (13C12)	116843-05-1	28	136
123789-HxCDF (13C12)	116843-04-0	29	147
1234678-HpCDF (13C12)	109719-84-8	28	143
1234789-HpCDF (13C12)	109719-94-0	26	138

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2231520**	Page	: 1 of 9
Client	: **BMT COMMERCIAL AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: CRAIG HEATHERINGTON	Contact	: Kimberly Hilton-Barber
Address	: PO BOX 203 SPRING HILL BRISBANE QLD 4004	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 7 3831 6744	Telephone	: +61-7-3243 7222
Project	: A11367 Gladstone - Sediment Quality	Date Samples Received	: 21-Oct-2022 17:07
Order number	: ----	Date Analysis Commenced	: 02-Nov-2022
C-O-C number	: ----	Issue Date	: 12-Jan-2023 14:14
Sampler	: BRAD HILES		
Site	: ----		
Quote number	: BN/523/22		
No. of samples received	: 33		
No. of samples analysed	: 33		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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*
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)			Sample ID	**GM2 0-0.5**	**GM2 0.5-1.0**	**GM4 0-0.5**	**GM16 0-0.5**	**GM4 0.5-1.0**
			Sampling date / time	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB2231520-001**	**EB2231520-002**	**EB2231520-003**	**EB2231520-004**	**EB2231520-005**
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.0**	**7.1**	**7.2**	**7.3**	**7.4**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)			Sample ID	GM4 >1	GM4 1.0-1.5	GM1 0.0.5	GM1 0.5-1.0	GM1 1.0 - 1.5
			Sampling date / time	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB2231520-006**	**EB2231520-007**	**EB2231520-008**	**EB2231520-009**	**EB2231520-010**
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.3**	**7.4**	**7.5**	**7.4**	**7.6**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)			Sample ID	GM9 0-0-5	GM9 0.5-1.0	GM9 1.0-1-5	GM14 0-0.5	GM14 0.5- 1.0
			Sampling date / time	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00
Compound	CAS Number	LOR	Unit	EB2231520-011	EB2231520-012	EB2231520-013	EB2231520-014	EB2231520-015
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.6**	**7.4**	**7.5**	**7.5**	**7.6**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)			Sample ID	GM15 0-0.5	GM15 0.5-1.0	GM3 0-0-5	GM3 0.5-1.0	GM5 0-0.5
			Sampling date / time	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00
Compound	CAS Number	LOR	Unit	EB2231520-016	EB2231520-017	EB2231520-018	EB2231520-019	EB2231520-020
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.5**	**7.6**	**7.4**	**7.5**	**7.4**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)			Sample ID	**GM5 0.5-1.0**	**UA7 0-0.5**	**UA7 0.5-1.0**	**UA8 0-0.5**	**UA9 0-0.5**
			Sampling date / time	26-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB2231520-021**	**EB2231520-022**	**EB2231520-023**	**EB2231520-024**	**EB2231520-025**
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.5**	**7.4**	**7.3**	**7.3**	**7.4**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)			Sample ID	**UA12 0-0.5**	**UA9 0.5-1.0**	**UA6 0.0-0.5**	**UA6 0.5-1.0**	**UA4 0-0.5**
			Sampling date / time	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EB2231520-026**	**EB2231520-027**	**EB2231520-028**	**EB2231520-029**	**EB2231520-030**
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.4**	**7.4**	**7.4**	**7.6**	**7.5**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)			Sample ID	**UA5 0-0.5**	**UA3 0-0.5**	**UA3 0.5-1.0**	**----**	**----**
			Sampling date / time	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB2231520-031**	**EB2231520-032**	**EB2231520-033**	**--------**	**--------**
				Result	Result	Result	----	----
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.4**	**7.5**	**7.7**	**----**	**----**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**----**	**----**

Annex D Secondary Laboratory Sediment Reports

Symbio LABORATORIES

CERTIFICATE OF ANALYSIS

Certificate Number	B1203117-A [R00]	**Page**	1/6
Client	BMT Commercial Australia Pty Ltd	**Registering Laboratory**	Brisbane
Contact	Brad Hiles	**Contact**	Customer Service Team
Address	Level 8 200 Creek Street Brisbane QLD 4000	**Address**	52 Brandl Street, Eight Mile Plains, QLD 4113
		Email	admin@symbiolabs.com.au
Telephone	07 3831 6744	**Telephone**	1300 703 166
Order Number	A11637.4	**Date Samples Received**	29/09/2022
Project ID	Soil- A11367 Gladstone SAP	**Date Analysis Commenced**	29/09/2022
Sampler	Customer	**Issue Date**	11/10/2022
Client Job Reference	---	**Receipt Temperature (°C)**	4
No. of Samples Registered	1 | Sampler: Customer	**Storage Temperature (°C)**	4
Priority	Normal	**Quote Number**	---

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ABN: 82 079 645 015

NATA

Accreditation No: 2455
Accredited for compliance
with ISO/IEC 17025 - Testing

Definitions

| <: Less Than | >: Greater Than | RP: Result Pending | MPN: Most Probable Number | CFU: Colony Forming Units | ---: Not Received/Not Requested | NA: Not Applicable | ND: Not Detected | LOR: Limit of Reporting | [NT]: Not Tested |

| ~: Estimated | ^ Subcontracted Analysis | TBA: To Be Advised | ** Potential Holding Time Concern | * Test not covered by NATA scope of accreditation | # Result derived from a calculation and includes results equal to or greater than the LOR

Authorised By

Name	Position	Accreditation Category
Glen Rangott	Environmental Laboratory Manager, Brisbane	Environmental Chemistry
Hongmei Kuang	Chemistry Laboratory Manager, Sydney	Environmental and Food Chemistry
Hongmei Kuang	Chemistry Laboratory Manager, Brisbane	Environmental and Food Chemistry

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone SAP
Certificate Number	B1203117-A [R00]	**Sampler**	Customer
Page	2/6	**Order Number**	A11637.4

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Sample Information - *Client/Sampler Supplied*

Sample ID	B1203117-A/1
Sample Description	GM17_0.-0.5
Sample Date/Time	2022-09-26 16:37

Analytical Results

Compound/Analyte	LOR	Units	GM17_0.-0.5
Client Sample Description			GM17_0.-0.5
Client Sampling date/time			26/09/2022 16:37
			B1203117-A/1
			Results
Organotins in Soil & Sediment			
04-026 - Determination of Organotins in Sediment/Soil by GCMS			
Monobutyltin (MBT as Sn)	4	µgSn/kg	<4.0
Dibutyltin (DBT as Sn)	2	µgSn/kg	<2.0
Tributyltin (TBT as Sn)	0.5	µgSn/kg	<0.5
Tripropyltin (SUR) *	---	%	79.4
Monobutyltin (MBT)	0.007	µg/kg	<0.007
Dibutyltin (DBT)	0.01	µg/kg	<0.01
Tributyltin (TBT)	0.01	µg/kg	<0.01
IND042 Elements ICP-MS Soil			
IND042 - Metals in Soil - ICP-MS			
Mercury (Hg)	0.1	mg/kg	<0.1
Polycyclic Aromatic Hydrocarbons			
ENV103S - PAH & Phenol in Soil			
Acenaphthylene	0.1	mg/kg	<0.1
Acenaphthene	0.1	mg/kg	<0.1
Anthracene	0.1	mg/kg	<0.1
Benzo[a]anthracene	0.1	mg/kg	<0.1
Benzo[a]pyrene	0.1	mg/kg	<0.1
Benzo[b,j,k]fluoranthene	0.3	mg/kg	<0.3
Benzo[g,h,i]perylene	0.1	mg/kg	<0.1
Chrysene	0.1	mg/kg	<0.1
Dibenzo(a,h)anthracene	0.1	mg/kg	<0.1

Analytical Results

Compound/Analyte	LOR	Units	GM17_0.-0.5
Client Sample Description			GM17_0.-0.5
Client Sampling date/time			26/09/2022 16:37
			B1203117-A/1
			Results
Polycyclic Aromatic Hydrocarbons - Continued			
ENV103S - PAH & Phenol in Soil - Continued			
Fluoranthene	0.1	mg/kg	<0.1
Fluorene	0.1	mg/kg	<0.1
Indeno(1,2,3-cd)pyrene	0.1	mg/kg	<0.1
Naphthalene	0.1	mg/kg	<0.1
Phenanthrene	0.1	mg/kg	<0.1
Pyrene	0.1	mg/kg	<0.1
Total PAHs (as above)	0.3	mg/kg	<0.3
Surrogate Nitrobenzene-D5(Control Limits 50%-150%)	---	%	110
Surrogate Phenanthrene-D10(Control Limits 50%-150%)	---	%	100
Surrogate 4-Terphenyl-D14(Control Limits 50%-150%)	---	%	120
Surrogate 2-Fluorobiphenyl(Control Limits 50%-150%)	---	%	100
ENV1025S-A: TPH6-36+TRH6-40			
ENV102S - TPH/TRH in Soil			
TPH C10-C14 Fraction Soil	50	mg/kg	<50
TPH C15-C28 Fraction Soil	100	mg/kg	<100
TPH C29-C36 Fraction Soil	100	mg/kg	<100

Analytical Results

Compound/Analyte	LOR	Units	Client Sample Description: GM17_0.-0.5 Client Sampling date/time: 26/09/2022 16:37 B1203117-A/1 Results
ENV1025S-A: TPH6-36+TRH6-40 - Continued			
ENV102S - TPH/TRH in Soil - Continued			
TPH C10-C36 Fraction Soil	100	mg/kg	<100
TRH >C10-C16 Fraction Soil	50	mg/kg	<50
TRH >C16-C34 Fraction Soil	100	mg/kg	<100
TRH >C34-C40 Fraction Soil	100	mg/kg	<100
TRH >C10-C40 Fraction Soil	100	mg/kg	<100
Surrogate o-Terphenyl in Soil(Control Limits 50%-150%)	---	%	96
ENV105S - TPH/TRH (C6-C9/C10) and BTEX in Soil			
TPH C6-C9 Fraction Soil	25	mg/kg	<30
TRH C6-C10 Fraction Soil	25	mg/kg	<30
Surrogate1.2-dichloroethane-d4(Control Limits 70%-130%)	---	%	100
Surrogate 4-Bromofluorobenzene(Control Limits 70%-130%)	---	%	110
Surrogate Toluene-D8(Control Limits 70%-130%)	---	%	110
General Tests			
ENV001_S - Soil Moisture Content			
Moisture Content - Soil	0.1	%	56.2

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone SAP
Certificate Number	B1203117-A [R00]	**Sampler**	Customer
Page	6/6	**Order Number**	A11637.4

Analytical Results

Compound/Analyte	LOR	Units	GM17_0.-0.5
Client Sample Description			GM17_0.-0.5
Client Sampling date/time			26/09/2022 16:37
			B1203117-A/1
			Results
General Tests - Continued			
ENV009_S - ENV009_S Total Organic Carbon in soil			
Total Organic Carbon (TOC)	0.02	% w/w	3.0
IND041 Elements			
IND041 - Metals in Soil - ICP-AES			
Copper (Cu)	1	mg/kg	40.8
Lead (Pb)	2	mg/kg	10
Zinc (Zn)	5	mg/kg	76.8
Chromium (Cr)	1	mg/kg	34.3
Nickel (Ni)	1	mg/kg	17.2
Arsenic (As)	5	mg/kg	9.5
Silver (Ag)*	1	mg/kg	<1
Manganese (Mn)	1	mg/kg	226
Aluminium (Al)	1	mg/kg	23800
Cobalt (Co)	0.5	mg/kg	4.7
Iron (Fe)	2	mg/kg	32900
Vanadium (V)	0.5	mg/kg	61.9
Selenium (Se)	5	mg/kg	<5.0
Antimony (Sb)*	2	mg/kg	<2.0

Analysis Location

The following analysis was completed by Symbio Laboratories - Brisbane: ENV001_S;ENV009_S;ENV102S;ENV103S;ENV105S;IND041;IND042.
The following analysis was completed by Symbio Laboratories - Sydney: E061_0B.

Symbio LABORATORIES

CERTIFICATE OF ANALYSIS

Certificate Number	B1203117-B [R00]	**Page**	1/4
Client	BMT Commercial Australia Pty Ltd	**Registering Laboratory**	Brisbane
Contact	Brad Hiles	**Contact**	Customer Service Team
Address	Level 8 200 Creek Street Brisbane QLD 4000	**Address**	52 Brandl Street, Eight Mile Plains, QLD 4113
		Email	admin@symbiolabs.com.au
Telephone	07 3831 6744	**Telephone**	1300 703 166
Order Number	A11637.4	**Date Samples Received**	29/09/2022
Project ID	Soil- A11367 Gladstone SAP	**Date Analysis Commenced**	29/09/2022
Sampler	Customer	**Issue Date**	18/10/2022
Client Job Reference	---	**Receipt Temperature (°C)**	4
No. of Samples Registered	1 | Sampler: Customer	**Storage Temperature (°C)**	4
Priority	Normal	**Quote Number**	---

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ABN: 82 079 645 015

This report supersedes any previous revision with this reference. This document must not be reproduced, except in full. If samples were provided by the customer, results apply only to the samples 'as received' and responsibility for representative sampling rests with the customer. Water results are reported on an 'as is' basis. Soil and sediment results are reported on a 'dry weight' basis. For other matrices the basis of reporting will be confirmed in the 'Report Comments' section. Measurement Uncertainty is available upon request. If the laboratory was authorised to conduct testing on samples received outside of the specified conditions, all test results may be impacted. Details of samples received outside of the specified conditions are mentioned in the sample description section of this test report.

Definitions

| <: Less Than | >: Greater Than | RP: Result Pending | MPN: Most Probable Number | CFU: Colony Forming Units | ---: Not Received/Not Requested | NA: Not Applicable | ND: Not Detected | LOR: Limit of Reporting | [NT]: Not Tested |

| ~: Estimated | ^ Subcontracted Analysis | TBA: To Be Advised | ** Potential Holding Time Concern | * Test not covered by NATA scope of accreditation | # Result derived from a calculation and includes results equal to or greater than the LOR

Authorised By

Name	Position	Accreditation Category
Glen Rangott	Environmental Laboratory Manager, Brisbane	Environmental Chemistry

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone SAP
Certificate Number	B1203117-B [R00]	**Sampler**	Customer
Page	2/4	**Order Number**	A11637.4

Sample Information - *Client/Sampler Supplied*

Sample ID	B1203117-B/1
Sample Description	GM17_0.-0.5
Sample Date/Time	2022-09-26 16:37

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone SAP
Certificate Number	B1203117-B [R00]	**Sampler**	Customer
Page	3/4	**Order Number**	A11637.4

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Analytical Results

Compound/Analyte	LOR	Units	GM17_0.-0.5
Client Sample Description			GM17_0.-0.5
Client Sampling date/time			26/09/2022 16:37
			B1203117-B/1
			Results
S004.09A Total Phosphorus			
S004.09 - Determination of Total Phosphorus			
Total Phosphorus^	1	mg/kg	210
S004.03A Total Nitrogen			
S004.03 - Determination of Total Nitrogen			
Total Nitrogen^	20	mg/kg	1200
S004.08A NOx as N			
S004.08 - Determination of NOx as N			
NOx as N^	0.1	mg/kg	1.0
S004.04A TKN			
S004.04 - Determination of Total Kjeldahl Nitrogen			
Total Kjeldahl Nitrogen^	20	mg/kg	1200
Acid Sulphate Soil - Cr Reduci			
ENV274 - Acid Sulphate Soil - Cr Reducible Sulphur Suite			
Chromium Reducible Sulphur	0.005	% S	0.27
pHkcl TAA	0.1	pH Units	8.6
ANCE (Acid Neutralising Capacity)	0.01	% CaCO3	2.9
Net Acid Soluble Sulfur	0.02	% S	N/A
Acid trail Titratable Actual Acidity	2	mol H+/t	<2
Sulfidic - TAA equiv	0.003	% pyrite S	<0.003
Chromium Reducible Sulfur Acidity Units	3	mol H+/t	170

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone SAP
Certificate Number	B1203117-B [R00]	**Sampler**	Customer
Page	4/4	**Order Number**	A11637.4

Analytical Results

Compound/Analyte	LOR	Units	GM17_0.-0.5
Client Sample Description			GM17_0.-0.5
Client Sampling date/time			26/09/2022 16:37
			B1203117-B/1
			Results
Acid Sulphate Soil - Cr Reduci - Continued			
ENV274 - Acid Sulphate Soil - Cr Reducible Sulphur Suite - Continued			
Sulfur - KCl Extractable	0.02	% S	N/A
HCl Extractable Sulfur	0.02	% S	N/A
Net Acid Soluble Sulfur Acidity Units	10	mol H+/t	N/A
Net Acid Soluble Sulfur Equiv S% Pyrite	0.02	% S	N/A
Acid Neutralising Capacity Acid (ANCbt)	2	mol H+/t	590
Acid Neutralising Capacity Equiv S%	0.02	% S	0.94
ANC Fineness Factor	---	factor	1.5
Net Acidity (Sulfur Units)	0.02	% S	0.27
Net Acidity (Acidity Units)	10	mol H+/t	170
Liming Rate	1	kg CaCO3/t	13

Analysis Location

All in-house analysis was completed by Symbio Laboratories - Subcontract Laboratory.

Report Comments

Please note; Testing performed by an NATA accredited external subcontracted Laboratory.
Accreditation No.: 1261
Report no.: 929463
Please note; Testing performed by an NATA accredited external subcontracted Laboratory.
Accreditation No.: 1884
Report no.: 84672

Symbio LABORATORIES

CERTIFICATE OF ANALYSIS

Certificate Number	B1204713-A [R00]	**Page**	1/8
Client	BMT Commercial Australia Pty Ltd	**Registering Laboratory**	Brisbane
Contact	Brad Hiles	**Contact**	Customer Service Team
Address	Level 8 200 Creek Street Brisbane QLD 4000	**Address**	52 Brandl Street, Eight Mile Plains, QLD 4113
		Email	admin@symbiolabs.com.au
Telephone	07 3831 6744	**Telephone**	1300 703 166
Order Number	A11637.4	**Date Samples Received**	04/10/2022
Project ID	Soil- A11367 Gladstone SAP	**Date Analysis Commenced**	05/10/2022
Sampler	Customer	**Issue Date**	14/10/2022
Client Job Reference	---	**Receipt Temperature (°C)**	8
No. of Samples Registered	2 | Sampler: Customer	**Storage Temperature (°C)**	4
Priority	Normal	**Quote Number**	---

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ABN: 82 079 645 015

NATA

Accreditation No: 2455
Accredited for compliance
with ISO/IEC 17025 - Testing

Definitions

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Authorised By

Name	Position	Accreditation Category
Glen Rangott	Environmental Laboratory Manager, Brisbane	Environmental Chemistry
Hongmei Kuang	Chemistry Laboratory Manager, Sydney	Environmental and Food Chemistry
Hongmei Kuang	Chemistry Laboratory Manager, Brisbane	Environmental and Food Chemistry

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone SAP
Certificate Number	B1204713-A [R00]	**Sampler**	Customer
Page	2/8	**Order Number**	A11637.4

Sample Information - *Client/Sampler Supplied*

Sample ID	B1204713-A/1	B1204713-A/2
Sample Description	LA10_0-0.5	UA13_0-0.5
Sample Date/Time	2022-09-28 09:00	2022-09-28 11:20

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone SAP
Certificate Number	B1204713-A [R00]	**Sampler**	Customer
Page	3/8	**Order Number**	A11637.4

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Analytical Results

Compound/Analyte	LOR	Units	LA10_0-0.5	UA13_0-0.5
Client Sample Description			LA10_0-0.5	UA13_0-0.5
Client Sampling date/time			28/09/2022 09:00	28/09/2022 11:20
			B1204713-A/1	B1204713-A/2
			Results	Results
General Tests				
ENV001_S - Soil Moisture Content				
Moisture Content - Soil	0.1	%	45.0	47.3
Cyanide				
ESS019 - Cyanide in Soil				
Total Cyanide	0.25	mg/kg	<0.25	<0.25
Total Organic Matter				
ENV009_S - ENV009_S Total Organic Carbon in soil				
Total Organic Carbon (TOC)	0.02	% w/w	3.1	3.2
Total Organic Matter (TOM) #	0.04	% w/w	5.29	5.50
IND042 Elements ICP-MS Soil				
IND042 - Metals in Soil - ICP-MS				
Mercury (Hg)	0.1	mg/kg	<0.1	<0.1
IND041 Elements				
IND041 - Metals in Soil - ICP-AES				
Copper (Cu)	1	mg/kg	29.4	27.6
Lead (Pb)	2	mg/kg	9.3	9.5
Zinc (Zn)	5	mg/kg	51.3	52.7
Chromium (Cr)	1	mg/kg	25.4	28.4
Nickel (Ni)	1	mg/kg	12.6	13.9
Arsenic (As)	5	mg/kg	11.7	12.4
Silver (Ag)*	1	mg/kg	<1	<1
Manganese (Mn)	1	mg/kg	386	257

Analytical Results

Compound/Analyte	LOR	Units	LA10_0-0.5	UA13_0-0.5
Client Sample Description			LA10_0-0.5	UA13_0-0.5
Client Sampling date/time			28/09/2022 09:00	28/09/2022 11:20
			B1204713-A/1	B1204713-A/2
			Results	Results
IND041 Elements - Continued				
IND041 - Metals in Soil - ICP-AES - Continued				
Aluminium (Al)	1	mg/kg	17100	19200
Cobalt (Co)	0.5	mg/kg	4.1	4.5
Iron (Fe)	2	mg/kg	26300	29900
Vanadium (V)	0.5	mg/kg	49.9	52.7
Selenium (Se)	5	mg/kg	<5.0	<5.0
Antimony (Sb)*	2	mg/kg	<2.0	<2.0
Organochlorine Pesticidesin Soil				
ENV104 - Multi-pesticide screen - Soil				
Aldrin	0.1	mg/kg	<0.1	<0.1
alpha-BHC	0.1	mg/kg	<0.1	<0.1
beta-BHC	0.1	mg/kg	<0.1	<0.1
delta-BHC	0.1	mg/kg	<0.1	<0.1
gamma-BHC (Lindane)	0.1	mg/kg	<0.1	<0.1
cis-Chlordane	0.1	mg/kg	<0.1	<0.1
trans-Chlordane	0.1	mg/kg	<0.1	<0.1
pp-DDD	0.1	mg/kg	<0.1	<0.1
pp-DDE	0.1	mg/kg	<0.1	<0.1
pp-DDT	0.1	mg/kg	<0.1	<0.1
Dieldrin	0.1	mg/kg	<0.1	<0.1
alpha-Endosulfan	0.1	mg/kg	<0.1	<0.1
beta-Endosulfan	0.1	mg/kg	<0.1	<0.1
Endosulfan Sulphate	0.1	mg/kg	<0.1	<0.1
Endrin	0.1	mg/kg	<0.1	<0.1

Analytical Results

Compound/Analyte	LOR	Units	LA10_0-0.5	UA13_0-0.5
Client Sample Description			LA10_0-0.5	UA13_0-0.5
Client Sampling date/time			28/09/2022 09:00	28/09/2022 11:20
			B1204713-A/1	B1204713-A/2
			Results	Results
Organochlorine Pesticidesin Soil - Continued				
ENV104 - Multi-pesticide screen - Soil - Continued				
Heptachlor	0.1	mg/kg	<0.1	<0.1
Heptachlor epoxide	0.1	mg/kg	<0.1	<0.1
HCB	0.1	mg/kg	<0.1	<0.1
Methoxychlor	0.1	mg/kg	<0.1	<0.1
Endrin ketone*	0.1	mg/kg	<0.1	<0.1
Mirex	0.1	mg/kg	<0.1	<0.1
op-DDT	0.1	mg/kg	<0.1	<0.1
op-DDD	0.1	mg/kg	<0.1	<0.1
op-DDE	0.1	mg/kg	<0.1	<0.1
Oxychlordane*	0.1	mg/kg	<0.1	<0.1
Organophosphate Pesticidesin Soil				
ENV104 - Multi-pesticide screen - Soil				
Bromophos-methyl	0.1	mg/kg	<0.1	<0.1
Chlorpyrifos	0.1	mg/kg	<0.1	<0.1
Chlorpyrifos-methyl	0.1	mg/kg	<0.1	<0.1
Diazinon	0.1	mg/kg	<0.1	<0.1
Dichlorvos	0.1	mg/kg	<0.1	<0.1
Dimethoate	0.1	mg/kg	<0.1	<0.1
Ethion	0.1	mg/kg	<0.1	<0.1
Fenitrothion	0.1	mg/kg	<0.1	<0.1
Mevinphos	0.1	mg/kg	<0.1	<0.1
Methyl parathion	0.1	mg/kg	<0.1	<0.1
Polycyclic Aromatic Hydrocarbons				
ENV103S - PAH & Phenol in Soil				
Acenaphthylene	0.1	mg/kg	<0.1	<0.1

Analytical Results

Compound/Analyte	LOR	Units	LA10_0-0.5	UA13_0-0.5
Client Sample Description			LA10_0-0.5	UA13_0-0.5
Client Sampling date/time			28/09/2022 09:00	28/09/2022 11:20
			B1204713-A/1	B1204713-A/2
			Results	Results
Polycyclic Aromatic Hydrocarbons - Continued				
ENV103S - PAH & Phenol in Soil - Continued				
Acenaphthene	0.1	mg/kg	<0.1	<0.1
Anthracene	0.1	mg/kg	<0.1	<0.1
Benzo[a]anthracene	0.1	mg/kg	<0.1	<0.1
Benzo[a]pyrene	0.1	mg/kg	<0.1	<0.1
Benzo[b,j,k]fluoranthene	0.3	mg/kg	<0.3	<0.3
Benzo[g,h,i]perylene	0.1	mg/kg	<0.1	<0.1
Chrysene	0.1	mg/kg	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	mg/kg	<0.1	<0.1
Fluoranthene	0.1	mg/kg	<0.1	<0.1
Fluorene	0.1	mg/kg	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	0.1	mg/kg	<0.1	<0.1
Naphthalene	0.1	mg/kg	<0.1	<0.1
Phenanthrene	0.1	mg/kg	<0.1	<0.1
Pyrene	0.1	mg/kg	<0.1	<0.1
Total PAHs (as above)	0.3	mg/kg	<0.3	<0.3
Surrogate Nitrobenzene-D5(Control Limits 50%-150%)	---	%	140	150
Surrogate 4-Terphenyl-D14(Control Limits 50%-150%)	---	%	120	130
Surrogate 2-Fluorobiphenyl(Control Limits 50%-150%)	---	%	130	140

Analytical Results

Compound/Analyte	LOR	Units	LA10_0-0.5	UA13_0-0.5
Client Sample Description			LA10_0-0.5	UA13_0-0.5
Client Sampling date/time			28/09/2022 09:00	28/09/2022 11:20
			B1204713-A/1	B1204713-A/2
			Results	Results
ENV1025S-A: TPH6-36+TRH6-40				
ENV102S - TPH/TRH in Soil - Continued				
TPH C10-C14 Fraction Soil	50	mg/kg	<50	<50
TPH C15-C28 Fraction Soil	100	mg/kg	<100	<100
TPH C29-C36 Fraction Soil	100	mg/kg	<100	<100
TPH C10-C36 Fraction Soil	100	mg/kg	<100	<100
TRH >C10-C16 Fraction Soil	50	mg/kg	<50	<50
TRH >C16-C34 Fraction Soil	100	mg/kg	<100	<100
TRH >C34-C40 Fraction Soil	100	mg/kg	<100	<100
TRH >C10-C40 Fraction Soil	100	mg/kg	<100	<100
Surrogate o-Terphenyl in Soil(Control Limits 50%-150%)	---	%	95	100
ENV105S - TPH/TRH (C6-C9/C10) and BTEX in Soil				
TPH C6-C9 Fraction Soil	25	mg/kg	<30	<30
TRH C6-C10 Fraction Soil	25	mg/kg	<30	<30
Organotins in Soil & Sediment				
04-026 - Determination of Organotins in Sediment/Soil by GCMS				
Monobutyltin (MBT as Sn)	4	µgSn/kg	<4.0	<4.0

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone SAP
Certificate Number	B1204713-A [R00]	**Sampler**	Customer
Page	8/8	**Order Number**	A11637.4

Analytical Results

Compound/Analyte	LOR	Units	LA10_0-0.5	UA13_0-0.5
Client Sample Description			LA10_0-0.5	UA13_0-0.5
Client Sampling date/time			28/09/2022 09:00	28/09/2022 11:20
			B1204713-A/1	B1204713-A/2
			Results	Results
Organotins in Soil & Sediment - Continued				
04-026 - Determination of Organotins in Sediment/Soil by GCMS - Continued				
Dibutyltin (DBT as Sn)	2	µgSn/kg	<2.0	<2.0
Tributyltin (TBT as Sn)	0.5	µgSn/kg	22.9	<0.5
Tripropyltin (SUR) *	---	%	93.4	84.9
Monobutyltin (MBT)	0.007	µg/kg	<0.007	<0.007
Dibutyltin (DBT)	0.01	µg/kg	<0.01	<0.01
Tributyltin (TBT)	0.01	µg/kg	61.80	<0.01
Moisture Content				
04-004 - Moisture by gravimetric, %				
Moisture Content	0.1	%	47	49

Analysis Location

The following analysis was completed by Symbio Laboratories - Brisbane: ENV001_S;ENV009_S;ENV102S;ENV103S;ENV104S;ENV105S;ESS019;IND041;IND042.
The following analysis was completed by Symbio Laboratories - Sydney: 04_004S;E061_0B.

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CERTIFICATE OF ANALYSIS

Certificate Number	B1204713-B [R00]	**Page**	1/4
Client	BMT Commercial Australia Pty Ltd	**Registering Laboratory**	Brisbane
Contact	Brad Hiles	**Contact**	Customer Service Team
Address	Level 8 200 Creek Street Brisbane QLD 4000	**Address**	52 Brandl Street, Eight Mile Plains, QLD 4113
		Email	admin@symbiolabs.com.au
Telephone	07 3831 6744	**Telephone**	1300 703 166
Order Number	A11637.4	**Date Samples Received**	04/10/2022
Project ID	Soil SUBCO- A11367 Gladstone SAP	**Date Analysis Commenced**	05/10/2022
Sampler	Customer	**Issue Date**	20/10/2022
Client Job Reference	---	**Receipt Temperature (°C)**	8
No. of Samples Registered	2 | Sampler: Customer	**Storage Temperature (°C)**	4
Priority	Normal	**Quote Number**	---

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ABN: 82 079 645 015

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Authorised By

Name	Position	Accreditation Category
Glen Rangott	Environmental Laboratory Manager, Brisbane	Environmental Chemistry

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil SUBCO- A11367 Gladstone SAP
Certificate Number	B1204713-B [R00]	**Sampler**	Customer
Page	2/4	**Order Number**	A11637.4

Sample Information - *Client/Sampler Supplied*

Sample ID	B1204713-B/1	B1204713-B/2
Sample Description	LA10_0-05	UA13_0-0.5
Sample Date/Time	2022-10-28 09:00	2022-10-28 11:20

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil SUBCO- A11367 Gladstone SAP
Certificate Number	B1204713-B [R00]	**Sampler**	Customer
Page	3/4	**Order Number**	A11637.4

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Analytical Results

Compound/Analyte	LOR	Units	LA10_0-05	UA13_0-0.5
Client Sample Description			LA10_0-05	UA13_0-0.5
Client Sampling date/time			28/10/2022 09:00	28/10/2022 11:20
			B1204713-B/1	B1204713-B/2
			Results	Results
Acid Sulphate Soil - Cr Reduci				
ENV274 - Acid Sulphate Soil - Cr Reducible Sulphur Suite				
Chromium Reducible Sulphur	0.005	% S	0.42	0.59
pHkcl TAA	0.1	pH Units	8.7	8.5
ANCE (Acid Neutralising Capacity)	0.01	% CaCO3	5.7	2.4
Net Acid Soluble Sulfur	0.02	% S	N/A	N/A
Acid trail Titratable Actual Acidity	2	mol H+/t	<2	<2
Sulfidic - TAA equiv	0.003	% pyrite S	<0.003	<0.003
Chromium Reducible Sulfur Acidity Units	3	mol H+/t	260	370
Sulfur - KCl Extractable	0.02	% S	N/A	N/A
HCl Extractable Sulfur	0.02	% S	N/A	N/A
Net Acid Soluble Sulfur Acidity Units	10	mol H+/t	N/A	N/A
Net Acid Soluble Sulfur Equiv S% Pyrite	0.02	% S	N/A	N/A
Acid Neutralising Capacity Acid (ANCbt)	2	mol H+/t	1100	490
Acid Neutralising Capacity Equiv S%	0.02	% S	1.8	0.78
ANC Fineness Factor	---	factor	1.5	1.5
Net Acidity (Sulfur Units)	0.02	% S	0.42	0.59
Net Acidity (Acidity Units)	10	mol H+/t	260	370

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil SUBCO- A11367 Gladstone SAP
Certificate Number	B1204713-B [R00]	**Sampler**	Customer
Page	4/4	**Order Number**	A11637.4

Analytical Results

Compound/Analyte	LOR	Units	LA10_0-05	UA13_0-0.5
Client Sample Description			LA10_0-05	UA13_0-0.5
Client Sampling date/time			28/10/2022 09:00	28/10/2022 11:20
			B1204713-B/1	B1204713-B/2
			Results	Results
Acid Sulphate Soil - Cr Reduci - Continued				
ENV274 - Acid Sulphate Soil - Cr Reducible Sulphur Suite - Continued				
Liming Rate	1	kg CaCO3/t	20	28
S004.09A Total Phosphorus				
S004.09 - Determination of Total Phosphorus				
Total Phosphorus^	0.5	mg/kg	530	500
S004.03A Total Nitrogen				
S004.03 - Determination of Total Nitrogen				
Total Nitrogen^	20	mg/kg	1400	1100
S004.08A NOx as N				
S004.08 - Determination of NOx as N				
NOx as N^	0.1	mg/kg	<0.1	<0.1
S004.04A TKN				
S004.04 - Determination of Total Kjeldahl Nitrogen				
Total Kjeldahl Nitrogen^	20	mg/kg	1400	1100

Analysis Location

All in-house analysis was completed by Symbio Laboratories - Subcontract Laboratory.

Report Comments

Please note; Testing performed by an NATA accredited external subcontracted Laboratory.
Accreditation No.: 1261
Report no.: 929819
Please note; Testing performed by an NATA accredited external subcontracted Laboratory.
Accreditation No.: 1884
Report no.: 84694

Symbio LABORATORIES

CERTIFICATE OF ANALYSIS

Certificate Number	B1206561-A [R00]	**Page**	1/7
Client	BMT Commercial Australia Pty Ltd	**Registering Laboratory**	Brisbane
Contact	Craig Heatherington	**Contact**	Customer Service Team
Address	Level 8 200 Creek Street Brisbane QLD 4000	**Address**	52 Brandl Street, Eight Mile Plains, QLD 4113
		Email	admin@symbiolabs.com.au
Telephone	07 3831 6744	**Telephone**	1300 703 166
Order Number	---	**Date Samples Received**	06/10/2022
Project ID	Soil- A11367 Gladstone - Sediment Quality	**Date Analysis Commenced**	10/10/2022
Sampler	Customer	**Issue Date**	20/10/2022
Client Job Reference	---	**Receipt Temperature (°C)**	8
No. of Samples Registered	1 | Sampler: Customer	**Storage Temperature (°C)**	4
Priority	Normal	**Quote Number**	---

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NATA

Accreditation No: 2455
Accredited for compliance
with ISO/IEC 17025 - Testing

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Authorised By

Name	Position	Accreditation Category
Glen Rangott	Environmental Laboratory Manager, Brisbane	Environmental Chemistry
Hongmei Kuang	Chemistry Laboratory Manager, Sydney	Environmental and Food Chemistry
Hongmei Kuang	Chemistry Laboratory Manager, Brisbane	Environmental and Food Chemistry

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone - Sediment Quality
Certificate Number	B1206561-A [R00]	**Sampler**	Customer
Page	2/7	**Order Number**	---

Sample Information - *Client/Sampler Supplied*

Sample ID	B1206561-A/1
Sample Description	MC26

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone - Sediment Quality
Certificate Number	B1206561-A [R00]	**Sampler**	Customer
Page	3/7	**Order Number**	---

Analytical Results

Compound/Analyte	LOR	Units	MC26
Client Sample Description			
Client Sampling date/time			---
			B1206561-A/1
			Results
ENV1025S-D: TPH+TRH+BTEXN+F1,2			
ENV102S - TPH/TRH in Soil			
TRH >C10-C16 Fraction Soil	50	mg/kg	<50
TRH >C16-C34 Fraction Soil	100	mg/kg	<100
TRH >C34-C40 Fraction Soil	100	mg/kg	<100
TRH >C10-C40 Fraction Soil	100	mg/kg	<100
TPH C10-C14 Fraction Soil	50	mg/kg	<50
TPH C15-C28 Fraction Soil	100	mg/kg	<100
TPH C29-C36 Fraction Soil	100	mg/kg	<100
TPH C10-C36 Fraction Soil	100	mg/kg	<100
Surrogate o-Terphenyl in Soil(Control Limits 50%-150%)	---	%	130
ENV105S - TPH/TRH (C6-C9/C10) and BTEX in Soil			
Benzene	0.2	mg/kg	<0.2
Toluene	0.2	mg/kg	<0.2
Ethylbenzene	0.2	mg/kg	<0.2
meta- & para-Xylenes	0.4	mg/kg	<0.4
ortho-Xylene	0.2	mg/kg	<0.2
Total Xylenes in Soil	0.6	mg/kg	<0.6

Analytical Results

Compound/Analyte	LOR	Units	MC26
Client Sample Description			
Client Sampling date/time			---
			B1206561-A/1
			Results
ENV1025S-D: TPH+TRH+BTEXN+F1,2 - Continued			
ENV105S - TPH/TRH (C6-C9/C10) and BTEX in Soil - Continued			
Total BTEX	1.2	mg/kg	<1.2
Naphthalene in Soil	2	mg/kg	<2.0
Surrogate1.2-dichloroethane-d4(Control Limits 70%-130%)	---	%	100
Surrogate Toluene-D8(Control Limits 70%-130%)	---	%	100
Surrogate 4-Bromofluorobenzene(Control Limits 70%-130%)	---	%	100
TRH C6-C10 Fraction Soil	25	mg/kg	<30
F1: [C6-C10] - BTEX #	25	mg/kg	<30
>C10-C16 Fraction minus Naphthalene (F2)	50	mg/kg	<50
TPH C6-C9 Fraction Soil	25	mg/kg	<30
General Tests			
EFF044 - Ammonia N in Soil by FIA			
Ammonia	0.1	mg/kg	8.7
ENV001_S - Soil Moisture Content			
Moisture Content - Soil	0.1	%	61.1
Total Organic Matter			
ENV009_S - ENV009_S Total Organic Carbon in soil			
Total Organic Carbon (TOC)	0.02	% w/w	2.1

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone - Sediment Quality
Certificate Number	B1206561-A [R00]	**Sampler**	Customer
Page	5/7	**Order Number**	---

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Analytical Results

Compound/Analyte	LOR	Units	MC26
Client Sample Description			
Client Sampling date/time			---
			B1206561-A/1
			Results
Total Organic Matter - Continued			
ENV009_S - ENV009_S Total Organic Carbon in soil - Continued			
Total Organic Matter (TOM) #	0.04	% w/w	3.62
IND041 Elements			
IND041 - Metals in Soil - ICP-AES			
Antimony (Sb)*	2	mg/kg	<2.0
Arsenic (As)	5	mg/kg	13.5
Cadmium (Cd)	0.5	mg/kg	0.6
Chromium (Cr)	1	mg/kg	26.4
Copper (Cu)	1	mg/kg	24.8
Lead (Pb)	2	mg/kg	8.0
Manganese (Mn)	1	mg/kg	311
Nickel (Ni)	1	mg/kg	13.9
Zinc (Zn)	5	mg/kg	52.8
Silver (Ag)*	1	mg/kg	<1
Aluminium (Al)	1	mg/kg	17300
Iron (Fe)	2	mg/kg	27500
Polycyclic Aromatic Hydrocarbons			
ENV103S - PAH & Phenol in Soil			
Acenaphthylene	0.1	mg/kg	<0.1
Acenaphthene	0.1	mg/kg	<0.1
Anthracene	0.1	mg/kg	<0.1
Benzo[a]anthracene	0.1	mg/kg	<0.1
Benzo[a]pyrene	0.1	mg/kg	<0.1
Benzo[b,j,k]fluoranthene	0.3	mg/kg	<0.3

Analytical Results

Compound/Analyte	LOR	Units	MC26
Client Sample Description			
Client Sampling date/time			---
			B1206561-A/1
			Results
Polycyclic Aromatic Hydrocarbons - Continued			
ENV103S - PAH & Phenol in Soil - Continued			
Benzo[g,h,i]perylene	0.1	mg/kg	<0.1
Chrysene	0.1	mg/kg	<0.1
Dibenzo(a,h)anthracene	0.1	mg/kg	<0.1
Fluoranthene	0.1	mg/kg	<0.1
Fluorene	0.1	mg/kg	<0.1
Indeno(1,2,3-cd)pyrene	0.1	mg/kg	<0.1
Naphthalene	0.1	mg/kg	<0.1
Phenanthrene	0.1	mg/kg	<0.1
Pyrene	0.1	mg/kg	<0.1
Total PAHs (as above)	0.3	mg/kg	<0.3
Surrogate Nitrobenzene-D5(Control Limits 50%-150%)	---	%	150
Surrogate 4-Terphenyl-D14(Control Limits 50%-150%)	---	%	140
Surrogate 2-Fluorobiphenyl(Control Limits 50%-150%)	---	%	120
Organotins in Soil & Sediment			
04-026 - Determination of Organotins in Sediment/Soil by GCMS			
Monobutyltin (MBT as Sn)	4	µgSn/kg	<4.0
Dibutyltin (DBT as Sn)	2	µgSn/kg	<2.0

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone - Sediment Quality
Certificate Number	B1206561-A [R00]	**Sampler**	Customer
Page	7/7	**Order Number**	---

Analytical Results

Compound/Analyte	LOR	Units	MC26
Client Sample Description			
Client Sampling date/time			---
			B1206561-A/1
			Results
Organotins in Soil & Sediment - Continued			
04-026 - Determination of Organotins in Sediment/Soil by GCMS - Continued			
Tributyltin (TBT as Sn)	0.5	µgSn/kg	<0.5
Tripropyltin (SUR) *	---	%	109.5
Monobutyltin (MBT)	0.007	µg/kg	<0.007
Dibutyltin (DBT)	0.01	µg/kg	<0.01
Tributyltin (TBT)	0.01	µg/kg	<0.01
Moisture Content			
04-004 - Moisture by gravimetric, %			
Moisture Content	0.1	%	64
IND042 Elements ICP-MS Soil			
IND042 - Metals in Soil - ICP-MS			
Mercury (Hg)	0.1	mg/kg	<0.1

Analysis Location

The following analysis was completed by Symbio Laboratories - Brisbane: EFF044_S;ENV001_S;ENV009_S;ENV102S;ENV103S;ENV105S;IND041;IND042.
The following analysis was completed by Symbio Laboratories - Sydney: 04_004S;E061_0B.

GRAIN SIZE ANALYSIS (hydrometer techniques)

2 soil samples supplied by Symbio Laboratories Pty Ltd on 12 October, 2022 - Lab Job No. N3573
Analysis requested by Customer Service Team. Job Ref PO 84757
PO Box 4312 EIGHT MILE PLAINS QLD 4113

SAMPLE ID	Lab Code	TEXTURE ISSS classification	MOISTURE CONTENT (105 °C) (% Moisture)	GRAVEL > 2 mm (%)	SAND > 20 µm ISSS (< 2 mm fraction)	SILT 2–20 µm ISSS (< 2 mm fraction)	CLAY < 2 µm (< 2 mm fraction)
B1206561-B-001	N3573/1	Clay	62.1%	0.1%	30.2%	17.2%	52.5%
B1206606-B-001	N3573/2	Sand	26.9%	0.0%	93.9%	0.1%	6.0%

Note:

1. The Hydrometer Analysis method was used to determine the percentage sand, silt and clay,
modified from SOP meth004 (California Dept of Pesticide Regulation), using method of Gee & Bauder (1986)," &
in Methods of Soil Analysis. Part 1 Agron. Monogr. 9 (2nd Ed). Klute, A., American Soc. of Agronomy Inc., Soil Sci. Soc. America Inc., Madison WI: 383-411.
2. The texture classification was based on the hydrometer results and the appropriate texture triangle.
3. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (see EAL website: scu.edu.au/eal).
4. This report is not to be reproduced except in full.
5. This report was issued on 19/10/2022

checked: .....
Graham Lancaster (Nata signatory)
Laboratory Manager

Environmental Analysis Laboratory, Southern Cross University,
Tel. 02 6620 3678, website: scu.edu.au/eal

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CERTIFICATE OF ANALYSIS

Certificate Number	B1206561-B [R00]	**Page**	1/3
Client	BMT Commercial Australia Pty Ltd	**Registering Laboratory**	Brisbane
Contact	Craig Heatherington	**Contact**	Customer Service Team
Address	Level 8 200 Creek Street Brisbane QLD 4000	**Address**	52 Brandl Street, Eight Mile Plains, QLD 4113
		Email	admin@symbiolabs.com.au
Telephone	07 3831 6744	**Telephone**	1300 703 166
Order Number	---	**Date Samples Received**	06/10/2022
Project ID	Soil SUBCO- A11367 Gladstone - Sediment Quality	**Date Analysis Commenced**	10/10/2022
Sampler	Customer	**Issue Date**	24/10/2022
Client Job Reference	---	**Receipt Temperature (°C)**	8
No. of Samples Registered	1 | Sampler: Customer	**Storage Temperature (°C)**	4
Priority	Normal	**Quote Number**	---

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Definitions

| <: Less Than | >: Greater Than | RP: Result Pending | MPN: Most Probable Number | CFU: Colony Forming Units | ---: Not Received/Not Requested | NA: Not Applicable | ND: Not Detected | LOR: Limit of Reporting | [NT]: Not Tested |

| ~: Estimated | ^ Subcontracted Analysis | TBA: To Be Advised | ** Potential Holding Time Concern | * Test not covered by NATA scope of accreditation | # Result derived from a calculation and includes results equal to or greater than the LOR

Authorised By

Name	Position	Accreditation Category
Glen Rangott	Environmental Laboratory Manager, Brisbane	Environmental Chemistry

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil SUBCO- A11367 Gladstone - Sediment Quality
Certificate Number	B1206561-B [R00]	**Sampler**	Customer
Page	2/3	**Order Number**	---

Sample Information - *Client/Sampler Supplied*

Sample ID	B1206561-B/1
Sample Description	MC26

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil SUBCO- A11367 Gladstone - Sediment Quality
Certificate Number	B1206561-B [R00]	**Sampler**	Customer
Page	3/3	**Order Number**	---

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Analytical Results

Compound/Analyte	LOR	Units	MC26
Client Sample Description			
Client Sampling date/time			---
			B1206561-B/1
			Results
S023-03A Particle Size Dist			
S023.03 - Particle Size Distribution by Hydrometer			
Particle Size Distribution	0.1	-	Please See Attached
S004.09A Total Phosphorus			
S004.09 - Determination of Total Phosphorus			
Total Phosphorus^	0.5	mg/kg	210
S004.03A Total Nitrogen			
S004.03 - Determination of Total Nitrogen			
Total Nitrogen^	20	mg/kg	1200
S004.08A NOx as N			
S004.08 - Determination of NOx as N			
NOx as N^	0.1	mg/kg	<0.50
S004.04A TKN			
S004.04 - Determination of Total Kjeldahl Nitrogen			
Total Kjeldahl Nitrogen^	20	mg/kg	1200

Analysis Location

All in-house analysis was completed by Symbio Laboratories - Subcontract Laboratory.

Report Comments

EAL Please note; Testing performed by an external subcontracted Laboratory.
Report no.: N3573
SAL Please note; Testing performed by an NATA accredited external subcontracted Laboratory.
Accreditation No.: 1884
Report no.: SAL28376D

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CERTIFICATE OF ANALYSIS

Certificate Number	B1206606-A [R00]	**Page**	1/7
Client	BMT Commercial Australia Pty Ltd	**Registering Laboratory**	Brisbane
Contact	Craig Heatherington	**Contact**	Customer Service Team
Address	Level 8 200 Creek Street Brisbane QLD 4000	**Address**	52 Brandl Street, Eight Mile Plains, QLD 4113
		Email	admin@symbiolabs.com.au
Telephone	07 3831 6744	**Telephone**	1300 703 166
Order Number	---	**Date Samples Received**	06/10/2022
Project ID	Soil- A11367 Gladstone - Sediment Quality	**Date Analysis Commenced**	10/10/2022
Sampler	Customer	**Issue Date**	20/10/2022
Client Job Reference	---	**Receipt Temperature (°C)**	8
No. of Samples Registered	1 | Sampler: Customer	**Storage Temperature (°C)**	4
Priority	Normal	**Quote Number**	---

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NATA

Accreditation No: 2455
Accredited for compliance
with ISO/IEC 17025 - Testing

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Definitions

| <: Less Than | >: Greater Than | RP: Result Pending | MPN: Most Probable Number | CFU: Colony Forming Units | ---: Not Received/Not Requested | NA: Not Applicable | ND: Not Detected | LOR: Limit of Reporting | [NT]: Not Tested |

| ~: Estimated | ^ Subcontracted Analysis | TBA: To Be Advised | ** Potential Holding Time Concern | * Test not covered by NATA scope of accreditation | # Result derived from a calculation and includes results equal to or greater than the LOR

Authorised By

Name	Position	Accreditation Category
Glen Rangott	Environmental Laboratory Manager, Brisbane	Environmental Chemistry
Hongmei Kuang	Chemistry Laboratory Manager, Sydney	Environmental and Food Chemistry
Hongmei Kuang	Chemistry Laboratory Manager, Brisbane	Environmental and Food Chemistry

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone - Sediment Quality
Certificate Number	B1206606-A [R00]	**Sampler**	Customer
Page	2/7	**Order Number**	---

Sample Information - *Client/Sampler Supplied*

Sample ID	B1206606-A/1
Sample Description	BE8

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone - Sediment Quality
Certificate Number	B1206606-A [R00]	**Sampler**	Customer
Page	3/7	**Order Number**	---

Analytical Results

Compound/Analyte	LOR	Units	BE8
Client Sample Description			
Client Sampling date/time			---
			B1206606-A/1
			Results
ENV1025S-D: TPH+TRH+BTEXN+F1,2			
ENV102S - TPH/TRH in Soil			
TRH >C10-C16 Fraction Soil	50	mg/kg	<50
TRH >C16-C34 Fraction Soil	100	mg/kg	<100
TRH >C34-C40 Fraction Soil	100	mg/kg	<100
TRH >C10-C40 Fraction Soil	100	mg/kg	<100
TPH C10-C14 Fraction Soil	50	mg/kg	<50
TPH C15-C28 Fraction Soil	100	mg/kg	<100
TPH C29-C36 Fraction Soil	100	mg/kg	<100
TPH C10-C36 Fraction Soil	100	mg/kg	<100
Surrogate o-Terphenyl in Soil(Control Limits 50%-150%)	---	%	110
ENV105S - TPH/TRH (C6-C9/C10) and BTEX in Soil			
Benzene	0.2	mg/kg	<0.2
Toluene	0.2	mg/kg	<0.2
Ethylbenzene	0.2	mg/kg	<0.2
meta- & para-Xylenes	0.4	mg/kg	<0.4
ortho-Xylene	0.2	mg/kg	<0.2
Total Xylenes in Soil	0.6	mg/kg	<0.6

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone - Sediment Quality
Certificate Number	B1206606-A [R00]	**Sampler**	Customer
Page	4/7	**Order Number**	---

Analytical Results

Compound/Analyte	LOR	Units	BE8
Client Sample Description			
Client Sampling date/time			---
			B1206606-A/1
			Results
ENV1025S-D: TPH+TRH+BTEXN+F1,2 - Continued			
ENV105S - TPH/TRH (C6-C9/C10) and BTEX in Soil - Continued			
Total BTEX	1.2	mg/kg	<1.2
Naphthalene in Soil	2	mg/kg	<2.0
Surrogate1.2-dichloroethane-d4(Control Limits 70%-130%)	---	%	100
Surrogate Toluene-D8(Control Limits 70%-130%)	---	%	100
Surrogate 4-Bromofluorobenzene(Control Limits 70%-130%)	---	%	110
TRH C6-C10 Fraction Soil	25	mg/kg	<30
F1: [C6-C10] - BTEX #	25	mg/kg	<30
>C10-C16 Fraction minus Naphthalene (F2)	50	mg/kg	<50
TPH C6-C9 Fraction Soil	25	mg/kg	<30
Water General Tests			
EFF044 - Ammonia N in Soil by FIA			
Ammonia	0.1	mg/kg	2.4
ENV001_S - Soil Moisture Content			
Moisture Content - Soil	0.1	%	34.9
ENV009 TotalOrganicMatter Soil			
ENV009_S - ENV009_S Total Organic Carbon in soil			
Total Organic Carbon (TOC)	0.02	% w/w	1.7

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone - Sediment Quality
Certificate Number	B1206606-A [R00]	**Sampler**	Customer
Page	5/7	**Order Number**	---

Analytical Results

Compound/Analyte	LOR	Units	BE8
Client Sample Description			
Client Sampling date/time			---
			B1206606-A/1
			Results
ENV009 TotalOrganicMatter Soil - Continued			
ENV009_S - ENV009_S Total Organic Carbon in soil - Continued			
Total Organic Matter (TOM) #	0.04	% w/w	2.90
IND041 Element AES IND High Lv			
IND041 - Metals in Soil - ICP-AES			
Antimony (Sb)*	2	mg/kg	<2.0
Arsenic (As)	5	mg/kg	12.9
Cadmium (Cd)	0.5	mg/kg	<0.5
Chromium (Cr)	1	mg/kg	11.5
Copper (Cu)	1	mg/kg	2.1
Lead (Pb)	2	mg/kg	2.5
Manganese (Mn)	1	mg/kg	276
Nickel (Ni)	1	mg/kg	4.1
Zinc (Zn)	5	mg/kg	16.5
Silver (Ag)*	1	mg/kg	<1
Aluminium (Al)	1	mg/kg	3730
Iron (Fe)	2	mg/kg	9560
ENV103.2B PAH Soil			
ENV103S - PAH & Phenol in Soil			
Acenaphthylene	0.1	mg/kg	<0.1
Acenaphthene	0.1	mg/kg	<0.1
Anthracene	0.1	mg/kg	<0.1
Benzo[a]anthracene	0.1	mg/kg	<0.1
Benzo[a]pyrene	0.1	mg/kg	<0.1
Benzo[b,j,k]fluoranthene	0.3	mg/kg	<0.3

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone - Sediment Quality
Certificate Number	B1206606-A [R00]	**Sampler**	Customer
Page	6/7	**Order Number**	---

Analytical Results

Compound/Analyte	LOR	Units	BE8
Client Sample Description			
Client Sampling date/time			---
			B1206606-A/1
			Results
ENV103.2B PAH Soil - Continued			
ENV103S - PAH & Phenol in Soil - Continued			
Benzo[g,h,i]perylene	0.1	mg/kg	<0.1
Chrysene	0.1	mg/kg	<0.1
Dibenzo(a,h)anthracene	0.1	mg/kg	<0.1
Fluoranthene	0.1	mg/kg	<0.1
Fluorene	0.1	mg/kg	<0.1
Indeno(1,2,3-cd)pyrene	0.1	mg/kg	<0.1
Naphthalene	0.1	mg/kg	<0.1
Phenanthrene	0.1	mg/kg	<0.1
Pyrene	0.1	mg/kg	<0.1
Total PAHs (as above)	0.3	mg/kg	<0.3
Surrogate Nitrobenzene-D5(Control Limits 50%-150%)	---	%	100
Surrogate 4-Terphenyl-D14(Control Limits 50%-150%)	---	%	96
Surrogate 2-Fluorobiphenyl(Control Limits 50%-150%)	---	%	83
E0610C.1 Organotins in Soil&Se			
04-026 - Determination of Organotins in Sediment/Soil by GCMS			
Monobutyltin (MBT as Sn)	4	µgSn/kg	<4.0
Dibutyltin (DBT as Sn)	2	µgSn/kg	<2.0

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil- A11367 Gladstone - Sediment Quality
Certificate Number	B1206606-A [R00]	**Sampler**	Customer
Page	7/7	**Order Number**	---

Analytical Results

Compound/Analyte	LOR	Units	BE8
Client Sample Description			
Client Sampling date/time			---
			B1206606-A/1
			Results
E0610C.1 Organotins in Soil&Se - Continued			
04-026 - Determination of Organotins in Sediment/Soil by GCMS - Continued			
Tributyltin (TBT as Sn)	0.5	µgSn/kg	<0.5
Tripropyltin (SUR) *	---	%	95.2
Monobutyltin (MBT)	0.007	µg/kg	<0.007
Dibutyltin (DBT)	0.01	µg/kg	<0.01
Tributyltin (TBT)	0.01	µg/kg	<0.01
4004S-2 Moisture Content			
04-004 - Moisture by gravimetric, %			
Moisture Content	0.1	%	31
IND042 Elements ICP-MS Soil			
IND042 - Metals in Soil - ICP-MS			
Mercury (Hg)	0.1	mg/kg	<0.1

Analysis Location

The following analysis was completed by Symbio Laboratories - Brisbane: EFF044_S;ENV001_S;ENV009_S;ENV102S;ENV103S;ENV105S;IND041;IND042.
The following analysis was completed by Symbio Laboratories - Sydney: 04_004S;E061_0B.

GRAIN SIZE ANALYSIS (hydrometer techniques)

2 soil samples supplied by Symbio Laboratories Pty Ltd on 12 October, 2022 - Lab Job No. N3573
Analysis requested by Customer Service Team. Job Ref PO 84757
PO Box 4312 EIGHT MILE PLAINS QLD 4113

SAMPLE ID	Lab Code	TEXTURE ISSS classification	MOISTURE CONTENT (105 °C) (% Moisture)	GRAVEL > 2 mm (%)	SAND > 20 µm ISSS (< 2 mm fraction)	SILT 2–20 µm ISSS (< 2 mm fraction)	CLAY < 2 µm (< 2 mm fraction)
B1206561-B-001	N3573/1	Clay	62.1%	0.1%	30.2%	17.2%	52.5%
B1206606-B-001	N3573/2	Sand	26.9%	0.0%	93.9%	0.1%	6.0%

Note:

1. The Hydrometer Analysis method was used to determine the percentage sand, silt and clay,
modified from SOP meth004 (California Dept of Pesticide Regulation), using method of Gee & Bauder (1986)," &
in Methods of Soil Analysis. Part 1 Agron. Monogr. 9 (2nd Ed). Klute, A., American Soc. of Agronomy Inc., Soil Sci. Soc. America Inc., Madison WI: 383-411.
2. The texture classification was based on the hydrometer results and the appropriate texture triangle.
3. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (see EAL website: scu.edu.au/eal).
4. This report is not to be reproduced except in full.
5. This report was issued on 19/10/2022

checked: .....
Graham Lancaster (Nata signatory)
Laboratory Manager

Environmental Analysis Laboratory, Southern Cross University,
Tel. 02 6620 3678, website: scu.edu.au/eal

Symbio LABORATORIES

CERTIFICATE OF ANALYSIS

Certificate Number	B1206606-B [R00]	**Page**	1/5
Client	BMT Commercial Australia Pty Ltd	**Registering Laboratory**	Brisbane
Contact	Craig Heatherington	**Contact**	Customer Service Team
Address	Level 8 200 Creek Street Brisbane QLD 4000	**Address**	52 Brandl Street, Eight Mile Plains, QLD 4113
		Email	admin@symbiolabs.com.au
Telephone	07 3831 6744	**Telephone**	1300 703 166
Order Number	---	**Date Samples Received**	06/10/2022
Project ID	Soil SUBCO- A11367 Gladstone - Sediment Quality	**Date Analysis Commenced**	10/10/2022
Sampler	Customer	**Issue Date**	24/10/2022
Client Job Reference	---	**Receipt Temperature (°C)**	8
No. of Samples Registered	1 | Sampler: Customer	**Storage Temperature (°C)**	4
Priority	Normal	**Quote Number**	---

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Definitions

| <: Less Than | >: Greater Than | RP: Result Pending | MPN: Most Probable Number | CFU: Colony Forming Units | ---: Not Received/Not Requested | NA: Not Applicable | ND: Not Detected | LOR: Limit of Reporting | [NT]: Not Tested |

| ~: Estimated | ^ Subcontracted Analysis | TBA: To Be Advised | ** Potential Holding Time Concern | * Test not covered by NATA scope of accreditation | # Result derived from a calculation and includes results equal to or greater than the LOR

Authorised By

Name	Position	Accreditation Category
Glen Rangott	Environmental Laboratory Manager, Brisbane	Environmental Chemistry

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil SUBCO- A11367 Gladstone - Sediment Quality
Certificate Number	B1206606-B [R00]	**Sampler**	Customer
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Sample Information - *Client/Sampler Supplied*

Sample ID	B1206606-B/1
Sample Description	BE8

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil SUBCO- A11367 Gladstone - Sediment Quality
Certificate Number	B1206606-B [R00]	**Sampler**	Customer
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Analytical Results

Compound/Analyte	LOR	Units	BE8
Client Sample Description			
Client Sampling date/time			---
			B1206606-B/1
			Results
Acid Sulphate Soil - Cr Reduci			
ENV274 - Acid Sulphate Soil - Cr Reducible Sulphur Suite			
Chromium Reducible Sulphur	0.005	% S	0.042
pHkcl TAA	0.1	pH Units	9.4
ANCE (Acid Neutralising Capacity)	0.01	% CaCO3	13
Net Acid Soluble Sulfur	0.02	% S	N/A
Acid trail Titratable Actual Acidity	2	mol H+/t	<2
Sulfidic - TAA equiv	0.003	% pyrite S	<0.003
Chromium Reducible Sulfur Acidity Units	3	mol H+/t	26
Sulfur - KCl Extractable	0.02	% S	N/A
HCl Extractable Sulfur	0.02	% S	N/A
Net Acid Soluble Sulfur Acidity Units	10	mol H+/t	N/A
Net Acid Soluble Sulfur Equiv S% Pyrite	0.02	% S	N/A
Acid Neutralising Capacity Acid (ANCbt)	2	mol H+/t	2500
Acid Neutralising Capacity Equiv S%	0.02	% S	4.0
ANC Fineness Factor	---	factor	1.5
Net Acidity (Sulfur Units)	0.02	% S	0.04
Net Acidity (Acidity Units)	10	mol H+/t	26

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil SUBCO- A11367 Gladstone - Sediment Quality
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Analytical Results

Compound/Analyte	LOR	Units	BE8
Client Sample Description			
Client Sampling date/time			---
			B1206606-B/1
			Results
Acid Sulphate Soil - Cr Reduci - Continued			
ENV274 - Acid Sulphate Soil - Cr Reducible Sulphur Suite - Continued			
Liming Rate	1	kg CaCO3/t	2
S023-03A Particle Size Dist			
S023.03 - Particle Size Distribution by Hydrometer			
Particle Size Distribution	0.1	-	Please See Attached
S004.09A Total Phosphorus			
S004.09 - Determination of Total Phosphorus			
Total Phosphorus^	0.5	mg/kg	160
S004.03A Total Nitrogen			
S004.03 - Determination of Total Nitrogen			
Total Nitrogen^	20	mg/kg	270
S004.08A NOx as N			
S004.08 - Determination of NOx as N			
NOx as N^	0.1	mg/kg	<0.50
S004.04A TKN			
S004.04 - Determination of Total Kjeldahl Nitrogen			
Total Kjeldahl Nitrogen^	20	mg/kg	270

Analysis Location

All in-house analysis was completed by Symbio Laboratories - Subcontract Laboratory.

Client	BMT Commercial Australia Pty Ltd	**Project ID**	Soil SUBCO- A11367 Gladstone - Sediment Quality
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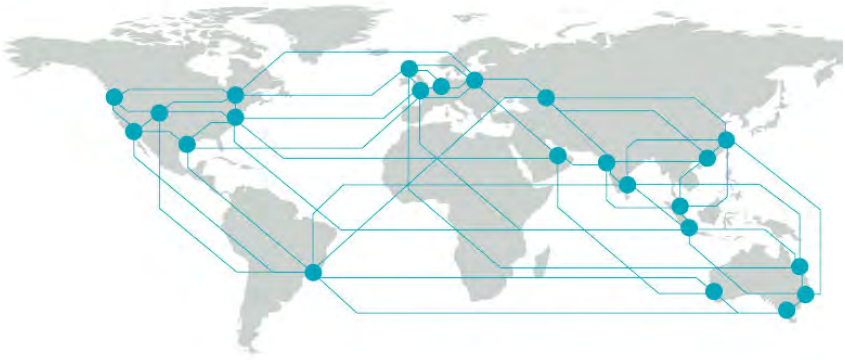
Report Comments

EAL Please note; Testing performed by an external subcontracted Laboratory.
Report no.: N3573
SAL Please note; Testing performed by an NATA accredited external subcontracted Laboratory.
Accreditation No.: 1884
Report no.: SAL28376D
Eurofins Please note; Testing performed by an NATA accredited external subcontracted Laboratory.
Accreditation No.: 1261
Report no.: 931802



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