DETAILED SITE INVESTIGATION
PREPARED FOR
SHINE MOTOR CORPORATION PTY LTD
8 NOONAN ROAD, INGLEBURN NSW, 2565

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EXECUTIVE SUMMARY

Benbow Environmental was commissioned by Shine Motor Corporation Pty Ltd (Shine) to prepare a Detailed Site Investigation (DSI) for the facility located at 8 Noonan Road, Ingleburn NSW ("the Site") legally titled Lot 25 and DP809258. The DSI was undertaken due to an earlier Preliminary Site Investigation that identified potential soil contamination identified in the Site history, most notably the existence of an abandoned underground petroleum storage system (UPSS) and to a lesser extent, the use of subterranean pits to collect and hold waste oil. The DSI assessed the level and extent of (potential) soil contaminates from historical and current site activities and located the UPSS.

Results from laboratory testing found the Site's soils contain low levels of heavy metals and petroleum hydrocarbons. These levels do not pose a threat to human health or the environment. The likely source of the contamination is leakage and spillage from the UPSS and possibly the subterranean oil collection pits.

It is highly recommended that the UPSS be decommissioned, with validation sampling and the results and associated environmental report submitted to Campbelltown Council who are the regulatory body overseeing management of UPSS in the Campbelltown LGA. Additionally, SafeWork require notification when a tank has been abandoned using the prescribed SafeWork NSW form.

With the UPSS decommissioned the Site is considered suitable for commercial/industrial use for the proposed development.

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ACRONYMS THAT MAY APPEAR IN THIS REPORT

ASS – Acid Sulfate Soil
AGT/AGST – Above Ground Storage Tank
ADI - Allowable Daily Intake
AEC – Area of Environmental Concern
BE – Benbow Environmental
BTEXN - Benzene, Toluene, Ethyl Benzene, Xylene, Naphthalene
CoC – Contaminants of Concern / Chain of Custody
CSM – Conceptual Site Model
DQO – Data Quality Objectives
DQI – Data Quality Indicators
DSI – Detailed Site Investigation
EIL – Environmental Investigation Level
EPA – Environmental Protection Authority (unless stated otherwise refers to NSW)
ESL – Environmental Screening Level
GSW – General Solid Waste
HIL – Health Investigation Level
HSL – Health Screening Level
LOR – Limit of Reporting
NATA – National Association of Testing Authorities
NEPM – National Environmental Protection Measure
PAH - Polynuclear Aromatic Hydrocarbons
PARCC (parameters) - Precision, Accuracy, Representativeness, Comparability and Completeness
PASS – Potential Acid Sulfate Soil
PFAS – Per and polyfluoroalkyl Substances
PFHxS - Perfluorohexanesulfonic acid
PFOS - Perfluorooctanesulfonic acid
PID – Photo Ionisation Detector
QA/QC - Quality Assurance and Quality Control
RAP – Remediation Action Plan
RPD - Relative Percent Difference
RSW – Restricted Solid Waste
SAC – Site Assessment Criteria
SAQP – Sampling Analysis Quality Plan
TPH - Total Petroleum Hydrocarbons
TRH – Total Recoverable Hydrocarbons
TWA - Time Weighted Average
UPSS – Underground Petroleum Storage System
VOC – Volatile Organic Compound

Spelling and Abbreviations

Spelling in this document follows Australian standard English except when referring to chemical names and abbreviations, where the International Union of Pure and Applied Chemistry (IUPAC) spelling is adopted (such as “sulfur” instead of “sulphur”).

1. INTRODUCTION

Benbow Environmental was commissioned by Shine Motor Corporation Pty Ltd (Shine) to prepare a Detailed Site Investigation (DSI) for the scrap metal facility located at 8 Noonan Close Ingleburn 2565 ("the Site") within Lot 25, DP809258.

This DSI has been prepared to support the regularisation of the existing metal recycling facility located at 8 Noonan Road, Ingleburn NSW 2565. The recovery of metal including steel, aluminium, ferrous and non-ferrous materials from various scrap items would enable manufacture of new products from recycled materials. The findings of a recent preliminary site investigation (PSI) identified potential for soil contamination based on the site history that included its use as a truck wash and mechanical repairs, the use of subterranean pits to collect and separate waste oil and water, and the discovery of an abandoned underground petroleum storage system.

This report has been prepared in accordance with the *Consultants Reporting on Contaminated Land; Contaminated Land Guidelines (NSW EPA 2020)* including *Sampling design guidelines parts 1 and 2 (NSW EPA 2022),* Guidelines for Consultants Reporting on Contaminated Sites (OEH 2011) and *The National Environment Protection (Assessment of Site Contamination) Measure 1999* (the ASC NEPM) *amended 2013*.

1.1 OBJECTIVE

The principal purpose of this report is to provide the Shine Management the findings of this investigation including;

- The extent and level/s of contamination;
- Risks that current levels potentially pose;
- Strategies for contaminant removal, and if appropriate, reduction of these to levels that do not pose an unacceptable risk to human health or the environment;
- Provide the appropriate site assessment criteria (SAC) for the evaluation of site contaminants against levels that do not posing an unacceptable risk to human or environmental health; and
- If required to provide a report to submit to Council detailing the above.

1.2 SCOPE OF WORK

The scope of works is provided below:

- Provide a brief outline of the site history, including geology, hydrology and geomorphologically processes;
- To investigate the extent of contamination by physically assessing the Site's soils and submitting soil samples for chemical analysis at a NATA accredited laboratory;
- Provide summary of works completed including sampling methodology;

- Provide the laboratory results and their interpretation;
- Compare contaminant levels to the appropriate criteria, including the current risk levels posed to human health and local ecological processes;
- Verify the presence, type, and extent of contamination (including levels) to the local environment;
- Provide a strategy for removal or reduction of contaminants to levels that do not pose an unacceptable risk to human health or the environment; and
- Provide a report detailing all the above.

1.3 PREVIOUS INVESTIGATIONS

Due to Shine's Development Application (DA) to Council, a number of investigations have been undertaken of the facility and land parcel. These include assessments of the Site's stormwater, air quality, hazardous materials management registry, waste management plan, environmental impact statement, a preliminary site investigation (PSI) plus other reports (not pertinent to contamination assessments) but required to support a DA.

The findings of the PSI (prepared by BE #241071_PSI_Rev5) are summarised as follows:

- The potential for soil contamination exists due to the Site's former use as a truck wash and vehicle repairer, the use of subterranean pits to collect and separate waste oil and water waste, and the discovery of an abandoned underground petroleum storage system.
- The stormwater assessment proposed the installation of a stormwater filter system to capture surface pollutants from the Site's hardstand to prevent contaminating the local receiving creek and to install rainwater tanks.
- The Hazardous materials Assessment found surface paint on site structures containing low levels of lead between 0.009% to 0.3%. This is at and above the current Australian Standards for allowable lead levels in paint of 0.009% legislated in 2021.

2. SITE IDENTIFICATION AND LOCATION

2.1 ZONING AND LAND USE

Site details are summarised below in Table 2-1. The Site's regional setting, aerial view and land zoning map are displayed in Figure 2-2 to Figure 2-3.

Table 2-1: Summary Site Details

Address:	Lot 25; DP809258
Lot and DP Numbers:	8 Noonan Road, Ingleburn NSW 2565
Area of Site	0.3 ha
Local Government Area:	City of Campbelltown
Regulatory Authority:	Campbelltown City Council
Parish of:	Minto
County of:	Cumberland
Land Zoning:	E4 – *General Industrial*
Coordinates:	-33.989003 (latitude) 150.862721 (Longitude)
Geocentric Datum:	GDA94 - Geographic

Figure 2-1: The Site's Regional Setting

Source: Six Maps (2014)

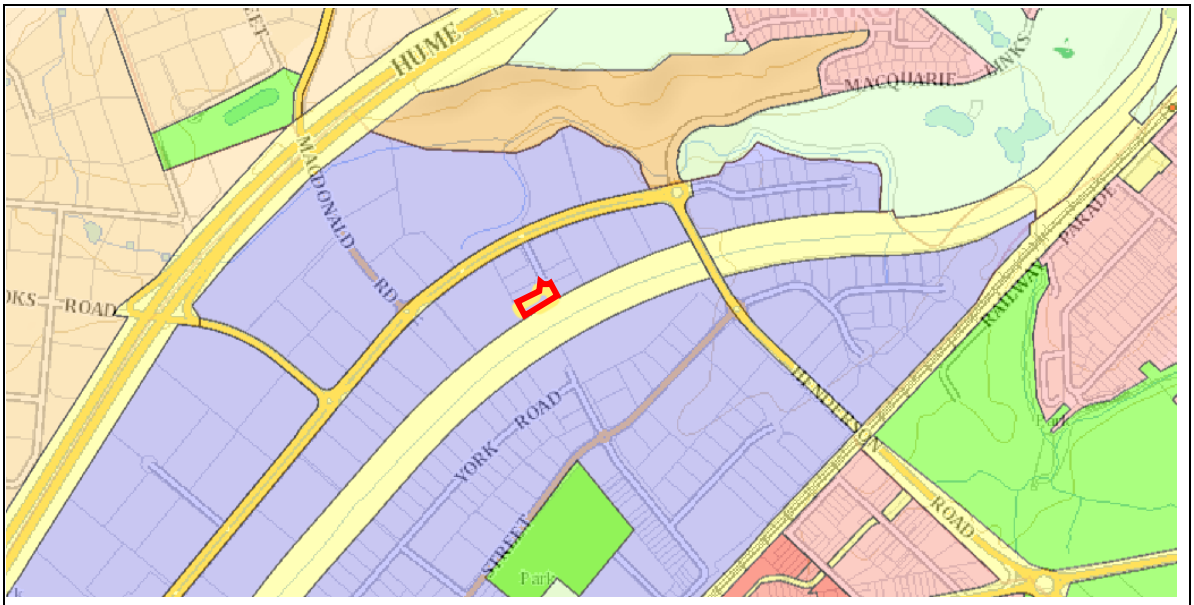
↑N Not to scale	Site Cadastral Boundary	Benbow Environmental 27-29 Sherwood Street, Northmead NSW 2152

Figure 2-2: Aerial Photograph of the Site Displaying the Site Boundaries

Source: Google Earth (image date 14/03/2024)

↑N Not to scale	LEGEND: Site Cadastral Boundary	Benbow Environmental 27-29 Sherwood Street, Northmead NSW 2152

Figure 2-3: Cumberland Council LEP 2021 – Land Zoning Map (extract)



Source: ePlanning Spatial Viewer (2024)

N

Not to scale

LEGEND

Lot Cadastral Boundary (approx.)

Zone

B1	Neighbourhood Centre	RE1	Public Recreation
B2	Local Centre	RE2	Private Recreation
B5	Business Development	RU1	Primary Production
B6	Enterprise Corridor	RU2	Rural Landscape
E1	National Parks and Nature Reserves	RU4	Primary Production Small Lots
E2	Environmental Conservation	RU5	Village
E3	Environmental Management	SP1	Special Activities
E4	Environmental Living	SP2	Infrastructure
IN1	General Industrial	W1	Natural Waterways
IN2	Light Industrial	W2	Recreational Waterways
R1	General Residential		
R2	Low Density Residential		
R3	Medium Density Residential		
R5	Large Lot Residential		

Benbow Environmental
27-29 Sherwood Street,
Northmead NSW 2152

2.2 SITE CONDITION AND SURROUNDING ENVIRONMENT

The Site is located at the end of Noonan Road, a short cul-de-sac off Williamson Rd, within Ingleburn's industrial area. Site elevation is approx. 27 m (AHD). The land parcel is predominantly oblong in shape apart from a small section that extends upwards towards the curved driveway entry/exit off Noonan Rd. The perimeter is marked by a steel picket fence apart from its northern boundary where the neighbouring building abuts the boundary. A lockable sliding gate secures the Site after hours.

The Site contains a long industrial building situated against its northern perimeter. It comprises a small two-storey administrative office of approximately 154 m^2 at the eastern end that is attached to a larger oblong structure containing an indoor industrial workspace area of

approximately 590 m^2. The buildings are constructed from a mix of brick, steel and prefabricated concrete. The indoor workspace and external surfaces are covered by concrete hardstand which the PSI described as being good. An unpaved stormwater easement is located along the length of Site's eastern boundary. The Site is predominantly flat with a slight rise from Noonan Rd before it levels and then gently slopes southeast towards the easement.

Surface water (when not hampered by site obstructions), flows into eight stormwater inlets mostly located along the hardstand's perimeter, before entering into the municipal stormwater located in the easement. Water is then discharged into the stormwater channel located approx. 46 m south of Site. The channel, euphuistically titled Bunbury Curran Creek, has a concrete bed and lays at the bottom of a long engineered grassy swale. The swale collects stormwater and surface runoff from sites located east and west of the subject Site. Some surface water leaves the Site through the driveway into Noonan Rd.

Small woody vegetation exists along the edges of Site's eastern, western and southern perimeter. A lockable sliding gate secures the Site after hours.

Natural Hazards

The Site is not at risk from bushfire but is subject to flood development controls. The soils have a very low acid sulfate risk but a high salinity risk. Annual rainfall is approx. 616 mm (Holsworthy AWS).

2.3 HISTORICAL INFORMATION

The Site was newly constructed in the late 90s after the surrounding area had been developed during the 1980s. Previous site uses included; for mechanical repairs, truck and car washing, maintenance, hiring and storage of construction equipment.

Neighbouring sites include, to the north, *Hex Masonry* stone cutting, *South West Containers*, shipping container supplier (east), and to the west, *Sonoco Consumer Packaging*, a packaging supplier. Bunbury Curran Creek is to the south.

2.4 AREAS OF ENVIRONMENTAL CONCERN

Figure 2-4 below shows the location of the areas of environmental concern (AEC) as identified during the site investigation.

During the PSI, the existence of an underground petroleum storage system (UPSS) was unearthed. Before environmental site work was conducted, ground penetrating radar was deployed to both clear the areas for the proposed boreholes and to locate the suspected tank/s. Both activities proved successful with the location of two underground storage tanks, identified beneath the hardstand end to end, situated between the Site's western boundary and western end of the building. A GIPA request to Council failed to find any documentation regarding the decommissioning or even the existence of the UPSS. Therefore, it is assumed the tanks present a current hazard and will need to be removed or permanently decommissioned.

This will be (again) brought to Shine's attention (who hold the site tenancy) but outside the scope of this DSI.

Additionally, two small subterranean pits, located within the last (western) room of the building, were used to collect oily water from dismantled engines. Subsurface soils in this area are potentially at risk from hydrocarbons entering through pathways in the hardstand from this practise. The DSI will sample soils across the whole site with special attention directed within these two (adjoining) areas to assess potential hydrocarbon release into the soils from the UPSS and pits.

Figure 2-4: Aerial Image Showing Areas of Environmental Concern, Sample Boreholes and Identified UPSS Infrastructure

Not to scale	Imaged date January 2014		Benbow Environmental 27-29 Sherwood Street Northmead NSW 2152

3. GEOLOGY, SOILS AND HYDROGEOLOGY

3.1 REGIONAL GEOLOGY AND SOILS

Information for regional geology, soil landscape and hydrogeology has been sourced from eSPADE, an interactive web portal of the NSW Government (Reference: espade.environment.nsw.gov.au © State of NSW and Department of Planning, Industry and Environment 2024).

Geology: Triassic Age residual (erosional) hills and Quaternary Age alluvial deposits.

Wianamatta Group shales and Minchinbury Sandstone.

Topography: Flat to gently sloping alluvial plain with occasional terraces or levees providing low relief. Slopes <5%. Local relief <10m.

3.2 REGIONAL SOILS

Soil Landscape Name*:* South Creek (sc)

Soil Landscape Type*:* Alluvial, derived from shale and sandstone.

Soil Parent Material*:* Triassic Wianamatta Group (Bringelly Shale, Ashfield Shale and Minchinbury Sandstone). Quaternary alluvium (fine-grained sand, gravel, silt and clay).

This landscape contains Triassic sedimentary rocks that comprises of shale, carbonaceous claystone, laminite, lithic sandstone and rare coal and recent alluvial sands and gravels derived from the surrounding rocks which are present along current streams.

Soils are often very deep layered sediments over bedrock or relict soils. Where pedogenesis (natural soil development) has occurred Structured Plastic Clays or Structured Loams in and immediately adjacent to drainage lines; Red and Yellow Podzolic Soils are most common terraces with small areas of Structured Grey Clays, leached clays and Yellow Solodic Soils. Due to the accumulation of heavy clays, soils can become (seasonally) waterlogged with some local areas experiencing perched (elevated) water.

3.2.1 *The Site's Position Within the Landscape*:

During redevelopment, the area's surface has been modified and re-engineered, altering much of the original topography. Nevertheless, the Site's landscape position appears to be on a former terrace above a local floodplain. Soils are derived from alluvial material deposited from flooding and colluvial material from hillslopes.

General Soil Description

For low terrace soils:

Topsoil*:*

Sandy loam to sandy clay loam (2–50 cm layer) (sc1);

Subsoils:

A 15 cm layer of an apedal massive (i.e. having no structure) clay loam (sc2) overlies a 60–85 cm whole-coloured medium to heavy clay (sometimes medium textured sandy clay) (sc3) (Red and Yellow Podzolic Soils).

3.3 ACID SULFATE SOILS

The site has a very low risk of acid sulfate soils

3.4 SURFACE AND LOCAL HYDROGEOLOGY

Hydrological Landscape Name: Upper South Creek Variant A

Landscape Hydrological Characteristics:

Limitations to development: Saline scalds (breaks in slope and in lower slope positions), sheet erosion, locally severe salt scalding and associated gully erosion along drainage depressions and fluvial erosion (including streambank erosion).

3.4.1 Site Specific Hydrological Conditions

The Site does not contain any permanent water bodies, the closest waterbody (Bunbury Curran Creek) is located 46 m south of the Site's southern boundary (see Figure 3-1 below). Bunbury Curran Creek eventually flows into the Georges River some 4.5 km east of the Site.

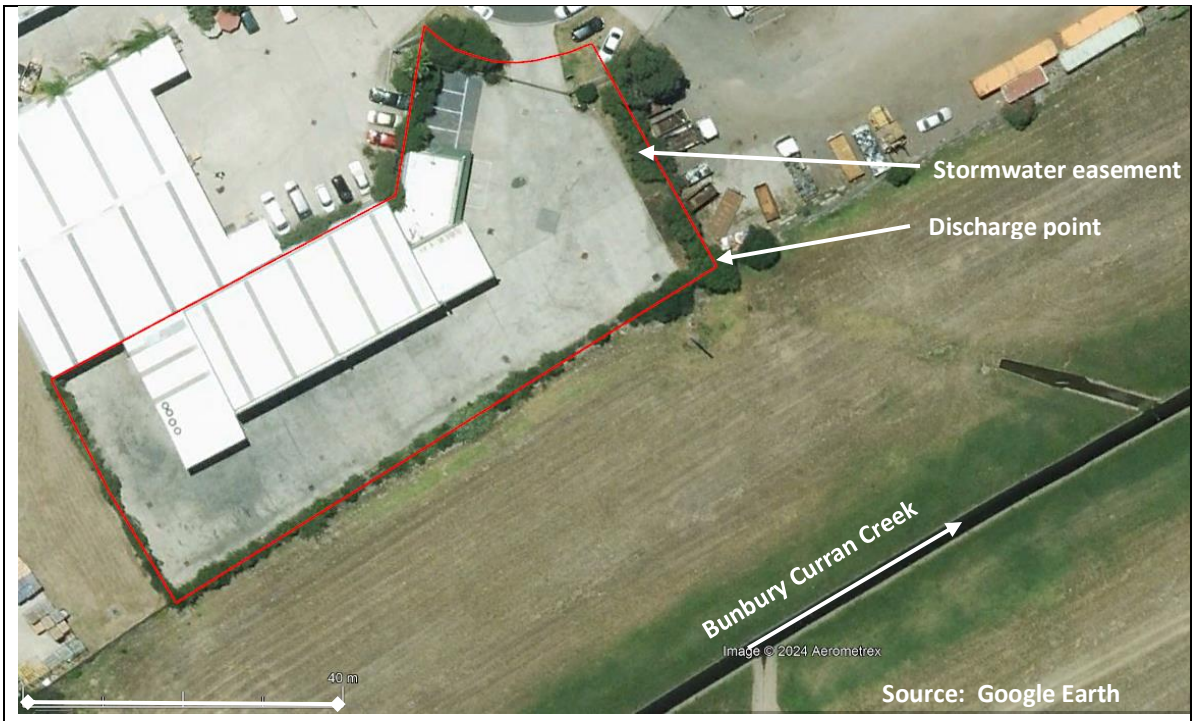
Regional groundwater is predicted to be at an approx. depth of 2-6.0 m. Groundwater beneath the Site is predicted to generally flow south to southeasterly towards Bunbury Curran Creek.

Bunbury Curran Creek flows easterly, with the elevation of its concrete bed (as measured below the Site) approx. six metres lower than the Site's elevation.

3.5 FLOODING POTENTIAL

The Site's northeastern corner and the easement would likely flood during a 1% AEP. During a PMF event, water would cover the whole site.

Figure 3-1: Location of the Nearest Waterbody to the Site



40 metres

↑N Not to scale	**LEGEND:** Site cadastral boundary	Benbow Environmental 27-29 Sherwood Street, Northmead NSW 2152

4. LOCAL FLORA AND FAUNA SPECIES

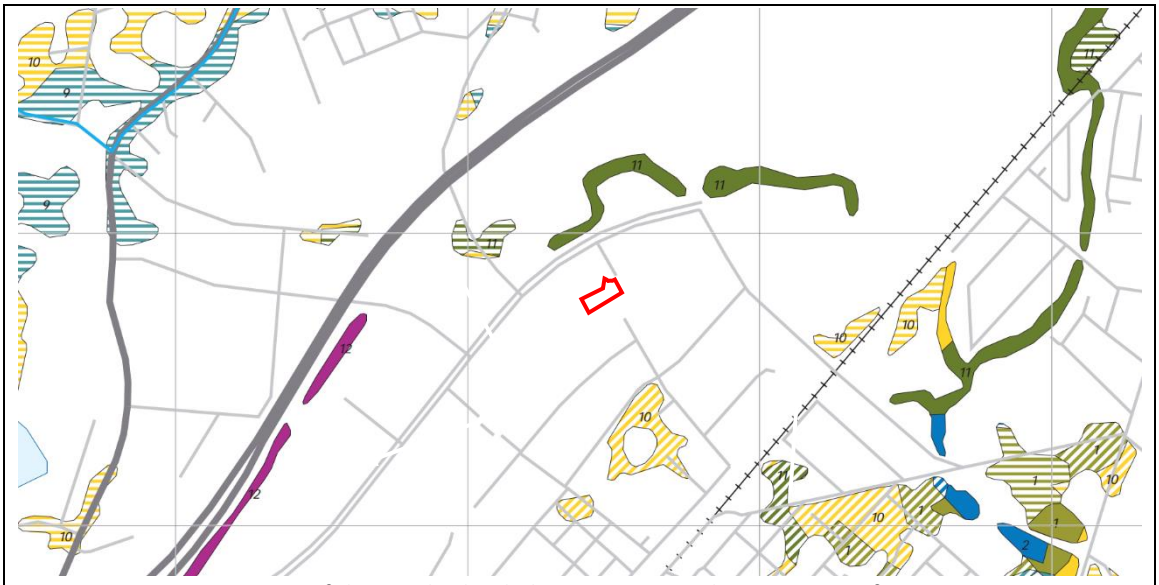
With use of the NSW National Parks & Wildlife Services *Native Vegetation of the Cumberland Plain* map, a number of endangered ecological communities listed under the *Threatened Species Conservation Act 1995* (as of 1st June 2002) in close proximity to the site have been identified.

These endangered ecological communities are as follows:

- Alluvial Woodland;
- Shale Hills Woodland;
- Shale Plains Woodlands;
- Riparian Forest;
- Shale/Sandstone Transitional Forest *(low sandstone influence)*; and
- Shale/Sandstone Transitional Forest *(high sandstone influence)*.

An extract of the endangered ecological communities map with context of the site is provided in Figure 4-1 below.

Figure 4-1: Map Showing Location of Endangered Species



Source: *Native Vegetation of the Cumberland Plain, Western Sydney – Map 6 of 16*

↑N Not to scale	**LEGEND** Site Cadastral Boundary Alluvial Woodland Shale Hills Woodland Shale Plains Woodlands Riparian Forest Shale/Sandstone Transitional Forest *(Low Sandstone Influence)* Shale/Sandstone Transitional Forest	Benbow Environmental 27-29 Sherwood Street, Northmead NSW 2152

	(High Sandstone Influence) >10% Canopy Cover <10% Canopy Cover <10% Canopy Cover (Urban)	

4.1 ALLUVIAL WOODLAND

This habitat provides a home for several plants and animal special considered threatened. A small sample of these threatened species include:

- **Amphibians**
  - *Litoria aurea;* and
  - *Litoria brevipalmata;*
- **Birds**
  - *Ardea ibis;* and
  - *Ergetta garzetta;*
- **Mammals**
  - *Acrobates pygmaeus;* and
  - *Minopterus australis*
- **Reptiles**
  - *Bellatorias major;*
  - *Varanus varius*
- **Plants**
  - *Eucalyptus bosistoana;*
  - *Acacia floribunda*.

Pockets of this ecological community are noted in the *Native Vegetation of the Cumberland Plain* map to the north, east and northeast of the site.

4.2 SHALE HILLS WOODLAND

This Shale Hills Woodland ecological community mainly occurs on the elevated and sloping southern half of the Cumberland Plain. The key canopy species found within the Shale Woodland include *E. moluccana*, *E. tereticornis* and *E. crebra*. The primary shrubs found within the community are *Bursaria spinoa*, *Acacia implexa*, *Indigofera Australia* and *Dodonaea viscosa*.

Shale Hills Woodland is known to provide a home for several plants and animal special considered threatened.

The following are a small sample of some threatened flora and fauna species known to be present in the area:

- **Invertebrates**
  - *Meridolum corneovirens*
- **Birds**
  - *Lathamus discolor;*
  - *Xanthomyza Phrygia; and*
  - *Callocephalon fimbriatum.*
- **Mammals**

- *Chalinolobus dwyeri;*
- *Dasyurus maculata;*
- *Phascolarctos cinereus; and*
- *Pteropus poliocephalus.*

- **Plants**
  - *Persoonia nutans;*
  - *Pimelea spicata;*
  - *Pultenaea pedunculata.*

Pockets of this ecological community are noted in the *Native Vegetation of the Cumberland Plain* map to the northwest of the site.

4.3 SHALE PLAINS WOODLAND

The Cumberland Shale Plains Woodlands are known to house a considerable variety of key vegetation species. These include trees (e.g. *E. moluccana, E. crebra, Acacia decurrens)*, Shrubs (e.g. *Acacia falcata, Breyna oblongifolia*), grasses (e.g. *Arista ramose, Cumbopogon refactus*) and wildflowers (e.g. *Asperula conferta, Wahlenbergia gracillis*).

This habitat provides a home for several plants and animal species considered threatened. These include:

- **Birds**
  - *Lathamus diclour;* and
  - *Anthochaera phygia*.
- **Mammals**
  - *Dasyrus malvlatus maculatus*; and
  - *Pteropus poliocephalus.*
- **Plants**
  - *Acacia pubescens;*
  - *Eucalyptus benthamii;* and
  - *Pimela spicata.*

Small pockets of Shale Plains Woodland are noted in the *Native Vegetation of the Cumberland Plain* map to south, east, southeast, southwest and northwest of the Site.

4.4 SHALE/SANDSTONE TRANSITIONAL FOREST

The Shale/Sandstone Transitional Forest within the Cumberland Plain is an endangered ecological community known to house a variety of key vegetation species. The species comprising the canopy include (but is not limited to) *Eucalyptus punctata, E. crebra, and Angophora bakeri*.

The shrub species include but is not limited to *Bursaria spinosa*, *Kunzea ambigua*, *Persoonia linearis*, *Ozothamnus diosmifoluis* and *Hibbertia aspera*.

Grasses found within the community include (but are not limited to) *Aristida vagans*, *Austristipa pubescens*, *Cheilanthes sieberi*, *Cheilantes sieberi*, and *Dichondra repens*.

This habitat provides a home for several plants and animal species considered threatened. Some of these include:

- **Birds**
  - *Phyholaemus saggitatus;*
  - *Climacteri picummus cixtoriae;*
  - *Lichenostomus fuscus.*
- **Mammals**
  - *Saccolaimus flaviventris.*
- **Reptiles**
  - *Varanus rosenbergii*.
- **Amphibians**
  - *Pseudophryne bibroni.*
- **Plants**
  - *Dillwynia tenuifolia;*
  - *Melaleuca deanei;*
  - *Persoonia bargensis;*
  - *Pimelea curviflora;*
  - *Pterostylis Saxicola*.

Pockets of this ecological community are noted in the *Native Vegetation of the Cumberland Plain* map to the southeast of the Site.

4.5 RIPARIAN FOREST

The Riparian Forest within the Cumberland Plain are found along stream lines or adjacent to swampy areas and are known to house a variety of key vegetation species. These include but is not limited to tree species (e.g. *Eucalyptus botryoides, E. elata, Backhousia myrtifolia and Angophora subcelutina*) and shrubs (e.g. *Acacia floribunda, Hymenanthera dentata, Lomatia myricoides, Austrostipa ramosissima and Poa affinis*).

This habitat provides a home for several plants and animal species considered threatened. However, specific threatened species within Riparian Forests of the Cumberland Plain were not able to be identified as these are shared between many bordering ecological communities.

Pockets of Riparian Forest are noted in the *Native Vegetation of the Cumberland Plain* map to the west and southwest of the Site.

4.6 NSW BioNet

The NSW BioNet is an online biodiversity data repository managed by the *Department of Climate Change, Energy, the Environment and Water*. It utilises both government and credible community collected data (citizen science) to document and manage biodiversity within NSW.

A search for identified species within the Campbelltown LGA in close proximity to the site was conducted on 24/09/2024. The timeframe of the search were species identified between 1st January 2019 to 1st January 2024. A map of the identified species in close proximity to the subject site is found in Figure 4-2 below.

Figure 4-2: Recorded Species in Close Proximity to the Subject Site (2019-2024)

Source: *NSW Government BioNet Atlas*

↑N Not to scale	**LEGEND** Site Cadastral Boundary Recorded Species	Benbow Environmental 27 Sherwood Street, Northmead NSW 2152

A list of the species identified on the above map provided by the BioNet Atlas are as follows:

- Australian Brush Turkey (*Alectura lathami*);
- Australian Wood Duck (*Chenonetta jubata*);
- Australian White Ibis (*Threskiornis moluccus*);
- Bush Rat (*Rattus fiscipes*);
- Common Wallaroo (*Osphranter robustus*);
- Eastern Barn Owl (*Tyto javanica*);

- Eastern Blue-tongue (*Tiliqua scincoides*);
- Eastern Brown Snake (*Pseudonaja textilis*);
- Eastern Snake-necked Turtle (*Chelodina longicollis*);
- Flying Fox (*Pteropus sp.*);
- Native Wandering Jew (*Commelina cyanea*);
- Noisy Miner (*Manorina melanocephala*);
- Rainbow Lorikeet (*Trichoglossus haematodus*);
- Red-bellied Black Snake (*Pseudechis porphyriacus*); and
- Sulphur-crested Cockatoo (*Cacatua galerita*).

5. CONCEPTUAL SITE MODEL

A conceptual site model (CSM) has been prepared in accordance with the National Environment Protection (Assessment of Site Contamination) Measure as amended in 2013. The CSM is a representation of site-related information regarding contamination sources, receptors and exposure pathways between sources and receptors. The CSM is presented below in Table 5-1. The CSM must show all potential contaminant pathways, even if the assessed risk is considered as being very low.

5.1 HUMAN AND ECOLOGICAL RECEPTORS

5.1.1 Human Receptors and Risk

Human onsite receptors include site workers, contractors, clients and visitors to the site.

Offsite receptors include workers, contractors, clients or visitors to the neighbouring premises and pedestrians on Noonan Rd.

Based on the PSI's Conceptual Site Model (CSM), the risk to human receptors either onsite or offsite was considered as low. The greatest risk to human receptors includes; disturbance of the UPSS, and exposure to site contaminants through ingestion or dermal contact. Good practise and management of OH&S would minimise this risk.

5.1.2 Risk to Ecological Receptors

Access to the Site's soils is very limited for fauna species due to the concreted surface. The 4.0 m wide easement along the Site's eastern boundary contains some woody vegetation and has exposed soils in parts. The low levels of contaminants found in soil samples, is centred in the Site's western half. The easement receives surface water from the subject Site and its eastern-bordering neighbour. Potentially, surface water may have deposited contaminants onto the easement. However, based on site observations, these are more likely to enter into any of the seven stormwater pits. External storage of oily waste materials, tended to be located towards the Site's middle and western areas and primarily internally, where dismantling, stripping and sorting the waste occurs.

The easement's surface was observed to contain much litter (plastics, paper, fast food containers etc.). Although unsightly, these do not pose a serious contamination risk.

A narrow garden bed containing low woody vegetation, lines the Site's southern and western boundaries. The bed is elevated having a concrete edge approx. 15 cm high. This would prevent potentially contaminated surface water from infiltrating the bed's soil. Additionally, it was observed during three site visits, that little to no dust is produced during normal Site activities, thus it seems unlikely that any significant levels of contaminants would be deposited from dust settling on the soils.

Therefore, the risk to ecological receptors onsite is considered to be low. However, a risk to receptors off site exists from surface water potentially carrying contaminants into the stormwater system and this being discharged into Bunbury Curran Creek below the Site.

Table 5-1: Conceptual Site Model Showing Complete Source-Pathway-Receptor Linkages

Known and Potential Primary Sources of Contamination	Primary Release Mechanism	Potentially Impacted Media	Contaminants of Potential Concern	Potential Receptors		Exposure Pathways		Risk of Contamination	
				Human	Environment	Human	Environment	Human	Environment
Scrap metal wastes	Disturbance of materials, leaks through cracks in hardstand. Stormwater	Soils, surface water	Heavy metals; Hydrocarbons; BTEX	Persons on site, neighbouring premises if contamination migrates off site	Soil; Waterways; native habitats	Dermal contact, inhalation, ingestion	Leakage into soil, groundwater Direct contact, ingestion (from foraging)	Moderate	Low - moderate
Use and Storage of Hazardous Materials	Spills/leaks from handling/storage	Soil, stormwater runoff, groundwater	Heavy metals; Hydrocarbons; BTEXN, VOCs	Persons on site, neighbouring premises if contamination migrates off site	Soil; Waterways; native habitats	Dermal contact, ingestion, inhalation dust/vapour	Leakage into soil, groundwater Direct contact, ingestion (from foraging)	Moderate	Low - moderate
Vehicles/ machinery stored externally	Corrosion / worn or leaking fuel/oil/hydraulic lines	Soil, stormwater runoff, groundwater	Hydrocarbons; BTEX	Persons on site, neighbouring premises if contamination migrates off site	Soil; Waterways; native habitats	Dermal contact, ingestion, inhalation dust/vapour	Leakage into soil, groundwater. Direct contact, (e.g. foraging)	Moderate	Low
Sediments/fluids on external hardstand	Disturbance of material, rainfall (stormwater drains)	Soil, storm/surface water, groundwater	TSS, heavy metals, hydrocarbons	Persons on site, neighbouring premises if contamination migrates off site	Soil; Waterways; native habitats	Dermal contact, ingestion	Leakage into soil, groundwater. Direct contact, (e.g. foraging)	Moderate	Medium
Subterranean pits (oils)	Cracks in hardstand / pits, spills during removal of oil	Soil, groundwater	Hydrocarbons; BTEX	Neighbouring premises if contamination migrates off site	Soil; Waterways; native habitats	Dermal contact, ingestion	Leakage into soil, groundwater. Direct contact, (e.g. foraging)	Moderate	Moderate
Underground fuel tank	Corrosion of tank/pipes, Puncture of tanks	Soil, groundwater	Hydrocarbons, lead, BTEX	Neighbouring premises if contamination migrates off site	Soil; Waterways; native habitats	Dermal contact, inhalation (vapour risk), ingestion	Leakage into soil, groundwater. Direct contact (foraging)	Med -high	Moderate

5.2 CONTAMINANTS OF CONCERN

The following list of contaminants were chosen based on the Site history.

- Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene (BTEXN);
- Heavy metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc);
- Polycyclic Aromatic Hydrocarbons (PAH);
- Phenols;
- Halogenated Organic (Aliphatic and Aromatic) Compounds; and
- Asbestos.

5.2.1 Total Recoverable Hydrocarbons (NEPM 2013) Fractions

TRH refers to the extracted biogenic and petrogenic hydrocarbon components of a sample. TRH levels are the values considered by the NEPM for site assessment of hydrocarbon risk. Although it includes non-petroleum sources of hydrocarbons, this allows for a conservative (i.e. 'safer') screening assessment to be set for petroleum hydrocarbon contamination.

Hydrocarbon chemicals are measured in 'fractions', each fraction representing one of four carbon groupings (F1, F2 etc.). The groupings are based on the length of the chemicals' carbon chains. The volatile chemicals (those that evaporate readily and are more toxic), belong in the lower fractions (F1 and F2), and have shorter carbon chains, while F3 and F4 are non-volatile with longer chains and do not pose a vapour risk. Risk from these fractions is through dermal contact and ingestion (or inhalation) of contaminated soil.

5.2.2 BTEXN

BTEXN refers to Benzene, toluene and xylenes and Naphthalene. BTEX is sourced from crude oil where these chemicals occur naturally. Naphthalene is derived from coal tar. Benzene is a known carcinogen with Naphthalene classed as a possible human carcinogen (Wilbur and Bosch 2004). BTEX is used as solvents in paint and coating products among its other uses. Naphthalene is used in manufacturing a wide variety of commercial products such as plasticisers, synthetic resins, plasterboard, paints and insecticides. BTEXN can contaminate soil, air and water.

The risk pathway for BTEXN exposure is primarily from airborne emissions, either after combustion, from off-gassing or vapour release.

5.2.3 Heavy Metals

Heavy metals can be a major threat to human health due to their ability to cause membrane and DNA damage, and to disturb protein function and enzyme activity. Lead can impact neurological development or functioning, with children most at risk. Heavy metals enter the human body by ingestion, dermal (skin) contact, or by inhalation (Witkowska et al. 2021).

Eight metals were included in the analysis.

5.2.4 Polycyclic and Monocyclic Aromatic Hydrocarbons (PAH and MAH)

PAHs are formed from the incomplete combustion of organic material such as coal, petrochemicals or wood and enter the environment as a gas or attached to dust particles such as soot. PAHs can be colourless, white or a pale yellow green. Receptor pathways include inhalation, ingestion and dermal. Typically, a variety of PAHs are formed and released together from the source. Depending on the exposure pathway, the PAH combination and dosage, a variety of health risks exist from PAHs including kidney, blood and respiratory systems diseases, and lung cancer (Mumtaz and George 1995). Common PAHs include naphthalene, chrysene and benzo(a)pyrene, a known carcinogen.

The list of MAH compounds includes styrene, BTEX and other aromatic solvents. Exposure (and subsequent absorption) of MAH solvents can increase oxidative stress and levels of cytokine (protein messengers that regulate immune and inflammatory responses) in humans. This brings changes in glucose metabolism and the induction of insulin resistance (Won et al. 2011). Some neurobehavioral and neuroendocrine changes have been reported in workers occupationally exposed to styrene and solvent mixtures (Mutti et al. 1988).

5.2.5 Phenolic Compounds

Phenols are both naturally occurring and man-made. They are used to produce plastics, added to cleaning products and used as a disinfectant. Commercially derived phenol is a liquid with an odour described as sickeningly sweet and acrid. It is soluble in water. Exposure pathways include dermal (is easily absorbed through the skin and is an irritant), ingestion and vapour. High doses of phenols either orally or dermally have been reported to cause acute toxicity and death. Studies indicate phenols as being potentially genotoxic. Other negative health impacts include diseases of the liver, kidneys, cardiovascular system and neurological (Crawford et al 2008).

5.2.6 Halogenated Organic (Aliphatic and Aromatic) Compounds

Halogens are a group of six non-metal elements in the periodic table and are very reactive. Halogenation is a chemical reaction where a halogen is added to a hydrocarbon by replacing one of its hydrogen atoms to form a halogenated compound.

Halogenation reactions are highly useful and used to create pharmaceutical products, disinfectants, refrigerants, polymers, fuel additives, fire retardants and many other products. Their use is widespread and can persist in the environment. Halogenated compounds can be toxic to human and animal species with exposure leading to negative health effects in reproductive, neurological, immunological, and endocrine systems, and also implicated in behavioural and carcinogenic health effects.

Exposure can occur through dermal contact, inhalation and ingestion, typically from consuming contaminated water or food (Kodavanti et al. 2023).

5.2.7 Asbestos

Asbestos Containing Materials (or Asbestos *Cement* Materials) were used extensively in NSW in all types of construction between the 1920s and late 1980s, when ACM began to be phased out in favour of asbestos-free products. However, the total ban on ACM use did not come into force until 31st December 2003. Buildings constructed before 1985 almost certainty contain ACM, while those built between 1985 and 2003 may contain ACM. Areas within buildings where ACM is often found includes; eaves, internal and external wall cladding, ceilings, downpipes and guttering and particularly in internal wet areas such as bathrooms, laundries and kitchens.

Exposure is from inhalation of asbestos fibres. Disease risk increases with the number of fibres inhaled (such as asbestosis). Mesothelioma (a cancer) requires only very low fibre levels for susceptible people (NSW Health 2017).

5.3 Site Assessment Criteria (SAC)

The SAC is a set of numbers that are used as a yardstick, that is applied against a site's contaminant levels. A site investigation establishes present and future risks potentially existing for human and environmental health from a contaminated site. In order to evaluate the perceived risks, site criteria is developed. These are the values of the tolerable limit of a contaminant/s that do not pose a threat to human or ecological health. These values are sourced from authoritative sources such as the NEPM (see following paragraph and Chapter 10 REFERENCES). The level of contaminants at a site are established from the levels found in samples collected at the site (as determined from laboratory analysis). These values are then applied against the SAC, to establish the level of risk posed from contaminants. The following outlines the SAC values adopted for this assessment.

Laboratory results obtained from field sampling have been evaluated as a Tier 1 assessment, against the investigation and screening levels outlined in Schedule B1 of the National

Environment Protection (Assessment of Site Contamination) Measure 2013 (ASC NEPM). These guidelines have been endorsed by the NSW EPA under the *Contaminated Land Management* (CLM) *Act*, 1997. The ASC NEPM provides soil investigation and screening levels for commonly encountered contaminants which are applicable to four generic land use settings and include consideration of the soil type and the depth and age of contamination, where relevant. When criteria are absent from the NEPM, other authoritative sources are sought, such as the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment, Adelaide SA, (CRC Care), the US EPA or the World Health Organisation.

The soil investigation and screening levels are described in the NEPM as follows:

- **Health Investigation Level (HIL)**

  Health investigation levels (HILs) are generic assessment criteria designed to be used in the first stage of an assessment of potential risks to human health from chronic exposure to contaminants. HILs are generic to all soil types and generally apply to the top 3 m of soil.

- **Health Screening Level (HSL)**

  Health Screening Levels (HSLs) have been derived for BTEX, naphthalene and four carbon chain fractions, as adopted in NEPC (2013). HSLs have been calculated to account for depth (from below surface to >4 m), soil textures (sand, silt, and clay) and the land use settings.

- **Ecological Investigation Level (EIL)**

  Ecological Investigation Levels (EILs) have been developed for selected metals and organic compounds and are applicable for assessing risk to terrestrial ecosystems. EILs depend on land use scenarios and specific soil physiochemical properties, such as pH, cation exchange capacity (CEC), iron and carbon content, etc. They generally apply to the top 2 m of soil.

- **Ecological Screening Level (ESL)**

  Ecological screening levels (ESLs) have been developed for selected petroleum hydrocarbon compounds and total petroleum hydrocarbon (TPH) fractions and are applicable for assessing risk to terrestrial ecosystems. ESLs broadly apply to coarse- and fine-grained soils and various land uses. They are generally applicable to the top 2 m of soil.

- **Management Limits**

  Petroleum hydrocarbon management limits ('management limits') are only applicable to petroleum hydrocarbon compounds. They are valid as screening levels following evaluation of human health and ecological risks, and risks to groundwater resources. Management limits apply to all soil depth, based on site-specific considerations for land use and soil type.

The four generic land use settings include:

- HIL A - residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry) and includes; children's day care centres, preschools and primary schools;
- HIL B - residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats;
- HIL C - public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. It does not include undeveloped public open space (such as urban

bushland and reserves) which should be subject to a site-specific assessment where appropriate; and

- HIL D - commercial/industrial such as shops, offices, factories, and industrial sites.

[NEPM 2013]

5.3.1 Field Assessment of Soil

Field assessment during sample collection revealed surface soils were primarily sands (fill material) over silty sands over deeper clays (see 7.1 for discussion of site soils). The SAC is shown below in Table 5-4. A conservative approach has been adopted with the soil classification being sand.

5.3.2 Soil Classification for SAC

The ASC NEPM 2013 considers three different soil textures and derives HSLs for each different soil classification as per AS 1726. Table 5-2 below displays soil classification for HSL.

Table 5-2: HSL Soil Classifications

Soil Type	Description
Sand	Coarse-grained soil
Silt	Fine-grained soil - silts and clays (liquid limit <50 %)
Clay	Fine-grained soil - silts and clays (liquid limit >50 %)

The Australian Standard for geotechnical site investigations, published in 2017 (AS 1726:2017), denotes soil material as either being coarse (sands/gravels) or fine (clay/silts) based on the percentage of coarse to fine material within the soil matrix. Previously, the delineation was determined by the majority rule i.e. soils containing more than 50% of material >75 micron was considered as being coarse. The new standard changes the boundary with:

- Soil material having >65% content above 75 micron is considered as coarse (sand or gravel);
- Soil material having >35% content below 75 micron is considered as fine (silt or clay).

This is because a relatively small volume of fines material can alter a soil's behaviour. The demarcation is slightly different to the ASC NEPM but has been adopted for this assessment. The area of investigation's health screening levels is summarised below in Table 5-3 with the SAC displayed in Table 5-4.

Table 5-3: Summarised Investigation/Screening Levels for the Subject Site

Type	Description
HIL-D	Industrial/commercial
Sand	Coarse-grained soil

The SAC Default Guideline Values (DGV) have been sourced from the NEPM and CRC Care.

Table 5-4: The Site Assessment Criteria

Contaminants of concern	Units	LOR	HIL-D[1]	HSL[2]	EIL[3]	ESL[4]		Management Limits	
						coarse	fine	coarse	fine
Total Recoverable Hydrocarbons (NEPM fractions)									
C6 - C10 Fraction (F1)	mg/kg	10		5,100		215		700	800
>C10 - C16 Fraction (F2)	mg/kg	50		3,800		170		1,000	
>C16 - C34 Fraction (F3)	mg/kg	100		5,300		1,700	2,500	3,500	5,000
>C34 - C40 Fraction (F4)	mg/kg	100		7,400		3,300	6,600	10,000	
BTEXN									
Benzene	mg/kg	0.2		430		75	95		
Toluene	mg/kg	0.5		99,000		135			
Ethylbenzene	mg/kg	0.5		27,000		165	185		
Total Xylenes[5]	mg/kg	0.5		81,000		180	95		
Naphthalene	mg/kg	1.0		11,000	370				
Heavy Metals									
Arsenic	mg/kg	5	3,000		160				
Cadmium	mg/kg	1	900		-[#]				
Chromium (VI) Chromium (III)	mg/kg	2	3,600 N/A		- 340				
Copper	mg/kg	5	240,000		180				
Nickel	mg/kg	5	6,000		190				
Lead	mg/kg	2	1,500		440				
Zinc	mg/kg	5	400,000		460				
Mercury (inorganic)	mg/kg	0.1	730		-				
Polycyclic Aromatic Hydrocarbons									
Benzo(a)pyrene	mg/kg	0.5	5			1.4			
Sum of PAH	mg/kg	0.5	4,000			-			
Halogenated Organic Compounds (vapour levels)									
Trichloroethene	mg/m^3	0.0054	4.0						
tetrachloroethene	mg/m^3	0.3400	8.0						
cis-1,2-dichloroethene	mg/m^3	0.0200	0.3						

Contaminants of concern	Units	LOR	HIL-D[1]	HSL[2]	EIL[3]	ESL[4]		Management Limits	
						coarse	fine	coarse	fine
vinyl chloride	mg/m^3	0.0051	0.1						

[1]Health Investigation Level (D for industrial/commercial land use)

[2]Health Screening Level (sourced from the *CRC Care Technical Report Paper #10*. Values are only applicable for direct contact with soil and not for vapour risk)

[3]Ecological Investigation Levels

[4]Ecological Screening Levels

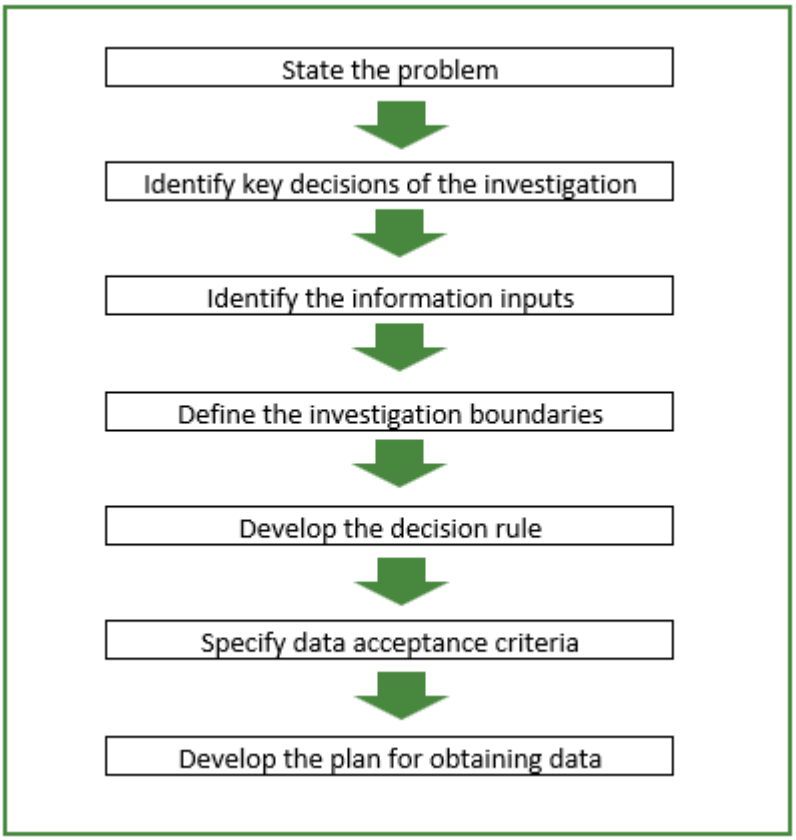
[5] Total Xylenes = M, P and O-Xylene

[#]— Dash signifies that no default guideline criteria are currently available

6. DATA QUALITY OBJECTIVES (DQO)

The DQO process is a seven-step iterative planning approach that is used to define the type, quantity and quality of data needed to inform decisions relating to the environmental condition of a site. The summary of the process as shown in Figure 6-1 below, is adapted from US EPA (2006a) and NSW DEC (2006) and the NEPM 2013.

Figure 6-1: The DQO Process



6.1 STATE THE PROBLEM

This first step involves a summation of the site's contamination problem that requires new environmental information and to identify the available resources to resolve this problem. A preliminary Conceptual Site Model (CSM) is needed to complete this step.

- A Preliminary Site Investigation (PSI) report for the Site has identified potential contamination issues in the Site's soils from historical and current site activities. Contaminants of concern (CoC) include petroleum hydrocarbons, volatile organic compounds, BTEXN and heavy metals.
- The Site contains an abandoned underground petroleum storage system (UPSS) previously unknown. The tank/s may have contained leaded petrol (based on signage at the site).
- The location of the UPSS tank/s has not yet been established (prior to the investigation) which is a critical component of the investigation.

- The Site contains two subterranean pits to collect waste oil that is then sent through an oil water separator. The pits are exposed at the surface and the separating equipment is very old and no longer appropriate for use. Much waste oil was observed on the floor of the room where the draining activity occurs. This is another potential contamination source.
- The principal purpose of this investigation is to determine if contaminants have entered into the site's soils and if so, their spatial extent, particularly if groundwater infiltration or off site migration has occurred.
- Additionally, if contamination is found, the investigation will assess: the contaminant levels; the risks these may pose; provide an appropriate site assessment criteria (SAC); provide management or removal strategies to address any (potential) risk, and (if appropriate), outline appropriate actions to reduce contaminants to levels that do not pose an unacceptable risk to human health or the environment).
- The report will support a Development Application to Council, currently being undertaken by

Constraints include:

- Some site access is limited – due to the storage of shipping containers and the current large quantities of scrap metal stored onsite.
- Sampling is only for the known (or expected) contaminants potentially released from Site activities;
- Groundwater sampling is not anticipated, unless results from laboratory analysis indicate contamination extends to or past the deepest (PID screened) point sampled point of 3.0 m bgl then this will be reevaluated;
- The timeline for the investigation. The DSI's report will be included with other documents to support a current Development Application by the Shine Management to Council as soon as it is practical.

6.2 IDENTIFY THE KEY DECISIONS OF THE INVESTIGATION

Step two requires identifying the key decisions that need to be taken concerning the site's contamination issue.

Key decisions include the determination of:

- What contaminants of concern (CoC) have been (potentially) released into the soil;
- The spatial extent of any contaminant released such as depth and horizontal extent;
- The location of the abandoned UPSS and its status;
- Levels of potential CoC (if any) and risks they may pose to human or environmental health;
- The best method to remove (and if appropriate), reduce the CoC levels to levels that do not pose a risk to human or environmental health.

6.3 IDENTIFY THE INFORMATION INPUTS

Identify the information/new data that will be required to resolve the key decision statements and its authoritative source.

- Sample locations are to be chosen by a combination of evenly spaced and selected locations, centred around the area most at risk from historical contaminant release (i.e. UPSS and subterranean oil receptacles), whilst accounting for underground / aboveground obstacles;
- Soil samples will be collected to decide if the contaminants of concern (COC) exist onsite, to establish levels and spatial extent;
- All sample analysis will be conducted by a NATA accredited laboratory
- Logging of the site soils during sampling to describe soil properties such as colour, texture and other characteristics to help determine depths of fill material and natural soil layers;
- A PID will be used to screen soil samples (as per NSW EPA guidelines) for potential hydrocarbon contamination and other VOCs;
- Development of the SAC (see Section 5.3), with Default Guideline Values adopted or developed from the NEPM and other authoritative sources for comparison against the levels of the potential COC as found in soil samples.
- The SAC will take in account the effects the CoC may or are likely to have on terrestrial and aquatic species and not just for human health criteria.
- Justification for the SAC including the literature referenced for its determination is set out in Section 5.3.

6.4 DEFINE THE INVESTIGATION BOUNDARIES

The fourth step involves specifying the spatial and temporal aspects of the environmental media that the data must represent to support decision(s).

- The Site's soils are the media of interest that potentially received surface contaminants through gaps/cracks in the hardstand and potential leakage from the UPSS and subterranean pits;
- Spatial extents include investigation within the property boundaries with attention directed around the UST and subsurface pits;
- Sampling of soils at 1.0 m intervals to a depth of 3.0 m unless PID indicates potential deeper contamination (reading >5 ppm), soil sampled at each metre depth or at the depth where the incremental PID screening (every 0.5 m) shows the PID returning <5 ppm or auger refusal;
- Additional samples collected if soil between planned sampling is odorous or shows signs of staining;
- Time constraints include completing the investigation as quickly as feasible so as to allow the DSI report to be submitted to Council to support a pending a DA.

6.5 DEVELOP THE DECISION RULE

The fifth step involves defining the parameter of interest, specifying the action level, and integrating information from Steps 1–4 into a single statement that gives a logical basis for choosing between alternative actions. The statistical parameter (the parameter of interest) characterises the population (media of interest).

- The inputs to the decision-making process for this assessment include the comparison of sampling results against the SAC in order to determine the extent and level of contamination and to identify the specific areas requiring remediation and those that do not;
- Recommendations will be made for clean-up strategies of the soils if the CoC exceed the SAC;
- Action criteria will be provided regarding the safe removal or permanent decommissioning of the UPSS.

6.5.1 Rinsate blanks

One rinsate blank will be collected and analysed from each sampling day if non-disposable sampling equipment was used on that day. The rinsate blank will be analysed for evidence of soil residue remaining on the sampling tool, by proxy evidence. Deionised or distilled water is poured over the washed tool and analysed for either salt or heavy metal that is commonly found in soil. See Table 6-2 for rinsate test analysis.

- Dedicated and disposable sampling equipment will be used, when possible, to collect samples.
- Rinsate will be collected if insufficient sampling trowels are available, and reuse is required.

6.5.2 Trip Spikes and Trip Blank Samples

If sampling is required for VOCs, one trip spike and trip blank sample (per Esky) will be used for each day of sampling.

- Collected samples were placed into one of two Eskys™ used during field work;
- Two trip blanks and two trip spikes accompanied the samples during collection and transportation to the laboratory;
- These remained in a chilled condition at all times;

6.5.3 Field Duplicates and Field Triplicates

Field duplicate will be collected at a rate of one per twenty (5%) site samples. Field triplicates will be collected for every three (3) field duplicates. Collected duplicates and triplicates will be analysed for at least one of the CoC the parent sample is also tested for. The relative percent difference (RPD) of concentrations of relevant CoC, between the original sample and the duplicate/triplicate will be calculated.

- Two field duplicate samples were collected and included in the laboratory analysis.
- No field triplicate samples were collected.

6.5.4 If/Then Decision Rules

A statement that defines the conditions that would cause a decision-maker to choose from alternative actions.

A PID will be used to screen soils for the absence/presence of potential volatile organic contaminants (VOCs). From this, sampling decisions will be made.

- **If** a PID reading ≥5.0 is returned from screened soil, **then** an additional sample will be collected for lab analysis to confirm the absence/presence of VOC contaminant at that depth (assuming no sample was marked for collection) OR VOCs analysis will be added to the sample if VOC analysis had been omitted. **If** a PID readings is <4.9, **then** no additional sample collection/ rule above is applied.
- **If** lab results show CoC level/s are above the SAC, **then** that soil is considered as contaminated and requires further investigation and/or remediation recommendations.
- **If** a chemical odour is detected, **then** a sample will be collected for lab analysis.
- **If** soil staining is found (not due to natural process such as mottles), **then** a sample will be collected for lab analysis.

6.6 SPECIFY DATA ACCEPTANCE CRITERIA

The sixth step involves specifying the decision maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data. Decision errors are incorrect decisions caused by using data that is not representative of site conditions due to sampling or analytical error. As a result, a decision may be made that site clean-up is not needed when really it is, or vice versa.

There are two types of decision error:

- **Sampling errors** occur when the sample program does not adequately detect a contaminant of concern's (CoC) spatial variability across the site, meaning the collected samples are not representative of the site conditions.
- **Measurement errors** occur during sample collection, handling, preparation, analysis and data reduction.

Benbow Environmental will mitigate the risk of decision error by:

- Assignment of fieldwork tasks to suitably experienced BE consultants and experienced contractors;
- Submit all samples to NATA accredited laboratories;
- Assignment of data interpretation tasks to suitably experienced BE consultants and outsourcing to technical experts where required;
- Assessment of data quality [data quality indicators (DQI)] of field and laboratory analysis are assessed against PARCC parameters (for explanation see 6.6.1 below); and

- Look for multiple lines of evidence to support a decision.

6.6.1 PARCC Parameters

Step Six also includes decision(s) on the acceptance of the analytical data assessed against the Data Quality Indicators (DQIs) in the context of PARCC parameters, precision, accuracy, representativeness, comparability and completeness. These are described below;

Precision is a measure of the repeatability of results obtained from sample analysis. It is assessed on the basis of agreement between a set of replicate results obtained from duplicate analyses. The agreement can be measured by calculating the Relative Percentage Difference (RPD). This can be applied to both laboratory and field split/duplicate samples. When the RPD is outside the criteria, an assessment is made whether the breach does not undermine the sample's integrity. An example being when very low analyte concentrations are reported in two samples, this can exaggerate the RPD calculation with respect to small total concentration differences. This would not affect the integrity of the results.

Accuracy is a measure of the agreement between an experimental determination and the true value of the parameter being measured. This can be achieved by analysis of know reference material by matrix spikes assessment. Matrix spikes analysis is performed by splitting a field sample and spiking each portion with known quantities of the target analyte in order to ascertain the effects of the specific sample matrix on the recovery of analytes. Accuracy is measured in terms of percentage recovery and is calculated by laboratory personnel.

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population or parameter variation at a sampling location, or an environmental condition. Representativeness is primarily dependent on the design and implementation of the sampling program and is partially safeguarded by avoiding cross-contamination, adherence to sample collection, handling and analysis procedures, completed and correct chain of custody documentation. Sample field duplicates, blanks and observance of holding times are quality assurance (QA) parameters that can assist in representativeness evaluation. Holding times from field collection to laboratory analysis must be minimised to ensure the representativeness of the result obtained. Delays between sampling and analysis can cause changes in analytes due to volatilisation, mineralisation or biological modification.

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This is achieved by maintaining consistency in sample collection and handling, and consistent laboratory analysis techniques and reporting methods. Comparability is also achieved by ensuring that precision and accuracy objectives were met.

Completeness
The following information is required to check for completeness of data sets:

- Chain of custody forms
- Sample receipt notification / advice
- Certificates of analysis (COA)
- Quality control report (QC)

- All sample results reported
- All laboratory duplicates reported and RPDs calculated
- Duplicates comprise of 5% of field samples

The examination of laboratory QC and results is examined and discussed in sections 6.10 and 7. Data Quality Indicators are evaluated in Table 6-3 below.

6.7 DEVELOP THE PLAN FOR OBTAINING DATA

The seventh step involves identifying the most resource-effective sampling and analysis design for generating the necessary data required to satisfy the DQOs. Reference and guidance for design and implementation of this is sourced from the National Environmental Protection (Assessment of Site Contamination) Measure (NEPM) (NEPC, 1999) amended 2013, and Consultants Reporting on Contaminated Land (NSW EPA 2020).

NSW EPA's *Consultants Reporting on Contaminated Land* (2020), *Sampling Design part 1, application*, *Contaminated Land Guidelines* (EPA 2022) and *the NEPM* (amended 2013). To maintain data integrity and reliability, the following measures were adopted:

- Strict adherence to sampling QA/QC protocols;
- Use of appropriate laboratory limits of reporting for CoC;
- Assessment of field and laboratory data quality against the DQIs.

6.8 SAMPLING METHODOLOGY

6.8.1 Sampling Equipment and Methods

Sampling at each location involved either the use of push tubes driven into the ground by a percussion hammer or taking soil directly from the blade of a mechanical auger. Both methods were driven by a Geoprobe drill rig. Soil collection was made with a fresh gloved hand with gloves changed between each sample. Collected soil was placed directly into laboratory supplied 150 mL glass jars except for asbestos, where laboratory supplied plastic bags were used.

When collecting soil for duplicates and triplicates, in order to split the sample, soil is placed in a clean stainless-steel bowl or new polyethene bag (dependant of the COCs) with care taken to thoroughly mix the soil as best as possible before placing it into the glass sample jars.

6.8.2 Equipment Decontamination Procedures

In order to minimise cross-contamination risk for soil samples, each sample was collected by a fresh gloved hand at each sample location. For a small number of samples, soils within push tubes were very tightly compacted which required the soil to be split using a stainless-steel spoon. A rinsate sample was collected to measure the effective of field decontamination.

6.8.3 Sample Handling Procedures

Each sample is identified by the following information, which was written on the container label:

- BE job number;

- Sampler;
- Sample ID (location number); and
- Date and time of sampling.

Immediately after collection, samples were placed into an Esky™ and covered in ice. Samples were transported in this manner to the BE office and transferred to a dedicated sample fridge for weekend storage at the end of the day's sampling. Samples were later placed under ice when returned to both Eskys™ and transported directly to the laboratory.

Completed Chain of Custody (COC) forms accompanied all samples to the laboratory. These are included in Attachment_4.

The laboratory issued Sample Receipt Notice (SRN) acknowledged that samples were received within the recommended holding times for the analysis requested and within the appropriate temperature range. The SRN is included in Attachment_5.

6.8.4 Sample Preservation Methods

Apart from the use of ice for temperature control, no chemical preservatives were added to the soil sample containers.

6.8.5 Soil Classification Methods

Soil texture is assessed utilising field sampling methods such as by the behaviour of moist boluses when manipulated by hand, such as stickiness (indication of clay content) or smoothness of bolus surface (indicates silt content). Grain sizes are judged by side by side comparison to soil charts with the aid of a hand lens. Description techniques are based on AS 1729-2017. Colour was determined with the aid of Munsell Colour charts.

6.9 LABORATORY TESTING

6.9.1 Analytes

Selected analytes for testing include the following:

- Heavy metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc);
- Total Recoverable Hydrocarbons (TRH);
- Monocyclic and Polycyclic Aromatic Hydrocarbons (MAH/PAH);
- Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene (BTEXN);
- Halogenated Organic (Aliphatic and Aromatic) Compounds;
- Phenol compounds; and
- Asbestos.

6.9.2 Testing Methods

The soil samples were analysed by ALS Environmental, a NATA accredited laboratory. Analytical methods used for analysis are described in the laboratory provided Quality Control reports. These are included in Attachment_2 and Attachment_3.

6.10 QA/QC Evaluation

Quality Assurance and Quality Control applied to this project were in accordance with AS 4482.1-2005 PARCC parameters, **Precision, Accuracy, Representativeness, Comparability** and **Completeness** (see 6.6.1 for expansion of PARCC principles and Table 6-3: for the results of the PARCC assessment of the data).

6.10.1 Duplicate Results

Two field duplicate samples QC100 (BH-05_0.2) and QC200 (BH-06_0.5) were taken to assess the homogeneity of the sample matrix. To compare the results between the duplicate to the original sample, the Relative Percent Difference (RPD) is calculated for each analyte that had results above the LOR. The RPD equals:

$$RPD\ (\%) = 100 * \frac{|\ X_A - X_B\ |}{½\ (X_A + X_B)}$$

where X_A and X_B are the analyte levels of original sample A and duplicate sample B, respectively.

The accuracy of RPD values for field duplicate samples are compared to a criterion of <50 % RPD Where RPDs have exceeded the acceptable criteria the potential causes of variability and whether this will affect the data's reliability was investigated. Where both results were below the lab's Limit of Reporting (LOR), these have been assessed for RPD as the value of LOR. Where LOR conflicts exist due to chemical interference with the sampling matrix, these are not assessed. See Table 6-1 below for the results of comparison between the original sample and its duplicate. Red font numbers in the table show RPD exceedances, blue font meets the RPD criterion.

Table 6-1: Duplicate Sample Results RPD%.

CoC	BH-05_0.2	QC100	RPD %	Achieved	BH-06_0.5	QC200	RPD %	Achieved
Heavy Metals								
Arsenic	10	<LOR	-	✘	7	6	15.38%	✓
Cadmium	<LOR	<LOR	0%	✓	<LOR	<LOR	0%	✓
Chromium	15	22	37.84%	✓	12	11	8.7%	✓
Copper	70	233	**107.59%**	✘	20	20	0%	✓
Lead	55	264	**131.03%**	✘	21	19	10%	✓
Nickel	2	20	**163.64%**	✘	10	10	0%	✓
Zinc	72	97	29.59%	✓	35	33	5.88%	✓
Mercury	<LOR	<LOR	0%	✓	<LOR	<LOR	0%	✓
Total Recoverable Hydrocarbons								
C6 – C10 Fraction minus BTEX	20	<LOR	-	✘	<LOR	<LOR	0%	✓
>C10 – C16 Fraction	260	160	47.62%	✓	<LOR	<LOR	0%	✓

>C16 – C34 Fraction	4,860	3,060	45.45%	✓	<LOR	<LOR	0%	✓
>C34 – C40 Fraction	520	420	21.28%	✓	<LOR	<LOR	0%	✓
BTEXN								
Benzene	<LOR	<LOR	0%	✓	<LOR	<LOR	0%	✓
Toluene	<LOR	<LOR	0%	✓	<LOR	<LOR	0%	✓
Ethylbenzene	<LOR	<LOR	0%	✓	<LOR	<LOR	0%	✓
Total Xylenes	<LOR	<LOR	0%	✓	<LOR	<LOR	0%	✓
Naphthalene	<LOR	<LOR	0%	✓	<LOR	<LOR	0%	✓

6.10.2 RPD Exceedances

The laboratory batch QC and field notes detailing sample collection were reviewed, with the following determined to be the potential causes of the RPD exceedances:

- For soil duplicate splitting, care is taken to thoroughly mix the soil sample as best as possible in a clean plastic bag. As the soil duplicate splitting for QC100 was conducted with surface sand, the RPD exceedance can be attributed to the fact that analysis can be so sensitive that even a small sand particles can hold a level of heavy metal at a different percentage than a neighbouring particle.
- The calculated RPD is not expected to affect the integrity of the results as results remain well below the nominated criteria.

6.10.3 Summary of Laboratory Report for Outliers

- No Method Blank value outliers occur;
- No Laboratory Control outliers exist;
- No matrix Spike outliers exist;
- Analysis Holding Time Outliers exist (for the rinsate sample, see explanation below);
- No Duplicate outliers occur;
- No Quality Control Sample Frequency Outliers exist;
- No Surrogate recovery outliers occur;

An analysis holding time exists for the rinsate sample. Laboratory analysis of the of pH water requires a sample to be analysed within 24-hours of collection. This was not achievable as the lab is closed over weekends, when sampling occurred. The rinsate sample was collected to measure the effectiveness of field cleaning techniques. The test measures electrical conductivity (EC), i.e. the volume of salt/s found in the rinsate sample. As deionised water is used for the rinsate water, any salt found within the sample would have come from soil residue remaining on the sampling tool. The test for EC was not in breach of its analysis holding time.

6.10.4 Rinsate Result

Laboratory supplied deionised water was used to pour over the field-cleaned sampling tool. The collected (rinse) water was analysed for salt content. The results show a very low level of salt was detected in the rinsate sample (6 µS/cm). While not perfect, the results reveal field cleaning techniques were sufficient to prevent cross-contamination skewing other sample results (see Table 6-2 below).

Table 6-2: Results of Rinsate Test

Rinsate Test Results			
	LOR	**Units**	**Rinse-1**
pH	0.1	pH unit	6.58
EC	1	µS/cm	6

Table 6-3: QA/QC Data Evaluation for Soil Samples (Data Quality Indicators)

Data Quality Objectives	Frequency	Achieved?	Data Quality Indicator	Achieved?
Precision				
Laboratory Duplicates (DUP)	10% of total number of samples	Yes	Within DUP recovery limits for each compound	Yes
Accuracy				
Blind field duplicates	5% of total number of samples	Yes	<50% RPD	No[1]
Laboratory Control Spikes (LCS)	5% of total number of samples	Yes	Within LCS recovery limits for each compound	Yes
Matrix Spikes (MS)	5% of total number of samples	Yes	Within MS recovery limits for each compound	Yes
Trip Blanks (TB)	1 per cooler	Yes	Below limits of reporting (LOR)	Yes
Trip Spikes (TS)	1 per cooler	Yes	Within acceptable recovery limits	Yes
Representativeness				
Method Blanks (MB)	5% of total number of samples	Yes	Variance between sample results and LOR	Yes
Sampling appropriate for media and analytes	All Samples	Yes	No errors in selection of media and analytes	Yes
Sample collected/analysed within holding times	All Samples	No		

Table 6-3: QA/QC Data Evaluation for Soil Samples (Data Quality Indicators)

Data Quality Objectives	Frequency	Achieved?	Data Quality Indicator	Achieved?
Comparability				
Standard operating procedures for sample collection and handling	All Samples	Yes	No errors in compliance with procedures	Yes
Standard analytical methods for analytes	All Samples	Yes	No errors in selection of analytical methods	Yes
Consistent field conditions and lab analysis	All Samples	Yes	No variations reported	Yes
Limit of reporting appropriate and consistent	All Samples	Yes	No errors in limit of reporting	Yes
Completeness				
Soil description and COCs properly completed	All Samples	Yes	No errors in COCs	Yes
Appropriate documentation	All Samples	Yes	No errors in documentation	Yes
Satisfactory QC sample results	All QA/QC Samples	Yes	No reported outliers in QC report	Yes
Data from critical samples is considered valid	Critical samples	Yes	Consistency within results from critical samples	Yes

Notes:

1 Duplicate RPDs outliers exist for four metal species (Arsenic, Copper, Lead and Nickel) and TRH. RPD exceeds LOR based limits.

2 Analysis Holding Time Outlier exists for rinsate test which does not affect the integrity of the sample results.

7. RESULTS

Results obtained from the analysis of the Site's soils during fieldwork are presented below in 7.1. Sample results as provided by laboratory analysis is detailed in 7.2.

Selected sample results are presented below in Table 7-2 with the comprehensive results and SAC included in Attachment_6. All laboratory (COA) results are included in Attachment_1.

7.1 RESULTS FROM FIELDWORK ANALYSIS OF SOILS

Observation of the Site's soils during fieldwork noted that a shallow layer of yellow sandy fill material was found across the site in the sampled bore holes. Depth of fill ranged from 0.2 – 0.8 m with the deeper fill found in bores at the rear (south) of the Site. The fill sometimes contained some angular basalt gravels and with grey sand to dark sand.

Below this layer, typically were sandy clays, silty clays and clay loams which is similar to the predicted South Creek landscape alluvial soils. Light clay was found in BH-04 from a depth of 1.5 m and below. Soil logs can be found in Attachment_7.

Soils were screened with a photoionisation detector (PID) which measures volatile compounds to parts per million Results are shown in below in Table 7-1. A review of screening and sample results show a close association between these with elevated results reflected in the laboratory analysis.

Table 7-1: Results of PID Field Screening (ppm)

Depth mbgl^	BH-01	BH-02	BH-03	BH-04	BH-05	BH-06	BH-07	BH-08
0.2	0.0	0.0	16.2	0.0	6.7	0.0	9.7	0.0
0.5	-	-	-	-	21.7	-	-	-
1.0	0.7	0.0	35.4	0.2	0.0	0.0	0.2	0.0
2.0	0.0	0.0	7.4	0.0	0.1	0.0	0.0	0.0
3.0	0.0	0.0	11.4	0.0	0.0	0.0	0.0	0.0
3.5	-	-	16.0	-	-	-	-	-

^metres below ground level

7.2 RESULTS FROM LABORATORY ANALYSIS OF SAMPLES

7.2.1 Total Recoverable Hydrocarbons (TRH)

Sample TRH values were below the LOR for the following boreholes: BH-02, BH-04, BH-06, BH-07 and BH-08. TRH for all other boreholes returned values above the LOR and above the ESL (Ecological Screening Level) criteria but well below the Health Screening Level (HSL).

7.2.2 BTEXN

Levels of BTEXN were below the LOR for all samples except total xylenes for BH-03_1.0 which was recorded at its LOR.

7.2.3 Heavy Metals

Heavy metal levels in all boreholes returned values above the LOR but well below the SAC.

7.2.4 Polynuclear Aromatic Hydrocarbons (PAH)

Levels of Polynuclear Aromatic Hydrocarbons were at or below the LOR for most samples. Remaining samples showed very low values above the LOR but well below the SAC.

7.2.5 Monocyclic Aromatic Hydrocarbons (MAH)

Levels of Monocyclic Aromatic Hydrocarbons were at or below the LOR for most samples. Remaining samples showed very low values above the LOR but well below the SAC.

7.2.6 Oxygenated Compounds (solvents)

Levels of Oxygenated Compounds were below the LOR for all samples.

7.2.7 Asbestos

No asbestos fibres were detected in any soil sample.

7.3 Discussion of Results

Laboratory results reveal the soils at the Site contain low levels of heavy metals and petroleum hydrocarbons.

Heavy metal levels in all boreholes returned values above the LOR but well below the SAC. Most values are within typically background levels with an exception being the result from QC100, the duplicate of BH-05_0.2. With this sample, the levels of lead and nickel were much higher than what was seen in the other samples and unlikely to be a background anomaly and highly likely due to surface contaminants entering into the soil.

Hydrocarbons were found in only three boreholes (BH-01, BH-03 and BH-05). Levels were above the Ecological Screening Level (ESL) criteria, but well below the human Health Screening Level (HSL) for industrial sites. Concrete hardstand is a robust barrier that prevents easy access to soils by humans, flora and fauna alike. The current levels are unlikely to migrate are not of a concern, as over time, natural attenuation will further reduce any risk posed.

The potential risk from vapours (from volatile chemicals below the surface) was considered and is low due to the low levels of hydrocarbon fractions that are vapour producing and the absence of other potential volatile chemicals (oxygenated compounds/solvents and halogenated compounds such as trichloroethylene) can in the sampling results.

The use of ground penetrating radar during the underground utilities locating, identified the location of the UPSS. This allowed bores (BH-01 and BH-03) to be positioned alongside the underground tank and associated delivery system. BH-03 was also positioned near the oil collecting pit. Results from both bores revealed contaminants had reached a depth beyond 3.0 m, although levels were very low by this point (marginally above the LOR). It did show leakage from the UPSS seems highly likely, quite possibly from two different parts of the fuel system. Pipe corrosion, especially in elbow joints and bends is quite common in UPSS. Additional evidence of this is the presence of 1.3.5-Trimethylbenzene, a fuel additive found at very low levels in bore hole 3. Trimethylbenzene detection occurred in depths from 1.0 m and below, not from the near surface sample. This indicates its source occurs at depth, potentially a leaking pipe from the UPSS.

It is believed that groundwater has not been impacted from leaking petroleum hydrocarbons because the very low levels detected at the 3.0 m and 3.5 m depths, indicate levels are too low to have penetrated deeper into groundwater, predicted to be 4 – 6.0 m below ground level. This will be further assessed when the UPSS is decommissioned, and validation sampling would confirm this belief (or otherwise).

Levels of hydrocarbons in BH-05 were mainly contained near the surface, with only very minor levels returned at 0.5 m depth. The dominant heavier chain fractions (F3 and F4) suggestive of heavy oils and grease rather than the shorter chain volatile fractions found in petrol.

It is believed the Shine Management are discontinuing the practise of allowing oil to drain into the pit. If this has been a contamination source, levels in the soil will naturally reduce over time as it degrades.

When sampling BH-03, the intention during field work was to continue drilling beyond 3.5 m as the PID registered 16 ppm (invoking the decision rule). However, the auger met refusal at 3.5 m, so the investigation was discontinued at that point since this was the last bore of the day.

See Figure 7-1 below of an aerial of the Site showing hydrocarbons levels and their bore locations.

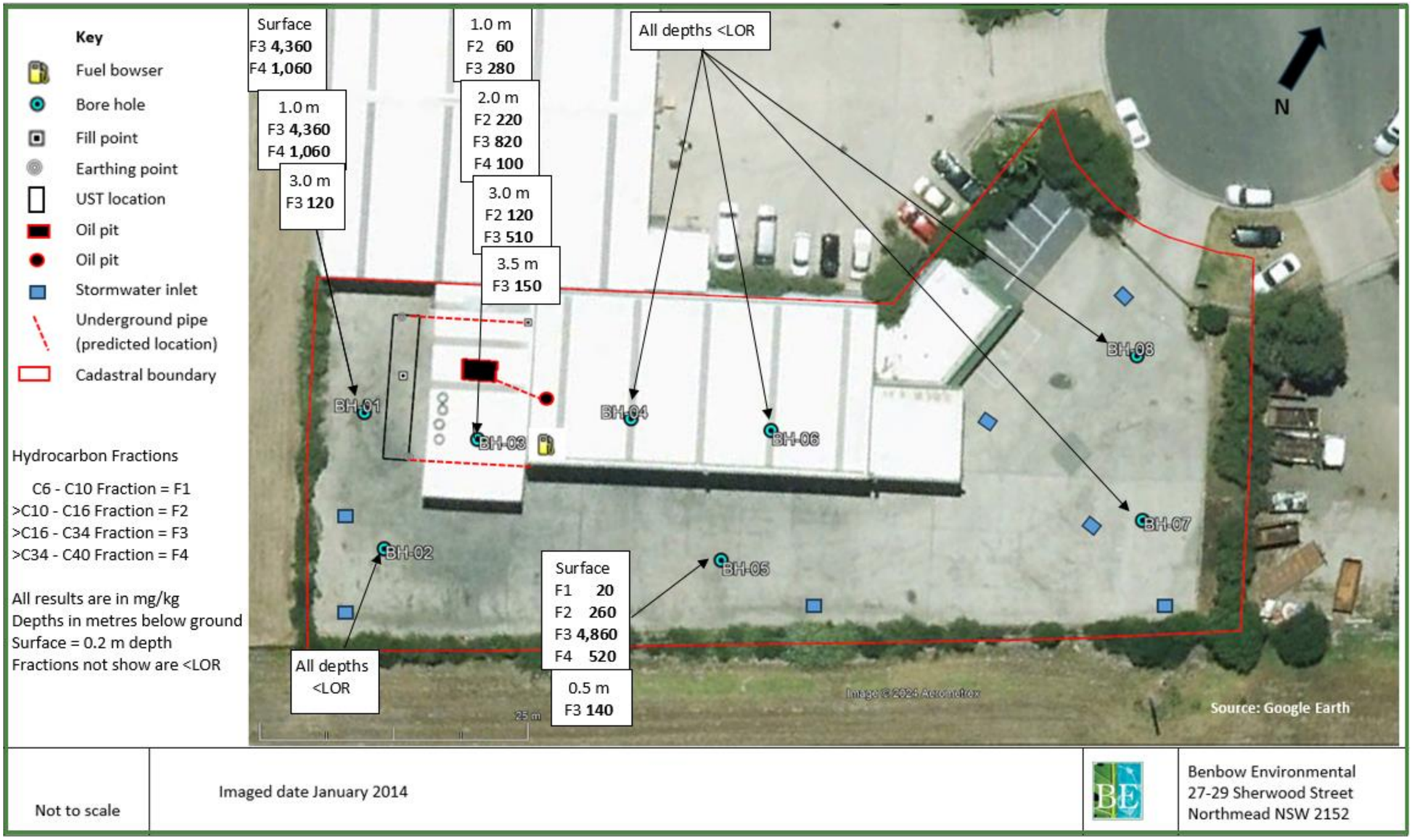
Table 7-2: Selected Results

			SAC[1]						BH-01				BH-03					BH-05				
	LOR[2]	Units	HIL-D[3]	HSL[4]	ESL[5]		EIL[6]	Management Limits		BH-01_0.2	BH-01_1.0	BH-01_2.0	BH-01_3.0	BH-03_0.2	BH-03_1.0	BH-03_2.0	BH-03_3.0	BH-03_3.5	BH-05_0.2	BH-05_0.5	BH-05_1.0	BH-05_2.0	BH-05_3.0
					coarse	fine		coarse	fine														
Heavy Metals																							
Arsenic	5	mg/kg	3,000				160			<LOR	**8**	**7**	**9**	**6**	**7**	**7**	**7**	**10**	**10**	**11**	**9**	**10**	**14**
Cadmium	1	mg/kg	900				-			<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Chromium	2	mg/kg	3,600				340			**14**	**11**	**11**	**12**	**8**	**11**	**12**	**9**	**9**	**15**	**11**	**15**	**14**	**19**
Copper	5	mg/kg	240,000				180			**20**	**34**	**22**	**26**	**31**	**37**	**25**	**31**	**24**	**70**	**72**	**24**	**23**	**26**
Lead	5	mg/kg	1,500				190			**9**	**29**	**16**	**22**	**39**	**35**	**20**	**25**	**20**	**55**	**81**	**17**	**27**	**34**
Nickel	2	mg/kg	6,000				440			**5**	**12**	**11**	**10**	**7**	**8**	**9**	**13**	**15**	**2**	**8**	**9**	**12**	**20**
Zinc	5	mg/kg	400,000				460			**12**	**55**	**36**	**43**	**39**	**47**	**34**	**49**	**62**	**72**	**66**	**38**	**46**	**74**
Mercury	0.1	mg/kg	730				-			<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	**0.1**	<LOR	<LOR	<LOR
Total Recoverable Hydrocarbons - NEPM 2013 Fractions																							
C6 - C10 Fraction	10	mg/kg		5,100	215			700	800	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	**12**	<LOR	<LOR	20	<LOR	<LOR	<LOR	<LOR
>C10 - C16 Fraction	50	mg/kg		3,800	170			1,000		<LOR	<LOR	<LOR	<LOR	<LOR	**60**	**220**	**120**	<LOR	**260**	<LOR	<LOR	<LOR	<LOR
>C16 - C34 Fraction	100	mg/kg		5,300	1,700	2,500		3,500	5,000	**4,360**	**260**	<LOR	**120**	<LOR	**280**	**820**	**510**	**150**	**4,860**	**140**	<LOR	<LOR	<LOR
>C34 - C40 Fraction	100	mg/kg		7,400	3,300	6,600		10,000		**1,060**	**190**	<LOR	<LOR	<LOR	<LOR	**100**	<LOR	<LOR	**520**	<LOR	<LOR	<LOR	<LOR
BTEXN																							
Benzene	0.2	mg/kg		430	75	95				<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Toluene	0.5	mg/kg		99,000	135					<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Ethylbenzene	0.5	mg/kg		27,000	165	185				<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Total Xylenes	0.5	mg/kg		81,000	180	95				<LOR	<LOR	<LOR	<LOR	<LOR	**0.5**	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Naphthalene	1	mg/kg		11,000			370			<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Monocyclic Aromatic Hydrocarbons																							
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-						-	-	-	-	<LOR	**1.0**	**1.7**	**0.7**	<LOR	**0.6**	<LOR	-	-	-

[1]Site Assessment Criteria
[2]Limit of Reporting
[3]Health Investigation Level (D for industrial/commercial land use)
[4]Health Screening Level (sourced from the *CRC Care Technical Report Paper #10*. Values are only applicable for direct contact with soil and not for vapour risk)
[5]Ecological Screening Levels
[6]Ecological Investigation Levels

Numbers presented in **bold** denote results reported above the LOR.
Numbers presented in **red** denote results exceeding the ESL.

Figure 7-1: Borehole Results of Hydrocarbon Fractions



8. RECOMMENDATIONS

The investigation has found the level of contaminants do not pose a threat to human health or the environment. The likely source/s is leakage from the UPSS, possibly the subterranean oil pits and potentially other historical activities. The current hydrocarbon levels in the soils will naturally degrade over time. The levels of heavy metals in the soils are low. However, a risk remains with the abandoned UPSS which poses a risk of explosion if punctured or residual vapour ignites.

The NSW EPA considers that "*Where a tank or UPSS has not been used to store fuel for two or more years or where it is not intended to be used to store fuel again, it is deemed to be abandoned. Abandoned UPSSs or tanks must be decommissioned appropriately. This means to remove the system or render it permanently unusable*." (NSW EPA 2019)

Therefore it is highly recommended that the tank/s undergo proper decommissioning as this significantly reduces the environmental and human health risk if the site is to be redeveloped in future. An environmental assessment is required to ensure that there is no adverse and/or ongoing contamination from the former UPSS. Additionally, once the UPSS has been removed (or decommissioned), Council must be notified and provided with a decommissioning report. Decommissioning must be done in accordance with Australian Standard AS 4976–2008.

Additionally, SafeWork NSW must be notified when a UPSS or underground tank has been abandoned using the prescribed SafeWork NSW form. The person responsible for the tank or UPSS will also need to demonstrate that the tank has been decommissioned appropriately as required by the Hazardous Material and Abandoned Tanks guide.

Notifying is done online, (there is no fee involved).

Surface pollutants entering into the stormwater can best be managed by implementing the recommendations provided in the SLR Consulting's Stormwater Assessment 2022 (SLR Ref: 620.30955.00200-R02) which include installing a gross pollutant trap and filter cartridges in the Site's stormwater system and a dish drain to redirect stormwater leaving the front of the Site, into the Site's stormwater system.

9. CONCLUSION

Benbow Environmental was commissioned by Shine Motor Corporation Pty Ltd to prepare a Detailed Site Investigation (DSI) for the facility located at 8 Noonan Road, Ingleburn NSW. The DSI was to examine the level and extent of potential contamination due to historical and current site practises. In particular, it was to locate an Underground Petroleum Storage System (UPSS) and sample soils to assess if contaminants have entered the soil from the storage system.

Laboratory results reveal that soils at the Site contain low levels of heavy metals and petroleum hydrocarbons. The investigation has found the level of contaminants returned in samples do not pose a threat to human health or the environment. The likely source/s is leakage from the UPSS, and possibly the subterranean oil collection pits.

It is highly recommended that the UPSS be decommissioned, and validation sampling occurs once this has been undertaken, with the results and associated environmental report submitted to Campbelltown Council who are the regulatory body overseeing management of UPSS in the Campbelltown LGA. Additionally, SafeWork require notification when a tank has been abandoned using the prescribed SafeWork NSW form.

With the UPSS decommissioned the Site is considered suitable for commercial/industrial use for the proposed development.

This concludes the report.

Francesco Faustino
Environmental Scientist

Prasanna Manoharan
Chemical Engineer

Damien Thomas
Senior Environmental Scientist

R T Benbow
Principal Consultant

10. REFERENCES

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11. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of the *Shine Motor Corporation Pty Ltd*, as per our agreement for providing environmental services. Only the *Shine Motor Corporation Pty Ltd* is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by the *Shine Motor Corporation Pty Ltd* for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

ATTACHMENTS

Attachment 1: Certificate of Analysis

CERTIFICATE OF ANALYSIS

Work Order	: **ES2428781**	Page	: 1 of 42
Client	: **Benbow Environmental**	Laboratory	: Environmental Division Sydney
Contact	: DAMIEN THOMAS	Contact	: Customer Services ES
Address	: 25 Sherwood St Northmead 2152	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Shine DSI	Date Samples Received	: 02-Sep-2024 14:35
Order number	: 241071	Date Analysis Commenced	: 04-Sep-2024
C-O-C number	: ----	Issue Date	: 08-Sep-2024 20:46
Sampler	: DAMIEN THOMAS		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 51		
No. of samples analysed	: 51		

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
- Descriptive 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
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW

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.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Sum of chlorinated hydrocarbons includes carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichlorothene, trans-1,2-dichlorothene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, vinyl chloride, hexachlorobutadiene and methylene chloride.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP071: Results of samples BH-05_0.2 and QC100 have been confirmed by re-extraction and re-analysis.
- EP080: The trip spike and its control have been analysed for volatile TPH and BTEXN only. The trip spike and control were prepared in the lab using reagent grade sand spiked with petrol. The spike was dispatched from the lab and the control retained. Results have been confirmed by re-extraction and re-analysis.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-01_0.2	BH-01_1.0	BH-01_2.0	BH-01_3.0	BH-02_0.2
				Sampling date / time	31-Aug-2024 15:20	31-Aug-2024 15:45	31-Aug-2024 15:50	31-Aug-2024 16:05	31-Aug-2024 14:50
Compound	CAS Number	LOR	Unit		ES2428781-001	ES2428781-002	ES2428781-003	ES2428781-004	ES2428781-005
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		10.6	11.8	12.0	10.6	10.2
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	8	7	9	5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		14	11	11	12	11
Copper	7440-50-8	5	mg/kg		20	34	22	26	28
Lead	7439-92-1	5	mg/kg		9	29	16	22	29
Nickel	7440-02-0	2	mg/kg		5	12	11	10	9
Zinc	7440-66-6	5	mg/kg		12	55	36	43	28
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-01_0.2	BH-01_1.0	BH-01_2.0	BH-01_3.0	BH-02_0.2
				Sampling date / time	31-Aug-2024 15:20	31-Aug-2024 15:45	31-Aug-2024 15:50	31-Aug-2024 16:05	31-Aug-2024 14:50
Compound	CAS Number	LOR	Unit		ES2428781-001	ES2428781-002	ES2428781-003	ES2428781-004	ES2428781-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	**1.0**	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		**2520**	**140**	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		**2240**	**200**	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		**4760**	**340**	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		**4360**	**260**	<100	**120**	<100
>C34 - C40 Fraction	----	100	mg/kg		**1060**	**190**	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		**5420**	**450**	<50	**120**	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-01_0.2	BH-01_1.0	BH-01_2.0	BH-01_3.0	BH-02_0.2
				Sampling date / time	31-Aug-2024 15:20	31-Aug-2024 15:45	31-Aug-2024 15:50	31-Aug-2024 16:05	31-Aug-2024 14:50
Compound	CAS Number	LOR	Unit		ES2428781-001	ES2428781-002	ES2428781-003	ES2428781-004	ES2428781-005
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**93.4**	**88.1**	**85.7**	**88.6**	**91.2**
2-Chlorophenol-D4	93951-73-6	0.5	%		**93.5**	**85.4**	**82.1**	**87.7**	**87.8**
2.4.6-Tribromophenol	118-79-6	0.5	%		**93.9**	**79.2**	**82.3**	**84.7**	**80.6**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**93.4**	**88.6**	**86.5**	**89.1**	**84.5**
Anthracene-d10	1719-06-8	0.5	%		**105**	**102**	**102**	**102**	**101**
4-Terphenyl-d14	1718-51-0	0.5	%		**103**	**95.6**	**93.5**	**94.0**	**96.5**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**89.7**	**97.2**	**96.8**	**108**	**99.5**
Toluene-D8	2037-26-5	0.2	%		**77.2**	**88.8**	**82.9**	**91.7**	**82.3**
4-Bromofluorobenzene	460-00-4	0.2	%		**74.6**	**81.2**	**80.4**	**85.0**	**80.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH-02_1.0	BH-02_2.0	BH-02_3.0	BH-03_0.2	BH-03_1.0
			Sampling date / time	31-Aug-2024 15:00	31-Aug-2024 15:20	31-Aug-2024 15:30	31-Aug-2024 15:30	31-Aug-2024 16:20
Compound	CAS Number	LOR	Unit	ES2428781-006	ES2428781-007	ES2428781-008	ES2428781-009	ES2428781-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	12.3	12.7	9.5	10.9	14.1
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	8	7	9	6	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	10	12	10	8	11
Copper	7440-50-8	5	mg/kg	58	22	29	31	37
Lead	7439-92-1	5	mg/kg	57	15	19	39	35
Nickel	7440-02-0	2	mg/kg	8	9	14	7	8
Zinc	7440-66-6	5	mg/kg	65	33	53	39	47
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	0.5	mg/kg	----	----	----	<0.5	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg	----	----	----	<0.5	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg	----	----	----	<0.5	<0.5
1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	----	----	----	<0.5	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg	----	----	----	<0.5	<0.5
1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	----	----	----	<0.5	1.0
tert-Butylbenzene	98-06-6	0.5	mg/kg	----	----	----	<0.5	<0.5
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	----	----	<0.5	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg	----	----	----	<0.5	<0.5
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	5	mg/kg	----	----	----	<5	<5
2-Butanone (MEK)	78-93-3	5	mg/kg	----	----	----	<5	<5
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	----	----	----	<5	<5
2-Hexanone (MBK)	591-78-6	5	mg/kg	----	----	----	<5	<5
EP074C: Sulfonated Compounds								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH-02_1.0	BH-02_2.0	BH-02_3.0	BH-03_0.2	BH-03_1.0
			Sampling date / time	31-Aug-2024 15:00	31-Aug-2024 15:20	31-Aug-2024 15:30	31-Aug-2024 15:30	31-Aug-2024 16:20
Compound	CAS Number	LOR	Unit	ES2428781-006	ES2428781-007	ES2428781-008	ES2428781-009	ES2428781-010
				Result	Result	Result	Result	Result
EP074C: Sulfonated Compounds - Continued								
Carbon disulfide	75-15-0	0.5	mg/kg	----	----	----	<0.5	<0.5
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	0.5	mg/kg	----	----	----	<0.5	<0.5
1.2-Dichloropropane	78-87-5	0.5	mg/kg	----	----	----	<0.5	<0.5
cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	----	----	----	<0.5	<0.5
trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	----	----	----	<0.5	<0.5
1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	----	----	----	<0.5	<0.5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	5	mg/kg	----	----	----	<5	<5
Chloromethane	74-87-3	5	mg/kg	----	----	----	<5	<5
Vinyl chloride	75-01-4	5	mg/kg	----	----	----	<5	<5
Bromomethane	74-83-9	5	mg/kg	----	----	----	<5	<5
Chloroethane	75-00-3	5	mg/kg	----	----	----	<5	<5
Trichlorofluoromethane	75-69-4	5	mg/kg	----	----	----	<5	<5
1.1-Dichloroethene	75-35-4	0.5	mg/kg	----	----	----	<0.5	<0.5
Iodomethane	74-88-4	0.5	mg/kg	----	----	----	<0.5	<0.5
trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	----	----	----	<0.5	<0.5
1.1-Dichloroethane	75-34-3	0.5	mg/kg	----	----	----	<0.5	<0.5
cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	----	----	----	<0.5	<0.5
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	----	----	----	<0.5	<0.5
1.1-Dichloropropylene	563-58-6	0.5	mg/kg	----	----	----	<0.5	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg	----	----	----	<0.5	<0.5
1.2-Dichloroethane	107-06-2	0.5	mg/kg	----	----	----	<0.5	<0.5
Trichloroethene	79-01-6	0.5	mg/kg	----	----	----	<0.5	<0.5
Dibromomethane	74-95-3	0.5	mg/kg	----	----	----	<0.5	<0.5
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	----	----	----	<0.5	<0.5
1.3-Dichloropropane	142-28-9	0.5	mg/kg	----	----	----	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-02_1.0	BH-02_2.0	BH-02_3.0	BH-03_0.2	BH-03_1.0
				Sampling date / time	31-Aug-2024 15:00	31-Aug-2024 15:20	31-Aug-2024 15:30	31-Aug-2024 15:30	31-Aug-2024 16:20
Compound	CAS Number	LOR	Unit		ES2428781-006	ES2428781-007	ES2428781-008	ES2428781-009	ES2428781-010
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
Tetrachloroethene	127-18-4	0.5	mg/kg		----	----	----	<0.5	<0.5
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	----	----	<0.5	<0.5
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg		----	----	----	<0.5	<0.5
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		----	----	----	<0.5	<0.5
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg		----	----	----	<0.5	<0.5
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg		----	----	----	<0.5	<0.5
Pentachloroethane	76-01-7	0.5	mg/kg		----	----	----	<0.5	<0.5
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg		----	----	----	<0.5	<0.5
Hexachlorobutadiene	87-68-3	0.5	mg/kg		----	----	----	<0.5	<0.5
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		----	----	----	<0.5	<0.5
Bromobenzene	108-86-1	0.5	mg/kg		----	----	----	<0.5	<0.5
2-Chlorotoluene	95-49-8	0.5	mg/kg		----	----	----	<0.5	<0.5
4-Chlorotoluene	106-43-4	0.5	mg/kg		----	----	----	<0.5	<0.5
1.3-Dichlorobenzene	541-73-1	0.5	mg/kg		----	----	----	<0.5	<0.5
1.4-Dichlorobenzene	106-46-7	0.5	mg/kg		----	----	----	<0.5	<0.5
1.2-Dichlorobenzene	95-50-1	0.5	mg/kg		----	----	----	<0.5	<0.5
1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg		----	----	----	<0.5	<0.5
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg		----	----	----	<0.5	<0.5
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		----	----	----	<0.5	<0.5
Bromodichloromethane	75-27-4	0.5	mg/kg		----	----	----	<0.5	<0.5
Dibromochloromethane	124-48-1	0.5	mg/kg		----	----	----	<0.5	<0.5
Bromoform	75-25-2	0.5	mg/kg		----	----	----	<0.5	<0.5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-02_1.0	BH-02_2.0	BH-02_3.0	BH-03_0.2	BH-03_1.0
				Sampling date / time	31-Aug-2024 15:00	31-Aug-2024 15:20	31-Aug-2024 15:30	31-Aug-2024 15:30	31-Aug-2024 16:20
Compound	CAS Number	LOR	Unit		ES2428781-006	ES2428781-007	ES2428781-008	ES2428781-009	ES2428781-010
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.6**
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.6**
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**1.2**
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	**250**
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	**100**
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	**350**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-02_1.0	BH-02_2.0	BH-02_3.0	BH-03_0.2	BH-03_1.0
				Sampling date / time	31-Aug-2024 15:00	31-Aug-2024 15:20	31-Aug-2024 15:30	31-Aug-2024 15:30	31-Aug-2024 16:20
Compound	CAS Number	LOR	Unit		ES2428781-006	ES2428781-007	ES2428781-008	ES2428781-009	ES2428781-010
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	**60**
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	**280**
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	**340**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	<50	<50	<50	**60**
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.5**
ortho-Xylene	95-47-6	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	**0.5**
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**0.5**
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.5	%		----	----	----	**87.5**	**92.0**
Toluene-D8	2037-26-5	0.5	%		----	----	----	**84.6**	**91.8**
4-Bromofluorobenzene	460-00-4	0.5	%		----	----	----	**91.5**	**95.6**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**103**	**88.0**	**95.6**	**96.0**	**83.4**
2-Chlorophenol-D4	93951-73-6	0.5	%		**99.1**	**83.3**	**83.6**	**92.3**	**82.4**
2.4.6-Tribromophenol	118-79-6	0.5	%		**82.6**	**76.7**	**67.4**	**77.7**	**80.6**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**95.1**	**84.3**	**87.3**	**94.2**	**84.2**
Anthracene-d10	1719-06-8	0.5	%		**103**	**104**	**96.1**	**104**	**102**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-02_1.0	BH-02_2.0	BH-02_3.0	BH-03_0.2	BH-03_1.0
				Sampling date / time	31-Aug-2024 15:00	31-Aug-2024 15:20	31-Aug-2024 15:30	31-Aug-2024 15:30	31-Aug-2024 16:20
Compound	CAS Number	LOR	Unit		ES2428781-006	ES2428781-007	ES2428781-008	ES2428781-009	ES2428781-010
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.5	%		**95.2**	**93.1**	**94.6**	**94.8**	**95.1**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**101**	**95.3**	**94.8**	**90.0**	**95.0**
Toluene-D8	2037-26-5	0.2	%		**85.9**	**82.9**	**80.3**	**87.1**	**94.3**
4-Bromofluorobenzene	460-00-4	0.2	%		**83.4**	**86.4**	**82.5**	**98.5**	**103**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-03_2.0	BH-03_3.0	BH-03_3.5	BH-04_0.2	BH-04_1.0
				Sampling date / time	31-Aug-2024 16:30	31-Aug-2024 16:40	31-Aug-2024 17:05	31-Aug-2024 14:20	31-Aug-2024 14:20
Compound	CAS Number	LOR	Unit		ES2428781-011	ES2428781-012	ES2428781-013	ES2428781-014	ES2428781-015
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.6	12.6	10.7	9.6	16.2
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		7	7	10	<5	7
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		12	9	9	8	11
Copper	7440-50-8	5	mg/kg		25	31	24	<5	16
Lead	7439-92-1	5	mg/kg		20	25	20	8	15
Nickel	7440-02-0	2	mg/kg		9	13	15	<2	7
Zinc	7440-66-6	5	mg/kg		34	49	62	8	21
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg		0.5	<0.5	<0.5	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg		1.7	0.7	<0.5	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg		<5	<5	<5	----	----
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	<5	<5	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		<5	<5	<5	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg		<5	<5	<5	----	----
EP074C: Sulfonated Compounds									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-03_2.0	BH-03_3.0	BH-03_3.5	BH-04_0.2	BH-04_1.0
				Sampling date / time	31-Aug-2024 16:30	31-Aug-2024 16:40	31-Aug-2024 17:05	31-Aug-2024 14:20	31-Aug-2024 14:20
Compound	CAS Number	LOR	Unit		ES2428781-011	ES2428781-012	ES2428781-013	ES2428781-014	ES2428781-015
					Result	Result	Result	Result	Result
EP074C: Sulfonated Compounds - Continued									
Carbon disulfide	75-15-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.2-Dichloropropane	78-87-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		<5	<5	<5	----	----
Chloromethane	74-87-3	5	mg/kg		<5	<5	<5	----	----
Vinyl chloride	75-01-4	5	mg/kg		<5	<5	<5	----	----
Bromomethane	74-83-9	5	mg/kg		<5	<5	<5	----	----
Chloroethane	75-00-3	5	mg/kg		<5	<5	<5	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg		<5	<5	<5	----	----
1.1-Dichloroethene	75-35-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Iodomethane	74-88-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.1-Dichloroethane	75-34-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.1-Dichloropropylene	563-58-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.2-Dichloroethane	107-06-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Trichloroethene	79-01-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Dibromomethane	74-95-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.3-Dichloropropane	142-28-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-03_2.0	BH-03_3.0	BH-03_3.5	BH-04_0.2	BH-04_1.0
				Sampling date / time	31-Aug-2024 16:30	31-Aug-2024 16:40	31-Aug-2024 17:05	31-Aug-2024 14:20	31-Aug-2024 14:20
Compound	CAS Number	LOR	Unit		ES2428781-011	ES2428781-012	ES2428781-013	ES2428781-014	ES2428781-015
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
Tetrachloroethene	127-18-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pentachloroethane	76-01-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Bromobenzene	108-86-1	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.3-Dichlorobenzene	541-73-1	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.4-Dichlorobenzene	106-46-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.2-Dichlorobenzene	95-50-1	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Bromoform	75-25-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-03_2.0	BH-03_3.0	BH-03_3.5	BH-04_0.2	BH-04_1.0
				Sampling date / time	31-Aug-2024 16:30	31-Aug-2024 16:40	31-Aug-2024 17:05	31-Aug-2024 14:20	31-Aug-2024 14:20
Compound	CAS Number	LOR	Unit		ES2428781-011	ES2428781-012	ES2428781-013	ES2428781-014	ES2428781-015
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		**1.0**	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		**1.6**	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		**1.5**	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		**0.6**	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		**0.6**	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		**5.3**	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		**100**	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		**740**	**450**	**130**	<100	<100
C29 - C36 Fraction	----	100	mg/kg		**220**	**140**	<100	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		**1060**	**590**	**130**	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		**12**	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-03_2.0	BH-03_3.0	BH-03_3.5	BH-04_0.2	BH-04_1.0
				Sampling date / time	31-Aug-2024 16:30	31-Aug-2024 16:40	31-Aug-2024 17:05	31-Aug-2024 14:20	31-Aug-2024 14:20
Compound	CAS Number	LOR	Unit		ES2428781-011	ES2428781-012	ES2428781-013	ES2428781-014	ES2428781-015
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		**12**	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		**220**	**120**	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		**820**	**510**	**150**	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		**100**	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		**1140**	**630**	**150**	<50	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		**220**	**120**	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	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
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.5	%		**93.3**	**100**	**96.1**	**----**	**----**
Toluene-D8	2037-26-5	0.5	%		**90.1**	**99.8**	**95.3**	**----**	**----**
4-Bromofluorobenzene	460-00-4	0.5	%		**93.8**	**99.3**	**97.8**	**----**	**----**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**93.7**	**80.6**	**98.0**	**93.9**	**93.1**
2-Chlorophenol-D4	93951-73-6	0.5	%		**91.9**	**85.4**	**94.1**	**93.1**	**99.6**
2.4.6-Tribromophenol	118-79-6	0.5	%		**82.1**	**81.4**	**79.4**	**72.9**	**76.2**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**94.0**	**92.2**	**95.4**	**90.6**	**94.3**
Anthracene-d10	1719-06-8	0.5	%		**101**	**101**	**104**	**98.6**	**106**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-03_2.0	BH-03_3.0	BH-03_3.5	BH-04_0.2	BH-04_1.0
				Sampling date / time	31-Aug-2024 16:30	31-Aug-2024 16:40	31-Aug-2024 17:05	31-Aug-2024 14:20	31-Aug-2024 14:20
Compound	CAS Number	LOR	Unit		ES2428781-011	ES2428781-012	ES2428781-013	ES2428781-014	ES2428781-015
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.5	%		94.6	97.0	97.7	94.0	97.3
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		96.3	103	99.3	95.3	108
Toluene-D8	2037-26-5	0.2	%		92.7	103	97.9	78.7	85.5
4-Bromofluorobenzene	460-00-4	0.2	%		100	107	104	76.3	87.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH-04_2.0	BH-04_3.0	BH-05_0.2	BH-05_0.5	BH-05_1.0
			Sampling date / time	31-Aug-2024 14:30	31-Aug-2024 14:15	31-Aug-2024 11:45	31-Aug-2024 11:50	31-Aug-2024 12:05
Compound	CAS Number	LOR	Unit	ES2428781-016	ES2428781-017	ES2428781-018	ES2428781-019	ES2428781-020
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**12.8**	**12.9**	**16.2**	**11.5**	**17.0**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**12**	**9**	**10**	**11**	**9**
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**17**	**12**	**15**	**11**	**15**
Copper	7440-50-8	5	mg/kg	**28**	**21**	**70**	**72**	**24**
Lead	7439-92-1	5	mg/kg	**43**	**19**	**55**	**81**	**17**
Nickel	7440-02-0	2	mg/kg	**25**	**11**	**2**	**8**	**9**
Zinc	7440-66-6	5	mg/kg	**89**	**42**	**72**	**66**	**38**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	**0.1**	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	<0.5	----
Isopropylbenzene	98-82-8	0.5	mg/kg	----	----	<0.5	<0.5	----
n-Propylbenzene	103-65-1	0.5	mg/kg	----	----	<0.5	<0.5	----
1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	----	----	<0.5	<0.5	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	----	----	<0.5	<0.5	----
1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	----	----	**0.6**	<0.5	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	----	----	<0.5	<0.5	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	----	<0.5	<0.5	----
n-Butylbenzene	104-51-8	0.5	mg/kg	----	----	<0.5	<0.5	----
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	5	mg/kg	----	----	<5	<5	----
2-Butanone (MEK)	78-93-3	5	mg/kg	----	----	<5	<5	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	----	----	<5	<5	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	----	----	<5	<5	----
EP074C: Sulfonated Compounds								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH-04_2.0	BH-04_3.0	BH-05_0.2	BH-05_0.5	BH-05_1.0
			Sampling date / time	31-Aug-2024 14:30	31-Aug-2024 14:15	31-Aug-2024 11:45	31-Aug-2024 11:50	31-Aug-2024 12:05
Compound	CAS Number	LOR	Unit	ES2428781-016	ES2428781-017	ES2428781-018	ES2428781-019	ES2428781-020
				Result	Result	Result	Result	Result
EP074C: Sulfonated Compounds - Continued								
Carbon disulfide	75-15-0	0.5	mg/kg	----	----	<0.5	<0.5	----
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	0.5	mg/kg	----	----	<0.5	<0.5	----
1.2-Dichloropropane	78-87-5	0.5	mg/kg	----	----	<0.5	<0.5	----
cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	----	----	<0.5	<0.5	----
trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	----	----	<0.5	<0.5	----
1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	----	----	<0.5	<0.5	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	5	mg/kg	----	----	<5	<5	----
Chloromethane	74-87-3	5	mg/kg	----	----	<5	<5	----
Vinyl chloride	75-01-4	5	mg/kg	----	----	<5	<5	----
Bromomethane	74-83-9	5	mg/kg	----	----	<5	<5	----
Chloroethane	75-00-3	5	mg/kg	----	----	<5	<5	----
Trichlorofluoromethane	75-69-4	5	mg/kg	----	----	<5	<5	----
1.1-Dichloroethene	75-35-4	0.5	mg/kg	----	----	<0.5	<0.5	----
Iodomethane	74-88-4	0.5	mg/kg	----	----	<0.5	<0.5	----
trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	----	----	<0.5	<0.5	----
1.1-Dichloroethane	75-34-3	0.5	mg/kg	----	----	<0.5	<0.5	----
cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	----	----	<0.5	<0.5	----
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	----	----	<0.5	<0.5	----
1.1-Dichloropropylene	563-58-6	0.5	mg/kg	----	----	<0.5	<0.5	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg	----	----	<0.5	<0.5	----
1.2-Dichloroethane	107-06-2	0.5	mg/kg	----	----	<0.5	<0.5	----
Trichloroethene	79-01-6	0.5	mg/kg	----	----	<0.5	<0.5	----
Dibromomethane	74-95-3	0.5	mg/kg	----	----	<0.5	<0.5	----
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	----	----	<0.5	<0.5	----
1.3-Dichloropropane	142-28-9	0.5	mg/kg	----	----	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-04_2.0	BH-04_3.0	BH-05_0.2	BH-05_0.5	BH-05_1.0
				Sampling date / time	31-Aug-2024 14:30	31-Aug-2024 14:15	31-Aug-2024 11:45	31-Aug-2024 11:50	31-Aug-2024 12:05
Compound	CAS Number	LOR	Unit		ES2428781-016	ES2428781-017	ES2428781-018	ES2428781-019	ES2428781-020
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
Tetrachloroethene	127-18-4	0.5	mg/kg		----	----	<0.5	<0.5	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	----	<0.5	<0.5	----
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg		----	----	<0.5	<0.5	----
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		----	----	<0.5	<0.5	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg		----	----	<0.5	<0.5	----
Pentachloroethane	76-01-7	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg		----	----	<0.5	<0.5	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg		----	----	<0.5	<0.5	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		----	----	<0.5	<0.5	----
Bromobenzene	108-86-1	0.5	mg/kg		----	----	<0.5	<0.5	----
2-Chlorotoluene	95-49-8	0.5	mg/kg		----	----	<0.5	<0.5	----
4-Chlorotoluene	106-43-4	0.5	mg/kg		----	----	<0.5	<0.5	----
1.3-Dichlorobenzene	541-73-1	0.5	mg/kg		----	----	<0.5	<0.5	----
1.4-Dichlorobenzene	106-46-7	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2-Dichlorobenzene	95-50-1	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg		----	----	<0.5	<0.5	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		----	----	<0.5	<0.5	----
Bromodichloromethane	75-27-4	0.5	mg/kg		----	----	<0.5	<0.5	----
Dibromochloromethane	124-48-1	0.5	mg/kg		----	----	<0.5	<0.5	----
Bromoform	75-25-2	0.5	mg/kg		----	----	<0.5	<0.5	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-04_2.0	BH-04_3.0	BH-05_0.2	BH-05_0.5	BH-05_1.0
				Sampling date / time	31-Aug-2024 14:30	31-Aug-2024 14:15	31-Aug-2024 11:45	31-Aug-2024 11:50	31-Aug-2024 12:05
Compound	CAS Number	LOR	Unit		ES2428781-016	ES2428781-017	ES2428781-018	ES2428781-019	ES2428781-020
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	**0.8**	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	**0.7**	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	**0.7**	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	<0.5	<0.5	**2.2**	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	**16**	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	**120**	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	**3550**	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	**1640**	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	<50	**5310**	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	**20**	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-04_2.0	BH-04_3.0	BH-05_0.2	BH-05_0.5	BH-05_1.0
				Sampling date / time	31-Aug-2024 14:30	31-Aug-2024 14:15	31-Aug-2024 11:45	31-Aug-2024 11:50	31-Aug-2024 12:05
Compound	CAS Number	LOR	Unit		ES2428781-016	ES2428781-017	ES2428781-018	ES2428781-019	ES2428781-020
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	**20**	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	**260**	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	**4860**	**140**	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	**520**	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	<50	**5640**	**140**	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	<50	**260**	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	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
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.5	%		----	----	**101**	**103**	----
Toluene-D8	2037-26-5	0.5	%		----	----	**99.1**	**100**	----
4-Bromofluorobenzene	460-00-4	0.5	%		----	----	**99.7**	**99.7**	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**95.2**	**103**	**85.6**	**99.1**	**91.6**
2-Chlorophenol-D4	93951-73-6	0.5	%		**101**	**97.9**	**88.8**	**98.9**	**100**
2.4.6-Tribromophenol	118-79-6	0.5	%		**75.6**	**70.8**	**64.3**	**80.5**	**72.8**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**95.7**	**93.4**	**90.5**	**94.0**	**93.0**
Anthracene-d10	1719-06-8	0.5	%		**107**	**105**	**98.6**	**106**	**104**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-04_2.0	BH-04_3.0	BH-05_0.2	BH-05_0.5	BH-05_1.0
				Sampling date / time	31-Aug-2024 14:30	31-Aug-2024 14:15	31-Aug-2024 11:45	31-Aug-2024 11:50	31-Aug-2024 12:05
Compound	CAS Number	LOR	Unit		ES2428781-016	ES2428781-017	ES2428781-018	ES2428781-019	ES2428781-020
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.5	%		97.5	99.2	102	100	98.1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		114	107	104	107	101
Toluene-D8	2037-26-5	0.2	%		90.0	81.8	102	104	81.2
4-Bromofluorobenzene	460-00-4	0.2	%		88.7	84.8	107	106	78.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH-05_2.0	BH-05_3.0	BH-06_0.2	BH-06_0.5	BH-06_1.0 Received as BH-06_0.1
			Sampling date / time	31-Aug-2024 12:00	31-Aug-2024 12:00	31-Aug-2024 12:50	31-Aug-2024 13:05	31-Aug-2024 13:25
Compound	CAS Number	LOR	Unit	ES2428781-021	ES2428781-022	ES2428781-023	ES2428781-024	ES2428781-025
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	8.4	9.3	9.5	12.8	15.0
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	10	14	<5	7	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	14	19	6	12	13
Copper	7440-50-8	5	mg/kg	23	26	<5	20	18
Lead	7439-92-1	5	mg/kg	27	34	8	21	19
Nickel	7440-02-0	2	mg/kg	12	20	<2	10	9
Zinc	7440-66-6	5	mg/kg	46	74	8	35	34
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-05_2.0	BH-05_3.0	BH-06_0.2	BH-06_0.5	BH-06_1.0 Received as BH-06_0.1
				Sampling date / time	31-Aug-2024 12:00	31-Aug-2024 12:00	31-Aug-2024 12:50	31-Aug-2024 13:05	31-Aug-2024 13:25
Compound	CAS Number	LOR	Unit		ES2428781-021	ES2428781-022	ES2428781-023	ES2428781-024	ES2428781-025
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-05_2.0	BH-05_3.0	BH-06_0.2	BH-06_0.5	BH-06_1.0 Received as BH-06_0.1
				Sampling date / time	31-Aug-2024 12:00	31-Aug-2024 12:00	31-Aug-2024 12:50	31-Aug-2024 13:05	31-Aug-2024 13:25
Compound	CAS Number	LOR	Unit		ES2428781-021	ES2428781-022	ES2428781-023	ES2428781-024	ES2428781-025
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	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
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**86.2**	**85.2**	**85.0**	**80.7**	**85.5**
2-Chlorophenol-D4	93951-73-6	0.5	%		**82.9**	**95.9**	**94.5**	**97.1**	**85.8**
2.4.6-Tribromophenol	118-79-6	0.5	%		**48.8**	**86.4**	**88.1**	**85.0**	**84.7**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**98.2**	**96.8**	**90.6**	**94.1**	**94.2**
Anthracene-d10	1719-06-8	0.5	%		**89.7**	**98.3**	**97.4**	**99.5**	**96.6**
4-Terphenyl-d14	1718-51-0	0.5	%		**110**	**105**	**106**	**102**	**106**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**123**	**122**	**104**	**105**	**109**
Toluene-D8	2037-26-5	0.2	%		**99.3**	**101**	**83.3**	**84.5**	**84.2**
4-Bromofluorobenzene	460-00-4	0.2	%		**95.1**	**94.6**	**80.6**	**80.8**	**79.8**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH-06_2.0	BH-06_3.0	BH-07_0.2	BH-07_1.0	BH-07_2.0
			Sampling date / time	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00
Compound	CAS Number	LOR	Unit	ES2428781-026	ES2428781-027	ES2428781-028	ES2428781-029	ES2428781-030
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**10.6**	**10.4**	**13.5**	**16.6**	**10.0**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**9**	**13**	**8**	**6**	**8**
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**13**	**18**	**11**	**12**	**11**
Copper	7440-50-8	5	mg/kg	**20**	**26**	**22**	**18**	**19**
Lead	7439-92-1	5	mg/kg	**20**	**30**	**20**	**22**	**14**
Nickel	7440-02-0	2	mg/kg	**12**	**15**	**10**	**8**	**9**
Zinc	7440-66-6	5	mg/kg	**43**	**62**	**40**	**32**	**36**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	<0.5	----
Isopropylbenzene	98-82-8	0.5	mg/kg	----	----	<0.5	<0.5	----
n-Propylbenzene	103-65-1	0.5	mg/kg	----	----	<0.5	<0.5	----
1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	----	----	<0.5	<0.5	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	----	----	<0.5	<0.5	----
1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	----	----	<0.5	<0.5	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	----	----	<0.5	<0.5	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	----	<0.5	<0.5	----
n-Butylbenzene	104-51-8	0.5	mg/kg	----	----	<0.5	<0.5	----
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	5	mg/kg	----	----	<5	<5	----
2-Butanone (MEK)	78-93-3	5	mg/kg	----	----	<5	<5	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	----	----	<5	<5	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	----	----	<5	<5	----
EP074C: Sulfonated Compounds								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-06_2.0	BH-06_3.0	BH-07_0.2	BH-07_1.0	BH-07_2.0
				Sampling date / time	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00
Compound	CAS Number	LOR	Unit		ES2428781-026	ES2428781-027	ES2428781-028	ES2428781-029	ES2428781-030
					Result	Result	Result	Result	Result
EP074C: Sulfonated Compounds - Continued									
Carbon disulfide	75-15-0	0.5	mg/kg		----	----	<0.5	<0.5	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2-Dichloropropane	78-87-5	0.5	mg/kg		----	----	<0.5	<0.5	----
cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg		----	----	<0.5	<0.5	----
trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		----	----	<0.5	<0.5	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		----	----	<5	<5	----
Chloromethane	74-87-3	5	mg/kg		----	----	<5	<5	----
Vinyl chloride	75-01-4	5	mg/kg		----	----	<5	<5	----
Bromomethane	74-83-9	5	mg/kg		----	----	<5	<5	----
Chloroethane	75-00-3	5	mg/kg		----	----	<5	<5	----
Trichlorofluoromethane	75-69-4	5	mg/kg		----	----	<5	<5	----
1.1-Dichloroethene	75-35-4	0.5	mg/kg		----	----	<0.5	<0.5	----
Iodomethane	74-88-4	0.5	mg/kg		----	----	<0.5	<0.5	----
trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg		----	----	<0.5	<0.5	----
1.1-Dichloroethane	75-34-3	0.5	mg/kg		----	----	<0.5	<0.5	----
cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg		----	----	<0.5	<0.5	----
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg		----	----	<0.5	<0.5	----
1.1-Dichloropropylene	563-58-6	0.5	mg/kg		----	----	<0.5	<0.5	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2-Dichloroethane	107-06-2	0.5	mg/kg		----	----	<0.5	<0.5	----
Trichloroethene	79-01-6	0.5	mg/kg		----	----	<0.5	<0.5	----
Dibromomethane	74-95-3	0.5	mg/kg		----	----	<0.5	<0.5	----
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg		----	----	<0.5	<0.5	----
1.3-Dichloropropane	142-28-9	0.5	mg/kg		----	----	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-06_2.0	BH-06_3.0	BH-07_0.2	BH-07_1.0	BH-07_2.0
				Sampling date / time	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00
Compound	CAS Number	LOR	Unit		ES2428781-026	ES2428781-027	ES2428781-028	ES2428781-029	ES2428781-030
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
Tetrachloroethene	127-18-4	0.5	mg/kg		----	----	<0.5	<0.5	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	----	<0.5	<0.5	----
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg		----	----	<0.5	<0.5	----
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		----	----	<0.5	<0.5	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg		----	----	<0.5	<0.5	----
Pentachloroethane	76-01-7	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg		----	----	<0.5	<0.5	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg		----	----	<0.5	<0.5	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		----	----	<0.5	<0.5	----
Bromobenzene	108-86-1	0.5	mg/kg		----	----	<0.5	<0.5	----
2-Chlorotoluene	95-49-8	0.5	mg/kg		----	----	<0.5	<0.5	----
4-Chlorotoluene	106-43-4	0.5	mg/kg		----	----	<0.5	<0.5	----
1.3-Dichlorobenzene	541-73-1	0.5	mg/kg		----	----	<0.5	<0.5	----
1.4-Dichlorobenzene	106-46-7	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2-Dichlorobenzene	95-50-1	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg		----	----	<0.5	<0.5	----
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg		----	----	<0.5	<0.5	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		----	----	<0.5	<0.5	----
Bromodichloromethane	75-27-4	0.5	mg/kg		----	----	<0.5	<0.5	----
Dibromochloromethane	124-48-1	0.5	mg/kg		----	----	<0.5	<0.5	----
Bromoform	75-25-2	0.5	mg/kg		----	----	<0.5	<0.5	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-06_2.0	BH-06_3.0	BH-07_0.2	BH-07_1.0	BH-07_2.0
				Sampling date / time	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00
Compound	CAS Number	LOR	Unit		ES2428781-026	ES2428781-027	ES2428781-028	ES2428781-029	ES2428781-030
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-06_2.0	BH-06_3.0	BH-07_0.2	BH-07_1.0	BH-07_2.0
				Sampling date / time	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00
Compound	CAS Number	LOR	Unit		ES2428781-026	ES2428781-027	ES2428781-028	ES2428781-029	ES2428781-030
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	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
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.5	%		----	----	**95.6**	**95.7**	----
Toluene-D8	2037-26-5	0.5	%		----	----	**94.3**	**98.2**	----
4-Bromofluorobenzene	460-00-4	0.5	%		----	----	**92.5**	**94.0**	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**92.8**	**94.9**	**90.2**	**88.8**	**85.5**
2-Chlorophenol-D4	93951-73-6	0.5	%		**101**	**88.8**	**90.4**	**94.7**	**82.0**
2.4.6-Tribromophenol	118-79-6	0.5	%		**75.7**	**83.8**	**87.8**	**95.4**	**85.8**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**97.1**	**95.6**	**93.4**	**97.7**	**92.5**
Anthracene-d10	1719-06-8	0.5	%		**99.5**	**98.9**	**110**	**94.9**	**112**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-06_2.0	BH-06_3.0	BH-07_0.2	BH-07_1.0	BH-07_2.0
				Sampling date / time	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00
Compound	CAS Number	LOR	Unit		ES2428781-026	ES2428781-027	ES2428781-028	ES2428781-029	ES2428781-030
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.5	%		**103**	**101**	**96.5**	**102**	**97.9**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**78.3**	**92.8**	**98.6**	**98.8**	**77.1**
Toluene-D8	2037-26-5	0.2	%		**74.4**	**72.6**	**97.0**	**101**	**70.5**
4-Bromofluorobenzene	460-00-4	0.2	%		**67.9**	**68.4**	**98.6**	**101**	**75.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-07_3.0	BH-08_0.2	BH-08_1.0	BH-08_2.0	BH-08_3.0
				Sampling date / time	31-Aug-2024 11:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00
Compound	CAS Number	LOR	Unit		ES2428781-031	ES2428781-032	ES2428781-033	ES2428781-034	ES2428781-035
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		11.1	15.8	18.4	15.4	17.5
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		8	8	6	8	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		10	12	13	10	9
Copper	7440-50-8	5	mg/kg		16	28	25	25	18
Lead	7439-92-1	5	mg/kg		18	19	13	14	9
Nickel	7440-02-0	2	mg/kg		7	11	14	10	7
Zinc	7440-66-6	5	mg/kg		36	38	30	43	28
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-07_3.0	BH-08_0.2	BH-08_1.0	BH-08_2.0	BH-08_3.0
				Sampling date / time	31-Aug-2024 11:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00
Compound	CAS Number	LOR	Unit		ES2428781-031	ES2428781-032	ES2428781-033	ES2428781-034	ES2428781-035
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH-07_3.0	BH-08_0.2	BH-08_1.0	BH-08_2.0	BH-08_3.0
				Sampling date / time	31-Aug-2024 11:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00
Compound	CAS Number	LOR	Unit		ES2428781-031	ES2428781-032	ES2428781-033	ES2428781-034	ES2428781-035
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**87.7**	**88.5**	**103**	**91.1**	**91.8**
2-Chlorophenol-D4	93951-73-6	0.5	%		**83.7**	**80.9**	**86.3**	**81.9**	**86.4**
2.4.6-Tribromophenol	118-79-6	0.5	%		**85.0**	**88.8**	**89.4**	**80.4**	**87.6**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**96.3**	**89.6**	**87.7**	**93.8**	**93.2**
Anthracene-d10	1719-06-8	0.5	%		**104**	**97.6**	**98.1**	**98.8**	**98.8**
4-Terphenyl-d14	1718-51-0	0.5	%		**103**	**101**	**102**	**100**	**102**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**73.3**	**79.9**	**79.3**	**93.9**	**77.9**
Toluene-D8	2037-26-5	0.2	%		**71.1**	**81.7**	**71.6**	**90.7**	**75.4**
4-Bromofluorobenzene	460-00-4	0.2	%		**72.7**	**81.5**	**81.4**	**96.2**	**73.3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QC100	QC200	Trip-1 Trip Spike 20	Trip-2 Trip Spike 21	Blank-1
			Sampling date / time	31-Aug-2024 00:00	31-Aug-2024 00:00	26-Aug-2024 00:00	26-Aug-2024 00:00	26-Aug-2024 00:00
Compound	CAS Number	LOR	Unit	ES2428781-036	ES2428781-037	ES2428781-038	ES2428781-039	ES2428781-040
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**14.1**	**12.4**	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	**6**	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**22**	**11**	----	----	----
Copper	7440-50-8	5	mg/kg	**233**	**20**	----	----	----
Lead	7439-92-1	5	mg/kg	**264**	**19**	----	----	----
Nickel	7440-02-0	2	mg/kg	**20**	**10**	----	----	----
Zinc	7440-66-6	5	mg/kg	**97**	**33**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC100	QC200	Trip-1 Trip Spike 20	Trip-2 Trip Spike 21	Blank-1
				Sampling date / time	31-Aug-2024 00:00	31-Aug-2024 00:00	26-Aug-2024 00:00	26-Aug-2024 00:00	26-Aug-2024 00:00
Compound	CAS Number	LOR	Unit		ES2428781-036	ES2428781-037	ES2428781-038	ES2428781-039	ES2428781-040
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	**0.6**	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	<10
C10 - C14 Fraction	----	50	mg/kg		**70**	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg		**2280**	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		**1090**	<100	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		**3440**	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg		**160**	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		**3060**	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		**420**	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		**3640**	<50	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		**160**	<50	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	**5.9**	**5.7**	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	**6.6**	**5.9**	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	**7.1**	**6.5**	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	**3.0**	**2.7**	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	**22.6**	**20.8**	<0.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC100	QC200	Trip-1 Trip Spike 20	Trip-2 Trip Spike 21	Blank-1
				Sampling date / time	31-Aug-2024 00:00	31-Aug-2024 00:00	26-Aug-2024 00:00	26-Aug-2024 00:00	26-Aug-2024 00:00
Compound	CAS Number	LOR	Unit		ES2428781-036	ES2428781-037	ES2428781-038	ES2428781-039	ES2428781-040
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	**10.1**	**9.2**	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**91.3**	**93.9**	**----**	**----**	**----**
2-Chlorophenol-D4	93951-73-6	0.5	%		**87.6**	**94.2**	**----**	**----**	**----**
2.4.6-Tribromophenol	118-79-6	0.5	%		**67.2**	**92.9**	**----**	**----**	**----**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**95.3**	**94.0**	**----**	**----**	**----**
Anthracene-d10	1719-06-8	0.5	%		**107**	**97.0**	**----**	**----**	**----**
4-Terphenyl-d14	1718-51-0	0.5	%		**106**	**99.8**	**----**	**----**	**----**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**78.2**	**92.2**	**92.2**	**79.8**	**88.5**
Toluene-D8	2037-26-5	0.2	%		**78.7**	**89.2**	**89.6**	**74.8**	**88.6**
4-Bromofluorobenzene	460-00-4	0.2	%		**82.1**	**93.3**	**88.1**	**75.7**	**88.3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Blank-2	BH-01_ACM	BH-02_ACM	BH-03_ACM	BH-04_ACM
				Sampling date / time	26-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00
Compound	CAS Number	LOR	Unit		ES2428781-041	ES2428781-043	ES2428781-044	ES2428781-045	ES2428781-046
					Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		**----**	**No**	**No**	**No**	**No**
Asbestos (Trace)	1332-21-4	-	-		**----**	**No**	**No**	**No**	**No**
Asbestos Type	1332-21-4	-	--		**----**	**-**	**-**	**-**	**-**
Synthetic Mineral Fibre	----	-	--		**----**	**No**	**No**	**No**	**No**
Organic Fibre	----	-	--		**----**	**No**	**No**	**No**	**No**
Sample weight (dry)	----	0.01	g		**----**	**433**	**366**	**460**	**576**
APPROVED IDENTIFIER:	----	-	--		**----**	**B.SCHRADER**	**B.SCHRADER**	**B.SCHRADER**	**B.SCHRADER**
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	**----**	**----**	**----**	**----**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**84.3**	**----**	**----**	**----**	**----**
Toluene-D8	2037-26-5	0.2	%		**80.7**	**----**	**----**	**----**	**----**
4-Bromofluorobenzene	460-00-4	0.2	%		**82.2**	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH-06_ACM	BH-07_ACM	BH-08_ACM	Trip Spike Control 20	Trip Spike Control 21
			Sampling date / time	31-Aug-2024 00:00	31-Aug-2024 00:00	31-Aug-2024 00:00	26-Aug-2024 00:00	26-Aug-2024 00:00
Compound	CAS Number	LOR	Unit	ES2428781-047	ES2428781-048	ES2428781-049	ES2428781-050	ES2428781-051
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	----	----
Asbestos (Trace)	1332-21-4	-	-	No	No	No	----	----
Asbestos Type	1332-21-4	-	--	-	-	-	----	----
Synthetic Mineral Fibre	----	-	--	No	No	No	----	----
Organic Fibre	----	-	--	No	No	No	----	----
Sample weight (dry)	----	0.01	g	479	508	812	----	----
APPROVED IDENTIFIER:	----	-	--	B.SCHRADER	B.SCHRADER	B.SCHRADER	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	6.0	6.1
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	6.6	6.3
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	7.3	6.9
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	3.1	2.8
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	23.0	22.1
^ Total Xylenes	----	0.5	mg/kg	----	----	----	10.4	9.7
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	<1
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	76.2	83.6
Toluene-D8	2037-26-5	0.2	%	----	----	----	81.0	80.8
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	79.2	82.4

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	Rinse-1	----	----	----	----
				Sampling date / time	31-Aug-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2428781-042	--------	--------	--------	--------
					Result	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**6.58**	**----**	**----**	**----**	**----**
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**6**	**----**	**----**	**----**	**----**

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	BH-01_ACM - 31-Aug-2024 00:00	A soil sample.
EA200: Description	BH-02_ACM - 31-Aug-2024 00:00	A soil sample.
EA200: Description	BH-03_ACM - 31-Aug-2024 00:00	A soil sample.
EA200: Description	BH-04_ACM - 31-Aug-2024 00:00	A soil sample.
EA200: Description	BH-06_ACM - 31-Aug-2024 00:00	A soil sample.
EA200: Description	BH-07_ACM - 31-Aug-2024 00:00	A soil sample.
EA200: Description	BH-08_ACM - 31-Aug-2024 00:00	A soil sample.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	64	130
Toluene-D8	2037-26-5	66	136
4-Bromofluorobenzene	460-00-4	60	122
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	63	125
Toluene-D8	2037-26-5	67	124
4-Bromofluorobenzene	460-00-4	66	131

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry / Biology).

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

Attachment 2: Quality Control Report (Lab)

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2428781**	Page	: 1 of 13
Client	: **Benbow Environmental**	Laboratory	: Environmental Division Sydney
Contact	: DAMIEN THOMAS	Telephone	: +61-2-8784 8555
Project	: Shine DSI	Date Samples Received	: 02-Sep-2024
Site	: ----	Issue Date	: 08-Sep-2024
Sampler	: DAMIEN THOMAS	No. of samples received	: 51
Order number	: 241071	No. of samples analysed	: 51

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
Rinse-1	----	----	----	04-Sep-2024	31-Aug-2024	**4**

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
BH-01_0.2, BH-01_1.0, BH-01_2.0, BH-01_3.0, BH-02_0.2, BH-02_1.0, BH-02_2.0, BH-02_3.0, BH-03_0.2, BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-04_0.2, BH-04_1.0, BH-04_2.0, BH-04_3.0, BH-05_0.2, BH-05_0.5, BH-05_1.0, BH-05_2.0, BH-05_3.0, BH-06_0.2, BH-06_0.5, BH-06_1.0 - Received as BH-06_0.1, BH-06_2.0, BH-06_3.0, BH-07_0.2, BH-07_1.0, BH-07_2.0, BH-07_3.0, BH-08_0.2, BH-08_1.0, BH-08_2.0, BH-08_3.0, QC100, QC200	**31-Aug-2024**	**----**	----	**----**	**04-Sep-2024**	14-Sep-2024	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)							
BH-01_ACM, BH-02_ACM, BH-03_ACM, BH-04_ACM, BH-06_ACM, BH-07_ACM, BH-08_ACM	**31-Aug-2024**	**----**	----	**----**	**05-Sep-2024**	27-Feb-2025	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BH-01_0.2, BH-01_1.0, BH-01_2.0, BH-01_3.0, BH-02_0.2, BH-02_1.0, BH-02_2.0, BH-02_3.0, BH-03_0.2, BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-04_0.2, BH-04_1.0, BH-04_2.0, BH-04_3.0, BH-05_0.2, BH-05_0.5, BH-05_1.0, BH-05_2.0, BH-05_3.0, BH-06_0.2, BH-06_0.5, BH-06_1.0 - Received as BH-06_0.1, BH-06_2.0, BH-06_3.0, BH-07_0.2, BH-07_1.0, BH-07_2.0, BH-07_3.0, BH-08_0.2, BH-08_1.0, BH-08_2.0, BH-08_3.0, QC100, QC200	**31-Aug-2024**	**04-Sep-2024**	27-Feb-2025	✓	**04-Sep-2024**	27-Feb-2025	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BH-01_0.2, BH-01_1.0, BH-01_2.0, BH-01_3.0, BH-02_0.2, BH-02_1.0, BH-02_2.0, BH-02_3.0, BH-03_0.2, BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-04_0.2, BH-04_1.0, BH-04_2.0, BH-04_3.0, BH-05_0.2, BH-05_0.5, BH-05_1.0, BH-05_2.0, BH-05_3.0, BH-06_0.2, BH-06_0.5, BH-06_1.0 - Received as BH-06_0.1, BH-06_2.0, BH-06_3.0, BH-07_0.2, BH-07_1.0, BH-07_2.0, BH-07_3.0, BH-08_0.2, BH-08_1.0, BH-08_2.0, BH-08_3.0, QC100, QC200	**31-Aug-2024**	**04-Sep-2024**	28-Sep-2024	✓	**06-Sep-2024**	28-Sep-2024	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074)							
BH-03_0.2	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**04-Sep-2024**	07-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP074)							
BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-05_0.2, BH-05_0.5, BH-07_0.2, BH-07_1.0	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**05-Sep-2024**	07-Sep-2024	✓
EP074B: Oxygenated Compounds							
Soil Glass Jar - Unpreserved (EP074)							
BH-03_0.2	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**04-Sep-2024**	07-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP074)							
BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-05_0.2, BH-05_0.5, BH-07_0.2, BH-07_1.0	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**05-Sep-2024**	07-Sep-2024	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074C: Sulfonated Compounds							
Soil Glass Jar - Unpreserved (EP074)							
BH-03_0.2	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**04-Sep-2024**	07-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP074)							
BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-05_0.2, BH-05_0.5, BH-07_0.2, BH-07_1.0	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**05-Sep-2024**	07-Sep-2024	✓
EP074D: Fumigants							
Soil Glass Jar - Unpreserved (EP074)							
BH-03_0.2	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**04-Sep-2024**	07-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP074)							
BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-05_0.2, BH-05_0.5, BH-07_0.2, BH-07_1.0	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**05-Sep-2024**	07-Sep-2024	✓
EP074E: Halogenated Aliphatic Compounds							
Soil Glass Jar - Unpreserved (EP074)							
BH-03_0.2	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**04-Sep-2024**	07-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP074)							
BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-05_0.2, BH-05_0.5, BH-07_0.2, BH-07_1.0	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**05-Sep-2024**	07-Sep-2024	✓
EP074F: Halogenated Aromatic Compounds							
Soil Glass Jar - Unpreserved (EP074)							
BH-03_0.2	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**04-Sep-2024**	07-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP074)							
BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-05_0.2, BH-05_0.5, BH-07_0.2, BH-07_1.0	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**05-Sep-2024**	07-Sep-2024	✓
EP074G: Trihalomethanes							
Soil Glass Jar - Unpreserved (EP074)							
BH-03_0.2	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**04-Sep-2024**	07-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP074)							
BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-05_0.2, BH-05_0.5, BH-07_0.2, BH-07_1.0	**31-Aug-2024**	**04-Sep-2024**	07-Sep-2024	✓	**05-Sep-2024**	07-Sep-2024	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH-01_0.2, BH-01_1.0, BH-01_2.0, BH-01_3.0, BH-02_0.2, BH-02_1.0, BH-02_2.0, BH-02_3.0, BH-03_0.2, BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-04_0.2, BH-04_1.0, BH-04_2.0, BH-04_3.0, BH-05_0.2, BH-05_0.5, BH-05_1.0, BH-07_0.2, BH-07_1.0, BH-07_2.0, BH-07_3.0	**31-Aug-2024**	**04-Sep-2024**	14-Sep-2024	✓	**04-Sep-2024**	14-Oct-2024	✓
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH-05_2.0, BH-05_3.0, BH-06_0.2, BH-06_0.5, BH-06_1.0 - Received as BH-06_0.1, BH-06_2.0, BH-06_3.0, BH-08_0.2, BH-08_1.0, BH-08_2.0, BH-08_3.0, QC100, QC200	**31-Aug-2024**	**04-Sep-2024**	14-Sep-2024	✓	**05-Sep-2024**	14-Oct-2024	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
Blank-1, Blank-2	**26-Aug-2024**	**04-Sep-2024**	09-Sep-2024	✓	**05-Sep-2024**	09-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP071)							
BH-01_0.2, BH-01_1.0, BH-01_2.0, BH-01_3.0, BH-02_0.2, BH-02_1.0, BH-02_2.0, BH-02_3.0, BH-03_0.2, BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-04_0.2, BH-04_1.0, BH-04_2.0, BH-04_3.0, BH-05_0.2, BH-05_0.5, BH-05_1.0	**31-Aug-2024**	**04-Sep-2024**	14-Sep-2024	✓	**04-Sep-2024**	14-Oct-2024	✓
Soil Glass Jar - Unpreserved (EP080)							
BH-01_0.2, BH-01_1.0, BH-01_2.0, BH-01_3.0, BH-02_0.2, BH-02_1.0, BH-02_2.0, BH-02_3.0, BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-04_0.2, BH-04_1.0, BH-04_2.0, BH-04_3.0, BH-05_0.2, BH-05_0.5, BH-05_1.0, BH-05_2.0, BH-05_3.0, BH-06_0.2, BH-06_0.5, BH-06_1.0 - Received as BH-06_0.1, BH-06_2.0, BH-06_3.0, BH-07_0.2, BH-07_1.0, BH-07_2.0, BH-07_3.0, BH-08_0.2, BH-08_1.0, BH-08_2.0, BH-08_3.0, QC100, QC200	**31-Aug-2024**	**04-Sep-2024**	14-Sep-2024	✓	**05-Sep-2024**	14-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP080)							
BH-06_3.0	**31-Aug-2024**	**04-Sep-2024**	14-Sep-2024	✓	**06-Sep-2024**	14-Sep-2024	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
Blank-1, Blank-2	**26-Aug-2024**	**04-Sep-2024**	09-Sep-2024	✓	**05-Sep-2024**	09-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP071)							
BH-01_0.2, BH-01_1.0, BH-01_2.0, BH-01_3.0, BH-02_0.2, BH-02_1.0, BH-02_2.0, BH-02_3.0, BH-03_0.2, BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-04_0.2, BH-04_1.0, BH-04_2.0, BH-04_3.0, BH-05_0.2, BH-05_0.5, BH-05_1.0	**31-Aug-2024**	**04-Sep-2024**	14-Sep-2024	✓	**04-Sep-2024**	14-Oct-2024	✓
Soil Glass Jar - Unpreserved (EP080)							
BH-01_0.2, BH-01_1.0, BH-01_2.0, BH-01_3.0, BH-02_0.2, BH-02_1.0, BH-02_2.0, BH-02_3.0, BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-04_0.2, BH-04_1.0, BH-04_2.0, BH-04_3.0, BH-05_0.2, BH-05_0.5, BH-05_1.0, BH-05_2.0, BH-05_3.0, BH-06_0.2, BH-06_0.5, BH-06_1.0 - Received as BH-06_0.1, BH-06_2.0, BH-06_3.0, BH-07_0.2, BH-07_1.0, BH-07_2.0, BH-07_3.0, BH-08_0.2, BH-08_1.0, BH-08_2.0, BH-08_3.0, QC100, QC200	**31-Aug-2024**	**04-Sep-2024**	14-Sep-2024	✓	**05-Sep-2024**	14-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP080)							
BH-06_3.0	**31-Aug-2024**	**04-Sep-2024**	14-Sep-2024	✓	**06-Sep-2024**	14-Sep-2024	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) Trip-1 - Trip Spike 20, Trip-2 - Trip Spike 21, Blank-1, Blank-2, Trip Spike Control 21	**26-Aug-2024**	**04-Sep-2024**	09-Sep-2024	✓	**05-Sep-2024**	09-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP080) Trip Spike Control 20	**26-Aug-2024**	**04-Sep-2024**	09-Sep-2024	✓	**06-Sep-2024**	09-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP080) BH-03_0.2	**31-Aug-2024**	**04-Sep-2024**	14-Sep-2024	✓	**04-Sep-2024**	14-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP080) BH-01_0.2, BH-01_1.0, BH-01_2.0, BH-01_3.0, BH-02_0.2, BH-02_1.0, BH-02_2.0, BH-02_3.0, BH-03_1.0, BH-03_2.0, BH-03_3.0, BH-03_3.5, BH-04_0.2, BH-04_1.0, BH-04_2.0, BH-04_3.0, BH-05_0.2, BH-05_0.5, BH-05_1.0, BH-05_2.0, BH-05_3.0, BH-06_0.2, BH-06_0.5, BH-06_1.0 - Received as BH-06_0.1, BH-06_2.0, BH-07_0.2, BH-07_1.0, BH-07_2.0, BH-07_3.0, BH-08_0.2, BH-08_1.0, BH-08_2.0, BH-08_3.0, QC100, QC200	**31-Aug-2024**	**04-Sep-2024**	14-Sep-2024	✓	**05-Sep-2024**	14-Sep-2024	✓
Soil Glass Jar - Unpreserved (EP080) BH-06_3.0	**31-Aug-2024**	**04-Sep-2024**	14-Sep-2024	✓	**06-Sep-2024**	14-Sep-2024	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) Rinse-1	**31-Aug-2024**	**----**	----	----	**04-Sep-2024**	31-Aug-2024	✘
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) Rinse-1	**31-Aug-2024**	**----**	----	----	**04-Sep-2024**	28-Sep-2024	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	5	47	**10.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	4	37	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	37	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	37	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	4	37	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	5	49	**10.20**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	49	**6.12**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	49	**6.12**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	49	**6.12**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Conductivity by Auto Titrator	EA010-P	3	21	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Conductivity by Auto Titrator	EA010-P	3	21	**14.29**	**8.33**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Conductivity by Auto Titrator	EA010-P	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
Volatile Organic Compounds	EP074	SOIL	In house: Referenced to USEPA SW 846 - 8260 Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Attachment 3: QA/QC Compliance Assessment (Laboratory)

QUALITY CONTROL REPORT

Work Order	: **ES2428781**	Page	: 1 of 17
Client	: **Benbow Environmental**	Laboratory	: Environmental Division Sydney
Contact	: DAMIEN THOMAS	Contact	: Customer Services ES
Address	: 25 Sherwood St Northmead 2152	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Shine DSI	Date Samples Received	: 02-Sep-2024
Order number	: 241071	Date Analysis Commenced	: 04-Sep-2024
C-O-C number	: ----	Issue Date	: 08-Sep-2024
Sampler	: DAMIEN THOMAS		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 51		
No. of samples analysed	: 51		

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 Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6033079)									
ES2428781-001	BH-01_0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	8	52.5	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	2	74.1	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	20	9	72.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	9	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	12	15	17.3	No Limit
ES2428781-011	BH-03_2.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	12	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	9	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	8	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	25	33	26.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	20	27	29.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	34	39	13.5	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6033081)									
ES2428781-021	BH-05_2.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	15	7.4	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	13	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	11	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	23	24	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	27	28	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6033081) - continued									
ES2428781-021	BH-05_2.0	EG005T: Zinc	7440-66-6	5	mg/kg	46	46	0.0	No Limit
ES2428781-031	BH-07_3.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	10	10	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	7	10	38.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	9	13.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	18	7.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	18	20	14.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	36	45	24.1	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6032962)									
ES2428625-002	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	47.5	49.0	3.1	0% - 20%
ES2428781-004	BH-01_3.0	EA055: Moisture Content	----	0.1 (1.0)*	%	10.6	10.0	6.3	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6032963)									
ES2428781-013	BH-03_3.5	EA055: Moisture Content	----	0.1 (1.0)*	%	10.7	10.0	6.5	0% - 50%
ES2428781-024	BH-06_0.5	EA055: Moisture Content	----	0.1 (1.0)*	%	12.8	13.0	1.4	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6033086)									
ES2428781-027	BH-06_3.0	EA055: Moisture Content	----	0.1 (1.0)*	%	10.4	10.4	0.0	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 6033080)									
ES2428781-001	BH-01_0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2428781-011	BH-03_2.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 6033082)									
ES2428781-021	BH-05_2.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2428781-031	BH-07_3.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 6032445)									
ES2428781-009	BH-03_0.2	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 6032445)									
ES2428781-009	BH-03_0.2	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074C: Sulfonated Compounds (QC Lot: 6032445)									
ES2428781-009	BH-03_0.2	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074D: Fumigants (QC Lot: 6032445)									
ES2428781-009	BH-03_0.2	EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 6032445)									
ES2428781-009	BH-03_0.2	EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 6032445)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074F: Halogenated Aromatic Compounds (QC Lot: 6032445) - continued									
ES2428781-009	BH-03_0.2	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 6032445)									
ES2428781-009	BH-03_0.2	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6031933)									
ES2428781-001	BH-01_0.2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES2428781-011	BH-03_2.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6031933) - continued									
ES2428781-011	BH-03_2.0	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.0	1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.6	1.6	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.5	1.6	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.6	0.6	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.6	0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	5.3	5.3	0.0	0% - 50%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6031936)									
ES2428781-021	BH-05_2.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6031936) - continued									
ES2428781-031	BH-07_3.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6031934)									
ES2428781-001	BH-01_0.2	EP071: C15 - C28 Fraction	----	100	mg/kg	2520	2150	16.0	0% - 20%
		EP071: C29 - C36 Fraction	----	100	mg/kg	2240	2050	8.9	0% - 20%
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2428781-011	BH-03_2.0	EP071: C15 - C28 Fraction	----	100	mg/kg	740	670	9.4	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	220	180	19.9	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	100	130	21.7	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6031937)									
ES2428781-021	BH-05_2.0	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2428781-031	BH-07_3.0	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6032438)									
ES2428781-001	BH-01_0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2428781-016	BH-04_2.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6032440)									
ES2428781-030	BH-07_2.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2428781-034	BH-08_2.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6032446)									
ES2428781-009	BH-03_0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6031934)									
ES2428781-001	BH-01_0.2	EP071: >C16 - C34 Fraction	----	100	mg/kg	4360	3570	19.7	0% - 20%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	1060	1250	16.5	0% - 50%
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2428781-011	BH-03_2.0	EP071: >C16 - C34 Fraction	----	100	mg/kg	820	680	17.3	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	100	100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	220	250	11.2	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6031937)									
ES2428781-021	BH-05_2.0	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2428781-031	BH-07_3.0	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6032438)									
ES2428781-001	BH-01_0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2428781-016	BH-04_2.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6032440)									
ES2428781-030	BH-07_2.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2428781-034	BH-08_2.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6032446)									
ES2428781-009	BH-03_0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 6032438)									
ES2428781-001	BH-01_0.2	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2428781-016	BH-04_2.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 6032438) - continued									
ES2428781-016	BH-04_2.0	EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 6032440)									
ES2428781-030	BH-07_2.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2428781-034	BH-08_2.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 6032446)									
ES2428781-009	BH-03_0.2	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 6034308)									
ES2428944-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.00	8.02	0.2	0% - 20%
ES2428490-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.26	8.25	0.1	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 6034305)									
ES2428786-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	14400	14500	0.9	0% - 20%
EN2410083-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	16700	16600	0.0	0% - 20%
ES2428490-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	5860	5670	3.4	0% - 20%

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6033079)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	110	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	91.6	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	106	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	102	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	95.9	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	93.5	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	88.2	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6033081)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	95.2	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	80.2	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	96.6	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	90.1	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	89.3	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	85.0	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	81.4	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6033080)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	117	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6033082)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	102	70.0	125
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 6032445)								
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	97.3	67.0	113
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	96.4	65.0	117
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	101	66.0	122
EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	104	68.0	118
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	102	69.0	119
EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	102	69.0	117
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	98.5	69.0	115
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	100	66.0	118
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	99.4	59.0	125
EP074B: Oxygenated Compounds (QCLot: 6032445)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP074B: Oxygenated Compounds (QCLot: 6032445) - continued								
EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	10 mg/kg	95.6	29.6	156
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	96.2	58.0	136
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	10 mg/kg	98.9	62.0	132
EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	10 mg/kg	98.8	54.0	136
EP074C: Sulfonated Compounds (QCLot: 6032445)								
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	88.0	54.0	126
EP074D: Fumigants (QCLot: 6032445)								
EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	97.4	60.0	126
EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	101	68.0	124
EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	96.8	51.0	119
EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	98.4	52.0	114
EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	97.2	63.0	115
EP074E: Halogenated Aliphatic Compounds (QCLot: 6032445)								
EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	10 mg/kg	76.6	30.0	148
EP074: Chloromethane	74-87-3	5	mg/kg	<5	10 mg/kg	105	41.0	141
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	84.2	43.0	147
EP074: Bromomethane	74-83-9	5	mg/kg	<5	10 mg/kg	94.3	47.0	141
EP074: Chloroethane	75-00-3	5	mg/kg	<5	10 mg/kg	94.6	49.0	143
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	10 mg/kg	95.3	49.0	135
EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	99.3	54.0	126
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	90.9	43.0	129
EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	98.7	64.0	120
EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	105	67.0	125
EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	99.8	69.0	121
EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	94.2	65.0	117
EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	102	65.0	123
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	88.6	59.0	125
EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	104	65.0	125
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	97.6	70.0	118
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	102	68.0	118
EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	101	64.0	126
EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	108	68.0	122
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	94.4	67.0	143
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	94.5	62.0	122

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP074E: Halogenated Aliphatic Compounds (QCLot: 6032445) - continued								
EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	104	54.0	128
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	88.1	55.0	129
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	99.2	65.0	121
EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	102	61.0	125
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	90.1	19.8	134
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	87.2	53.0	129
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	102	50.0	128
EP074F: Halogenated Aromatic Compounds (QCLot: 6032445)								
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	101	68.0	116
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	97.9	70.0	114
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	105	68.0	122
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	106	67.0	123
EP074: 1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	101	70.0	116
EP074: 1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	99.7	67.0	117
EP074: 1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	98.3	70.0	114
EP074: 1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	99.4	48.0	122
EP074: 1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	103	52.0	122
EP074G: Trihalomethanes (QCLot: 6032445)								
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	101	66.0	124
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	98.8	61.0	121
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	86.3	63.0	121
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	84.6	60.0	126
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6031933)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	94.9	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	95.7	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	95.0	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	97.7	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	95.2	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	98.3	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	98.7	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	99.3	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	90.6	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	94.4	75.0	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6031933) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	90.1	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	92.3	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	97.2	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	70.7	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	74.4	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	69.6	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6031936)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	90.9	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	96.0	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	91.0	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	94.9	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	92.9	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	93.8	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	96.4	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	94.3	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	93.3	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	91.5	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	90.6	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	100	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	92.8	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	78.5	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	71.6	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	74.2	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6031934)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	102	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	104	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	108	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6031937)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	92.2	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	104	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	108	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6032438)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	74.2	72.2	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Acceptable Limits (%)
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6032440)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	83.8	72.2	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6032446)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	84.3	72.2	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6031934)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	104	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	105	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	108	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6031937)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	94.2	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	121	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	111	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6032438)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	75.3	72.4	133
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6032440)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	77.2	72.4	133
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6032446)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	87.0	72.4	133
EP080: BTEXN (QCLot: 6032438)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	91.5	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	92.3	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	90.2	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	102	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	98.4	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	98.9	78.8	122
EP080: BTEXN (QCLot: 6032440)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	87.8	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	90.4	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	83.2	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	87.8	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	87.5	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	96.6	78.8	122
EP080: BTEXN (QCLot: 6032446)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080: BTEXN (QCLot: 6032446) - continued								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	108	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	107	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	111	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	116	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	108	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	112	78.8	122

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EA005P: pH by PC Titrator (QCLot: 6034308)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	99.8	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 6034305)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	97.4	89.9	110
				<1	2100 µS/cm	96.9	90.2	111

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6033079)							
ES2428781-001	BH-01_0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	112	70.0	130
		EG005T: Cadmium	7440-43-9	20 mg/kg	129	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	95.4	68.0	132
		EG005T: Copper	7440-50-8	80 mg/kg	105	70.0	130
		EG005T: Lead	7439-92-1	80 mg/kg	119	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	97.4	70.0	130
		EG005T: Zinc	7440-66-6	80 mg/kg	116	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6033081)							
ES2428781-021	BH-05_2.0	EG005T: Arsenic	7440-38-2	50 mg/kg	104	70.0	130
		EG005T: Cadmium	7440-43-9	20 mg/kg	117	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	92.6	68.0	132
		EG005T: Copper	7440-50-8	80 mg/kg	106	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6033081) - continued							
ES2428781-021	BH-05_2.0	EG005T: Lead	7439-92-1	80 mg/kg	101	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	91.8	70.0	130
		EG005T: Zinc	7440-66-6	80 mg/kg	105	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6033080)							
ES2428781-001	BH-01_0.2	EG035T: Mercury	7439-97-6	5 mg/kg	98.1	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6033082)							
ES2428781-021	BH-05_2.0	EG035T: Mercury	7439-97-6	5 mg/kg	114	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 6032445)							
ES2428781-009	BH-03_0.2	EP074: 1.1-Dichloroethene	75-35-4	2.5 mg/kg	78.7	70.0	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	82.9	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 6032445)							
ES2428781-009	BH-03_0.2	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	92.9	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6031933)							
ES2428781-001	BH-01_0.2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	100	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	101	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6031936)							
ES2428781-021	BH-05_2.0	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	96.6	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	92.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6031934)							
ES2428781-001	BH-01_0.2	EP071: C10 - C14 Fraction	----	480 mg/kg	122	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	103	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	121	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6031937)							
ES2428781-021	BH-05_2.0	EP071: C10 - C14 Fraction	----	480 mg/kg	136	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	119	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	111	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6032438)							
ES2428781-001	BH-01_0.2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	77.9	60.4	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6032440)							
ES2428781-030	BH-07_2.0	EP080: C6 - C9 Fraction	----	32.5 mg/kg	91.1	60.4	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6032446)							
ES2428781-009	BH-03_0.2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	80.9	60.4	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6031934)							
ES2428781-001	BH-01_0.2	EP071: >C10 - C16 Fraction	----	860 mg/kg	101	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	116	53.0	131

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6031934) - continued							
ES2428781-001	BH-01_0.2	EP071: >C34 - C40 Fraction	----	890 mg/kg	108	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6031937)							
ES2428781-021	BH-05_2.0	EP071: >C10 - C16 Fraction	----	860 mg/kg	114	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	124	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	109	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6032438)							
ES2428781-001	BH-01_0.2	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	72.4	61.1	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6032440)							
ES2428781-030	BH-07_2.0	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	85.6	61.1	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6032446)							
ES2428781-009	BH-03_0.2	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	82.6	61.1	142
EP080: BTEXN (QCLot: 6032438)							
ES2428781-001	BH-01_0.2	EP080: Benzene	71-43-2	2.5 mg/kg	90.0	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	91.9	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	97.5	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	103	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	101	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	94.8	61.1	115
EP080: BTEXN (QCLot: 6032440)							
ES2428781-030	BH-07_2.0	EP080: Benzene	71-43-2	2.5 mg/kg	87.1	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	89.7	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	83.4	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	86.0	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	84.1	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	88.2	61.1	115
EP080: BTEXN (QCLot: 6032446)							
ES2428781-009	BH-03_0.2	EP080: Benzene	71-43-2	2.5 mg/kg	93.0	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	94.4	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	103	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	105	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	98.5	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	92.2	61.1	115

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CLIENT: Benbow Environmental	TURNAROUND REQUIREMENTS : ☒ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: 25 Sherwood St Northmead 2152	(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: Shine DSI	ALS QUOTE NO.:	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: 241071	COC SEQUENCE NUMBER (Circle) COC: (1) 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Damien Thomas CONTACT PH: 98960399	OF: 1 2 3 (4) 5 6 7	Other comment:

SAMPLER: Damien Thomas (DT) SAMPLER MOBILE: 0418 637 355	RELINQUISHED BY: Sarah	RECEIVED BY:	RELINQUISHED BY:
COC emailed to ALS? (YES / NO) EDD FORMAT (or default):	DATE/TIME: 12.20 02/09/2024	DATE/TIME: 2/9/24 1435	DATE/TIME:
Email Reports to (will default to PM if no other addresses are listed): damien@Benbowenviro.com.au			RECEIVED BY:
Email Invoice to (will default to PM if no other addresses are listed):			DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME		MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-10 (TRH/BTEXN/ PAH/VOC)	S-2 (8 metals)	EC & pH	S-26 (TRH (C6-C40) / BTEXN / PAH / 8 Metals)	S-18 (TRH C6 -C10)				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BH-01_0.2	31/08/2024	15:20	S		1				✓					
2	BH-01_1.0	31/08/2024	15:45	S		1				✓					
3	BH-01_2.0	31/08/2024	15:50	S		1				✓					
4	BH-01_3.0	31/08/2024	16:05	S		1				✓					
5	BH-02_0.2	31/08/2024	14:50	S		1				✓					
6	BH-02_1.0	31/08/2024	15:00	S		1				✓					
7	BH-02_2.0	31/08/2024	15:20	S		1				✓					
8	BH-02_3.0	31/08/2024	15:30	S		1				✓					
9	BH-03_0.2	31/08/2024	15:30	S		1	✓	✓							
10	BH-03_1.0	31/08/2024	16:20	S		1	✓	✓							
11	BH-03_2.0	31/08/2024	16:30	S		1	✓	✓							
12	BH-03_3.0	31/08/2024	16:40	S		1	✓	✓							
13	BH-03_3.5	31/08/2024	17:05	S		1	✓	✓							
14	BH-04_0.2	31/08/2024	14:20	S		1				✓					
					TOTAL	14	5	5		9					

Sydney Lab

Newcastle - Asbestos #43-49

ES2428781

Environmental Division
Sydney
Work Order Reference
ES2428781

Telephone : +61-2-8784 8555

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

ES2428781

ALS Environmental

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Benbow Environmental	TURNAROUND REQUIREMENTS : ☒ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)	
OFFICE: 25 Sherwood St Northmead 2152	(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact?	Yes / No / N/A
PROJECT: Shine DSI	ALS QUOTE NO.:	Free ice / frozen ice bricks present upon receipt?	Yes / No / N/A
ORDER NUMBER: 241071	COC SEQUENCE NUMBER (Circle) COC: 1 (2) 3 4 5 6 7	Random Sample Temperature on Receipt:	°C
PROJECT MANAGER: Damien Thomas CONTACT PH: 98960399	OF: 1 2 3 (4) 5 6 7	Other comment:	
SAMPLER: Damien Thomas (DT) SAMPLER MOBILE: 0418 637 355	RELINQUISHED BY: Sarah	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY:
COC emailed to ALS? ((YES) / NO) EDD FORMAT (or default):	DATE/TIME: 12.20 02/09/2024	DATE/TIME: 2/9/24 1435	DATE/TIME: / DATE/TIME:
Email Reports to (will default to PM if no other addresses are listed): damien@Benbowenviro.com.au			
Email Invoice to (will default to PM if no other addresses are listed):			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME		MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-10 (TRH/BTEXN/ PAH/VOC)	S-2 (8 metals)	EC & pH	S-26 (TRH (C6-C40) / BTEXN / PAH / 8 Metals)	S-18 (TRH C6 -C10)				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
15	BH-04_1.0	31/08/2024	14:20	S		1				✓					
16	BH-04_2.0	31/08/2024	14:30	S		1				✓					
17	BH-04_3.0	31/08/2024	14:15	S		1				✓					
18	BH-05_0.2	31/08/2024	11:45	S		1	✓	✓							
19	BH-05_0.5	31/08/2024	11:50	S		1	✓	✓							
20	BH-05_1.0	31/08/2024	12:05	S		1				✓					
21	BH-05_2.0	31/08/2024	12:00	S		1				✓					
22	BH-05_3.0	31/08/2024	12:00	S		1				✓					
23	BH-06_0.2	31/08/2024	12:50	S		1				✓					
24	BH-06_0.5	31/08/2024	13:05	S		1				✓					
25	BH-06_1.0	31/08/2024	13:25	S		1				✓					
26	BH-06_2.0	31/08/2024	13:15	S		1				✓					
27	BH-06_3.0	31/08/2024	13:05	S		1				✓					
28	BH-07_0.2	31/08/2024	10:L45	S		1	✓	✓							
					TOTAL	14	3	3		11					

Proceed to BH06-0.1

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

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NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Benbow Environmental	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☒ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: 25 Sherwood St Northmead 2152		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: Shine DSI	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: 241071		COC: 1 2 (3) 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Damien Thomas CONTACT PH: 98960399		OF: 1 2 3 (4) 5 6 7	Other comment:

SAMPLER: Damien Thomas (DT) SAMPLER MOBILE: 0418 637 355	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:
COC emailed to ALS? (YES / NO) EDD FORMAT (or default):			RECEIVED BY:
Email Reports to (will default to PM if no other addresses are listed): damien@Benbowenviro.com.au	DATE/TIME: Sarah 12.20	DATE/TIME: 2/9/24 1435	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed):	02/09/2024		DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME		MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-10 (TRH/BTEXN/ PAH/VOC)	S-2 (8 metals)	EC & pH	S-26 (TRH (C6-C40) / BTEXN / PAH / 8 Metals)	S-18 (TRH C6 -C10)				
29	BH-07_1.0	31/08/2024	10:50	S		1	✓	✓							
30	BH-07_2.0	31/08/2024	11:15	S		1				✓					
31	BH-07_3.0	31/08/2024	11:00	S		1				✓					
32	BH-08_0.2	31/08/2024	9:45	S		1				✓					
33	BH-08_1.0	31/08/2024	9:40	S		1				✓					
34	BH-08_2.0	31/08/2024	10:00	S		1				✓					
35	BH-08_3.0	31/08/2024	10:00	S		1				✓					
36	QC-100	31/08/2024	10:00	S		1				✓					
37	QC-200	31/08/2024	-	S		1				✓					
38	Trip-1	2618 29/08/2024	-	S		1					✓				
39	Trip-2	2618 29/08/2024	-	S		1					✓				
40	Blank-1	2618 29/08/2024	-	S		1					✓				
41	Blank-2	2618 29/08/2024	-	S		1					✓				
42	Rinse-1	31/08/2024	17:30	W		1			✓						
					TOTAL	14	1	1	1	8	4				

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

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TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Benbow Environmental	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☒ Standard TAT **(List due date):**	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: 25 Sherwood St Northmead 2152		☐ Non Standard or urgent TAT **(List due date):**	Custody Seal Intact? Yes No N/A
PROJECT: Shine DSI	**ALS QUOTE NO.:**	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: 241071		COC: 1 2 3 (4) 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Damien Thomas **CONTACT PH:** 98960399		OF: 1 2 3 (4) 5 6 7	Other comment:

SAMPLER: Damien Thomas (DT) **SAMPLER MOBILE:** 0418 637 355	**RELINQUISHED BY:** Sman	**RECEIVED BY:**	**RELINQUISHED BY:**
COC emailed to ALS? ((YES) / NO) **EDD FORMAT (or default):**	DATE/TIME: 2/9/2024 12.20pm	DATE/TIME: 2/9/24 1435	DATE/TIME:
Email Reports to (will default to PM if no other addresses are listed): damien@Benbowenviro.com.au	02/09/2024		
Email Invoice to (will default to PM if no other addresses are listed):			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME		MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	s-18 (TRH/BTEXN)	EC-pH	EA200 (asbestos)						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
43	BH-01_ACM	31/08/2024	-	S		1			✓						
44	BH-02_ACM	31/08/2024		S		1			✓						
45	BH-03_ACM	31/08/2024		S		1			✓						
46	BH-04_ACM	31/08/2024		S		1			✓						
47	BH-06_ACM	31/08/2024		S		1			✓						
48	BH-07_ACM	31/08/2024		S		1			✓						
49	BH-08_ACM	31/08/2024		S		1			✓						
50	TCS 20	26/8/24													
51	TCS 21	26/8/24													
					TOTAL	7			7						

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2428781**

Client	: **Benbow Environmental**	Laboratory	: Environmental Division Sydney
Contact	: DAMIEN THOMAS	Contact	: Customer Services ES
Address	: 25 Sherwood St Northmead 2152	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: damien@benbowenviro.com.au	E-mail	: ALSEnviro.Sydney@ALSGlobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: Shine DSI	Page	: 1 of 4
Order number	: 241071	Quote number	: ES2023BENBOW0001 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: DAMIEN THOMAS		

Dates

Date Samples Received	: 02-Sep-2024 14:35	Issue Date	: 03-Sep-2024
Client Requested Due Date	: 09-Sep-2024	Scheduled Reporting Date	: **09-Sep-2024**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 2.9'C, 2.8'C, 2.2'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 51 / 51

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exists.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES2428781-025	: 31-Aug-2024 13:25	: BH-06_1.0 - Received as BH-06_0.1
ES2428781-038	: [26-Aug-2024]	: Trip-1 - Trip Spike 20
ES2428781-039	: [26-Aug-2024]	: Trip-2 - Trip Spike 21
ES2428781-050	: [26-Aug-2024]	: Trip Spike Control 20
ES2428781-051	: [26-Aug-2024]	: Trip Spike Control 21

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EP080 BTEXN	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-10 TRH/VOC/PAH	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2428781-001	31-Aug-2024 15:20	BH-01_0.2	✓					✓
ES2428781-002	31-Aug-2024 15:45	BH-01_1.0	✓					✓
ES2428781-003	31-Aug-2024 15:50	BH-01_2.0	✓					✓
ES2428781-004	31-Aug-2024 16:05	BH-01_3.0	✓					✓
ES2428781-005	31-Aug-2024 14:50	BH-02_0.2	✓					✓
ES2428781-006	31-Aug-2024 15:00	BH-02_1.0	✓					✓
ES2428781-007	31-Aug-2024 15:20	BH-02_2.0	✓					✓
ES2428781-008	31-Aug-2024 15:30	BH-02_3.0	✓					✓
ES2428781-009	31-Aug-2024 15:30	BH-03_0.2	✓		✓	✓		
ES2428781-010	31-Aug-2024 16:20	BH-03_1.0	✓		✓	✓		
ES2428781-011	31-Aug-2024 16:30	BH-03_2.0	✓		✓	✓		
ES2428781-012	31-Aug-2024 16:40	BH-03_3.0	✓		✓	✓		
ES2428781-013	31-Aug-2024 17:05	BH-03_3.5	✓		✓	✓		
ES2428781-014	31-Aug-2024 14:20	BH-04_0.2	✓					✓
ES2428781-015	31-Aug-2024 14:20	BH-04_1.0	✓					✓
ES2428781-016	31-Aug-2024 14:30	BH-04_2.0	✓					✓
ES2428781-017	31-Aug-2024 14:15	BH-04_3.0	✓					✓
ES2428781-018	31-Aug-2024 11:45	BH-05_0.2	✓		✓	✓		
ES2428781-019	31-Aug-2024 11:50	BH-05_0.5	✓		✓	✓		
ES2428781-020	31-Aug-2024 12:05	BH-05_1.0	✓					✓
ES2428781-021	31-Aug-2024 12:00	BH-05_2.0	✓					✓
ES2428781-022	31-Aug-2024 12:00	BH-05_3.0	✓					✓
ES2428781-023	31-Aug-2024 12:50	BH-06_0.2	✓					✓
ES2428781-024	31-Aug-2024 13:05	BH-06_0.5	✓					✓
ES2428781-025	31-Aug-2024 13:25	BH-06_1.0 Received ...	✓					✓
ES2428781-026	31-Aug-2024 00:00	BH-06_2.0	✓					✓
ES2428781-027	31-Aug-2024 00:00	BH-06_3.0	✓					✓
ES2428781-028	31-Aug-2024 00:00	BH-07_0.2	✓		✓	✓		
ES2428781-029	31-Aug-2024 00:00	BH-07_1.0	✓		✓	✓		
ES2428781-030	31-Aug-2024 00:00	BH-07_2.0	✓					✓

			SOIL - EA055-103 Moisture Content	SOIL - EP080 BTEXN	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-10 TRH/VOC/PAH	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2428781-031	31-Aug-2024 11:00	BH-07_3.0	✓					✓
ES2428781-032	31-Aug-2024 00:00	BH-08_0.2	✓					✓
ES2428781-033	31-Aug-2024 00:00	BH-08_1.0	✓					✓
ES2428781-034	31-Aug-2024 00:00	BH-08_2.0	✓					✓
ES2428781-035	31-Aug-2024 00:00	BH-08_3.0	✓					✓
ES2428781-036	31-Aug-2024 00:00	QC100	✓					✓
ES2428781-037	31-Aug-2024 00:00	QC200	✓					✓
ES2428781-038	26-Aug-2024 00:00	Trip-1 Trip Spike 20		✓				
ES2428781-039	26-Aug-2024 00:00	Trip-2 Trip Spike 21		✓				
ES2428781-040	26-Aug-2024 00:00	Blank-1					✓	
ES2428781-041	26-Aug-2024 00:00	Blank-2					✓	
ES2428781-050	26-Aug-2024 00:00	Trip Spike Control 20		✓				
ES2428781-051	26-Aug-2024 00:00	Trip Spike Control 21		✓				

Matrix: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOIL - EA200 Asbestos Identification in Soils -
ES2428781-043	31-Aug-2024 00:00	BH-01_ACM	✓
ES2428781-044	31-Aug-2024 00:00	BH-02_ACM	✓
ES2428781-045	31-Aug-2024 00:00	BH-03_ACM	✓
ES2428781-046	31-Aug-2024 00:00	BH-04_ACM	✓
ES2428781-047	31-Aug-2024 00:00	BH-06_ACM	✓
ES2428781-048	31-Aug-2024 00:00	BH-07_ACM	✓
ES2428781-049	31-Aug-2024 00:00	BH-08_ACM	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA005P pH (Auto Titrator)
ES2428781-042	31-Aug-2024 00:00	Rinse-1	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA010P Electrical Conductivity (Auto Titrator)
ES2428781-042	31-Aug-2024 00:00	Rinse-1	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

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

Method / Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received Date	Samples Received Evaluation	Instructions Received Date	Instructions Received Evaluation
EA005-P: pH by Auto Titrator							
Rinse-1	Clear Plastic Bottle - Natural	----	31-Aug-2024	02-Sep-2024	×	----	----

Requested Deliverables

DAMIEN THOMAS

- *AU Certificate of Analysis - NATA (COA)	Email	damien@benbowenviro.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	damien@benbowenviro.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	damien@benbowenviro.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	damien@benbowenviro.com.au
- A4 - AU Tax Invoice (INV)	Email	damien@benbowenviro.com.au
- Chain of Custody (CoC) (COC)	Email	damien@benbowenviro.com.au
- EDI Format - ESDAT (ESDAT)	Email	damien@benbowenviro.com.au

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry / Biology).

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

Attachment 6: Sample Result and SAC Spreadsheet

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11	Column12	Column13	Column14	Column142	Column15	Column16	Column17	Column18	Column19	Column20	Column21	Column22	Column222	Column23	Column24	Column25	Column26	Column262	Column27	Column28	Column29	Column30	Column31	Column32	Column33	Column34	Column35	Column37	Column38
	LOR	Units	BH-01_0.2	BH-01_1.0	BH-01_2.0	BH-01_3.0	BH-02_0.2	BH-02_1.0	BH-02_2.0	BH-02_3.0	BH-03_0.2	BH-03_1.0	BH-03_2.0	BH-03_3.0	BH-03_3.5	BH-04_0.2	BH-04_1.0	BH-04_2.0	BH-04_3.0	BH-05_0.2	BH-05_0.5	BH-05_1.0	BH-05_2.0	BH-05_3.0	BH-06_0.2	BH-06_0.5	BH-06_1.0	BH-06_2.0	BH-06_3.0	BH-07_0.2	BH-07_1.0	BH-07_2.0	BH-07_3.0	BH-08_0.2	BH-08_1.0	BH-08_2.0	BH-08_3.0	QC100	QC200
Moisture Content	1	%	10.6	11.8	12	10.6	10.2	12.3	12.7	9.5	10.9	14.1	12.6	12.6	10.7	9.6	16.2	12.8	12.9	16.2	11.5	17	8.4	9.3	9.5	12.8	15	10.6	10.4	13.5	16.6	10	11.1	15.8	18.4	15.4	17.5	14.1	12.4
Total Metals																																							
Arsenic	5	mg/kg	<LOR	8	7	9	5	8	**7**	9	6	7	7	7	10	<LOR	7	12	9	10	11	9	10	14	<LOR	7	7	9	13	8	6	8	8	8	6	8	<LOR	<LOR	6
Cadmium	1	mg/kg	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Chromium	2	mg/kg	14	11	11	12	11	10	12	10	8	11	12	9	9	8	11	17	12	15	11	15	14	19	6	12	13	13	18	11	12	11	10	12	13	10	9	22	11
Copper	5	mg/kg	20	34	22	26	28	58	22	29	31	37	25	31	24	<LOR	16	28	21	70	72	24	23	26		20	18	20	26	22	18	19	16	28	25	25	18	233	20
Lead	5	mg/kg	9	29	16	22	29	57	15	19	39	35	20	25	20	8	15	43	19	55	81	17	27	34	8	21	19	20	30	20	22	14	18	19	13	14	9	264	19
Nickel	2	mg/kg	5	12	11	10	9	8	9	14	7	8	9	13	15	<LOR	7	25	11	2	8	9	12	20		10	9	12	15	10	8	9	7	11	14	10	7	20	10
Zinc	5	mg/kg	12	55	36	43	28	65	33	53	39	47	34	49	62	8	21	89	42	72	66	38	46	74	8	35	34	43	62	40	32	36	36	38	30	43	28	97	33
Mercury	0.1	mg/kg	<LOR	<LOR	<LOR	<LOR	<LOR	0.2	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	0.1	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Total Petroleum Hydrocarbons																																							
C6 - C9 Fraction	10	mg/kg	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	16	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
C10 - C14 Fraction	50	mg/kg	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	100	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	120	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	70	<LOR
C15 - C28 Fraction	100	mg/kg	2520	140	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	250	740	450	130	<LOR	<LOR	<LOR	<LOR	3550	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	2280	<LOR
C29 - C36 Fraction	100	mg/kg	2240	200	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	100	220	140	<LOR	<LOR	<LOR	<LOR	<LOR	1640	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	1090	<LOR
Total Recoverable Hydrocarbons - NEPM 2013 Fractions																																							
C6 - C10 Fraction	10	mg/kg	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	12	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	20	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
>C10 - C16 Fraction	50	mg/kg	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	60	220	120	<LOR	<LOR	<LOR	<LOR	<LOR	260	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	160	<LOR
>C16 - C34 Fraction	100	mg/kg	4360	260	<LOR	120	<LOR	<LOR	<LOR	<LOR	<LOR	280	820	510	150	<LOR	<LOR	<LOR	<LOR	4860	140	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	3060	<LOR
>C34 - C40 Fraction	100	mg/kg	1060	190	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	100	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	520	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	420	<LOR
SUM			5420	450	0	120	0	0	0	0	0	340	1140	630	150	0	0	0	0	5640	140	0		0	0	0	0		0	0	0	0	0	0	0	0	0	3640	0
BTEXN																																							
Benzene	0.2	mg/kg	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Toluene	0.5	mg/kg	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Ethylbenzene	0.5	mg/kg	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Total Xylenes	0.5	mg/kg	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	0.5	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Napthalene	1	mg/kg	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR
Asbestos (fibres in soil)																																							
Asbestos Detected	0.1	g/kg	**No**	-	-	-	**No**	-	-	-	**No**	-	-		-	**No**	-	-	-						**No**	-	-		-	**No**	-	-	-	**No**	-	-	-	-	-
Asbestos (Trace)	0.1	g/kg	**No**	-	-	-	**No**	-	-	-	**No**	-	-		-	**No**	-	-	-						**No**	-	-		-	**No**	-	-	-	**No**	-	-	-	-	-
Asbestos (Type)	0.1	g/kg	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-						-	-	-		-	-	-	-	-	-	-	-	-	-	-

Rinsate Test			
	LOR	Units	Rinse-1
pH	0.01	pH unit	6.58
EC	1	µS/cm	6

Borehole Log

Benbow ENVIRONMENTAL

Job no.: **241071**
Date: **31/08/2024**
Logged by: DJ
Checked by:

Borehole ID: BH-01 Depth: 3.0m
Location: Dinglebum
Drill type:
Drilling method: mechanised auger

Soil description (Colour, particle size, texture)	DEPTH (m)	GRAPHIC	CLASSIFICATION	Field monitoring (odour, PID, staining)	PID (ppm)	SAMPLE INTERVALS
Surface: concrete	0.2m			No odour		
Sand (yellow fill)						
10YR 4/3 Sandy clay	1m			no odour PID: 0.7		
10YR 2/6 Sandy clay loam	2.0m			no odour PID 0.0		
Sandstone angular rock 8cm x 4cm @ 3.0m	3.0m			no odour PID 0.0		
Clay loam 10YR 4/4						

Borehole Log

Benbow ENVIRONMENTAL

Job no.: **241071**
Date: **31/08/2024**
Logged by: DT
Checked by:

Borehole ID: BH-02 Depth:
Location: Ingleburn
Drill type:
Drilling method: Auger

Soil description (Colour, particle size, texture)	DEPTH (m)	GRAPHIC	CLASSIFICATION	**Field monitoring** (odour, PID, staining)	PID (ppm)	SAMPLE INTERVALS
Surface: concrete 0.2m						
Sand (Yellow) Fill	0.4m					
Igneous gravels [Roadbase] throughout soil column						
10YR/5/3 Brown PID 0.0 Slight chemical odour 15:00 Sandy Clay	1.0m			PID 0.0		
colour change [more red] 7.5y 5/6 Light clay 15:20	1.5m			PID 0.0		
Light clay 7.5 5/6.	2m			PID 0.0		
	3.0m					

Borehole Log

Benbow ENVIRONMENTAL

Job no.: **241071**
Date: **31/08/2024**
Logged by: DT
Checked by:

Borehole ID: BH-03 Depth: 3.0m
Location:
Drill type:
Drilling method: mechanical auger

Soil description (Colour, particle size, texture)	DEPTH (m)	GRAPHIC	CLASSIFICATION	Field monitoring (odour, PID, staining)	PID (ppm)	SAMPLE INTERVALS
Surface: concrete	0.2					
Sandy clay loam 10YR 4/1 strong hydrocarbon odour 5cm beneath concrete				PID 16.2		
Sand	0.5m			PID 35.4		
10YR 5/4 Clay loam						
angular cobbles [basalt road base]	1m			Hydrocarbon odour		
10YR 5/4 Clay Loam						
	2.0m			PID 7.4		
odourless 10YR 5/6 Sandy Clay	3.0m			PID 11.4		
10YR 5/4 Clay Loam	3.5m			P.D 16.0		
* Refusal at 3.5m						

Borehole Log

Benbow ENVIRONMENTAL

Job no.: **241071**
Date: **31/08/2024**
Logged by: DT
Checked by:

Borehole ID: BH-04 Depth: 3 m
Location: Ingleburn
Drill type: Push tubes
Drilling method:

Soil description (Colour, particle size, texture)	DEPTH (m)	GRAPHIC	CLASSIFICATION	Field monitoring (odour, PID, staining)	PID (ppm)	SAMPLE INTERVALS
Surface: concrete	0.2			bore became resistant @ 2.5m		
Sand (med) dry [Fill] PID 0.0					0.0	
(Dark) 10YR 4/4 Sand	0.6		0.6			
	1.0m			PID 0.2	0.2	
7.5Y 6/6 dry light clay						
	Sample @ 2.0m.				0.0	
	2.5m					
dry clayey sand 10YR	3.0m		3.0m	PID 0.0		

Borehole Log

Benbow ENVIRONMENTAL

Job no.: **241071**
Date: **31/08/2024**
Logged by: DT
Checked by:

Borehole ID: BH-05 Depth: 3 m
Location: Ingleburn
Drill type:
Drilling method: Push Tube

Soil description (Colour, particle size, texture)	DEPTH (m)	GRAPHIC	CLASSIFICATION	Field monitoring (odour, PID, staining)	PID (ppm)	SAMPLE INTERVALS
Surface: concrete	0.2					
wet Sand dark Grey - odour hydrocarbon Sample 0.2 m. Duplicate QC100 BH-05_0.2				PID 6.7		
dry Sample 0.5 Silty sand Yellow/black/white - misc (fill)				Grey sand [fill] PID 21.7		
	0.8			Silty sand 0.8m		
C						
1m - 10YR 4/4 dry Silty clay loam PID 0.0	.5					
dry Sand, PID 0.1 7.5YR 5/6	3m			Hole PID 1.1		
				PID (in pit) 0.4		

Borehole Log

Benbow ENVIRONMENTAL

Job no.: **241071**
Date: **31/08/2024**
Logged by: DT
Checked by:

Borehole ID: BH-06
Depth: 2.0m
Location: Ingleburn
Drill type: Push Tube
Drilling method:

Soil description (Colour, particle size, texture)	DEPTH (m)	GRAPHIC	CLASSIFICATION	**Field monitoring** (odour, PID, staining)	PID (ppm)	SAMPLE INTERVALs
Surface: concrete				Bore becomes Harder at 0.4m		
12:50 Moist sand, "dirty" Yellow 10YR 5/4 [Fill] P						
				0.4m		
~~Silty~~ clay loam ~~10YR 4/4~~ 10YR 2/1 Root ~~fibres~~ ~~sample is darker~~ extra sample ~~QC~~	1m			mild odour PID 0.0		
				1.0m		
0.5 + QC200 Silty clay loam 10YR 4/4 root fibres						
				1.5m		
~~thight clay~~ Fine Sandy clay loam 10YR 4/6				2.0m		
Sandy clay 10YR 6/6	3m					
				0.0 (In the Borehole) PID		

Borehole Log

Benbow ENVIRONMENTAL

Job no.: **241071**
Date: **31/08/2024**
Logged by: DT
Checked by:

Borehole ID: BH-07
Location: Engleburn
Drill type: Push Tube
Drilling method:
Depth: 3.0

Soil description (Colour, particle size, texture)	DEPTH (m)	GRAPHIC	CLASSIFICATION	Field monitoring (odour, PID, staining)	PID (ppm)	SAMPLE INTERVALS
Surface: concrete	0.2					
Fine root fibres 10YR 3/2 dry silty clay Some sml cobbles Gravel				PID 9.7 sweet odour core was soft @ ~1.1m began to resist	9.7	0.2m
				BH-07_1.0 10:50		1m
moist silty clay 10YR 3/2	1.0m					
dry	1.1m				0.0	
silty clay loam 10YR 6/6 brownish yellow			2.0m			2m
Sandy with ~15% Pebbles 1mm → 10mm Basalt rounded/sub rounded			2.5m		0.0	3m
			← clayey sand 10YR 4/4			
core becomes increasingly dry & sandy further down	3.0m				0.0	3m
fine to coarse grain black speckles				PID in hole 0.0 ppm		

Borehole Log

Benbow ENVIRONMENTAL

Job no.: 241071
Date: 31/08/2024
Logged by: DT
Checked by:

Borehole ID: BH-08 Depth: 3.0m
Location: Ingleburn
Drill type: push tube
Drilling method:

Soil description (Colour, particle size, texture)	DEPTH (m)	GRAPHIC	CLASSIFICATION	Field monitoring (odour, PID, staining)	PID (ppm)	SAMPLE INTERVALS
Surface: concrete 0.15m thick				No odour 0.0	0.0	0.2
Yellow sand [fill] 5cm thick Sample collected for ACM.						
Grey/Brown clay [dry] 10YR 5/2 loam					0.0	
clay shows evidence of being "mixed" spotted colours throughout core				no odour 0.0		1.0
			1.5			
Silty clay loam 10YR 4/3 dry no odour						
	3.0m					
Silty clay loam Dry Some evidence of mottling [Grey] 10YR 4/3 brown				PID in hole 0.0		

Attachment 8: PID Calibration Certificate

Calibration & Service Report
Gas Monitor

Company:	Active Environmental Solutions Hire	Manufacturer:	RAE Systems	Serial #:	592-927423
Contact:	Aleks Todorovic	Instrument:	MiniRAE 3000	Asset #:	-
Address:	2 Merchant Avenue	Model:	PGM 7320	Part #:	-
	Thomastown Vic 3074	Configuration:	VOC	Sold:	-
Phone:	03 9464 2300 | Fax: 03 9464 3421	Wireless:	-	Last Cal:	-
Email:	Hire@aesolutions.com.au	Network ID:	-	Job #:	-
		Unit ID:	-	Cal Spec:	Std

Item	Test	Pass/Fail	Comments
Battery	Li Ion	✓	
Charger	Charger, Power supply	✓	
	Cradle	-	
Pump	Flow	✓	>500 mL/min
Filter	Filter, fitting, etc	✓	
Alarms	Audible, visual, vibration	✓	
Display	Operation	✓	
PCB	Operation	✓	
Connectors	Condition	✓	
Firmware	Version	✓	2.22A
Datalogger	Operation	✓	
Monitor Housing	Condition	✓	
Case	Condition/Type	✓	
Sensors			
Oxygen		-	
LEL		-	
PID	10.6eV	✓	
Toxic 1		-	
Toxic 2		-	
Toxic 3		-	
Toxic 4		-	
Toxic 5		-	

Engineer's Report
Setup, service and calibration for hire

Calibration Certificate

Sensor	Type	Serial No:	Span Gas	Concentration	Traceability Lot #	CF	Reading	
							Zero	Span
Oxygen								
LEL								
PID	10.6ev	S023030575W3	Isobutylene	100.0 PPM	WO443753-1		0	100.0 PPM
Toxic 1								
Toxic 2								
Toxic 3								
Toxic 4								

Calibrated/Repaired by: Jason Cheng

Date: 03/06/2024

Next due: 30/11/2024