



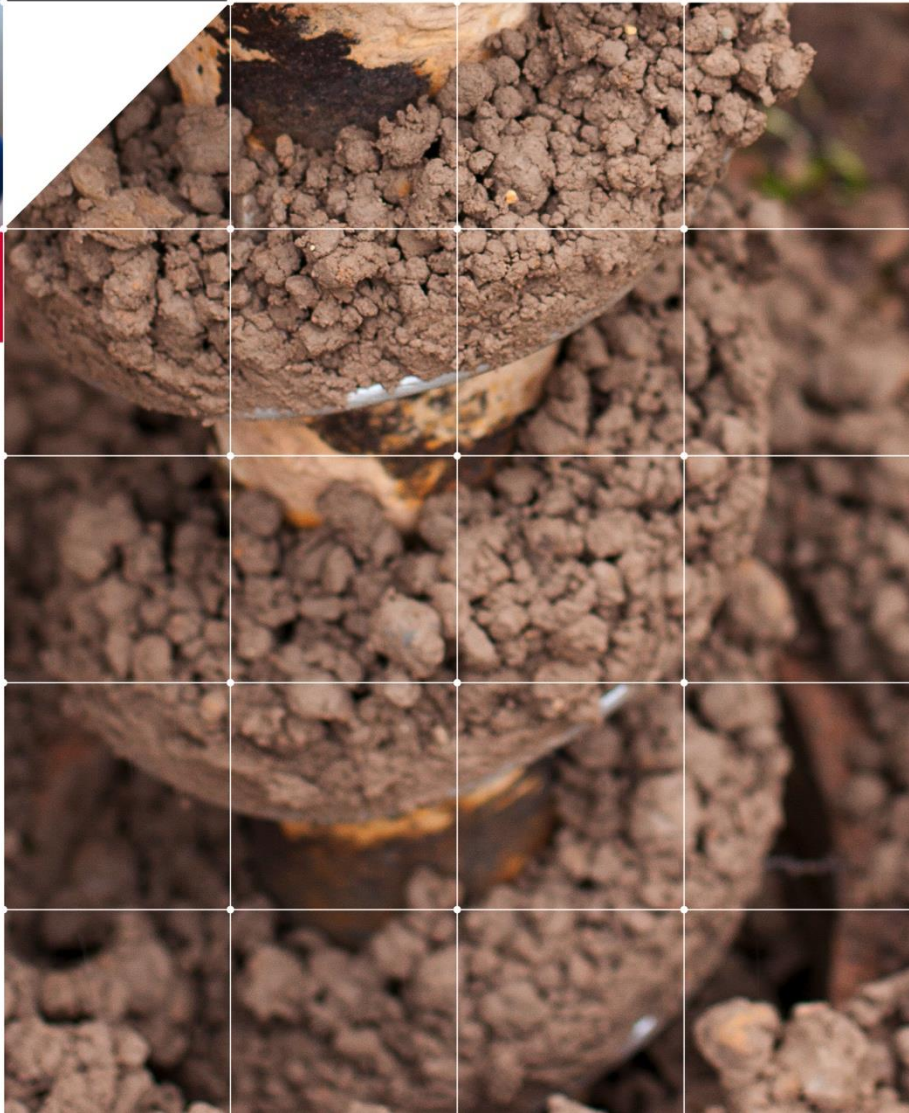
**50 MID-WESTERN HIGHWAY
WEST WYALONG NSW**

**PRELIMINARY SITE
INVESTIGATION**

OCTOBER 2020

REFERENCE: 7291

DM McMahon Pty Ltd
6 Jones St (PO Box 6118)
Wagga Wagga NSW 2650
t (02) 6931 0510 www.dmmcmahon.com.au



Report type

Preliminary Site Investigation

Site address

50 Mid-Western Highway
West Wyalong NSW 2671

Report number

7291



Prepared for

John and Mandy Hallahan
50 Mid-Western Highway
West Wyalong NSW 2671
Tel: 0421 013 476
Email: mandyhallahan12@outlook.com

Prepared by

DM McMahon Pty Ltd
6 Jones Street (PO Box 6118)
Wagga Wagga NSW 2650
Tel: 0269 310 510
Email: admin@dmmcmahon.com.au

Document control

Role	Name	Signed	Date	Revision
Author	Zach Bradley BEnvSc MALGA MEIANZ		13/10/2020	0
Certifier	David McMahon CEnvP SC BAppSc SA GradDip WRM MEnvMgmt MALGA MEIANZ MSSA		13/10/2020	0



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1.0 Executive summary

DM McMahon Pty Ltd (McMahon) conducted a Preliminary Site Investigation (PSI) at 50 Mid-Western Highway NSW (the site). The 4ha (approx.) site is currently occupied by two houses and three sheds with the remaining vacant land having a history of agriculture. The site is subject to a planning proposal for rezoning from primary production to large lot residential and reduction of the minimum lot size from 200ha to 2ha. Surrounding land uses include residential, agricultural and commercial. A map of the site and surrounds can be seen in **Attachment A**.

The objective of this investigation is to assess whether contamination has the potential to exist on the site and whether further investigation is needed.

The scope of work includes:

- A desktop study used to collect basic site information and identify the site characteristics.
- A site inspection with limited soil sampling using Data Quality Objectives (DQOs).
- An assessment of the potential contamination source-pathway-receiver linkages.
- Interpretation of data collected to conduct a risk assessment for site suitability regarding the proposed development.

Findings of the investigation include:

- The site has historically been used for residential/hobby farming as far as records can ascertain.
- Areas of potential environmental concern include:
 - Pesticide use on agricultural land.
 - Oil spills in and next to the shed.
 - Silt from the dam spread around the rear paddock.
 - Stockpile of silt from the dam.
 - Former RMS temporary depot in the front paddock.
- Sampling of the above areas returned results below the adopted criteria for residential land use and as such the potential contaminants that may be present in these areas are assessed to be of low significance in terms of risk to future residential site users.

In summary McMahon assess there is no gross contamination across the site. The site is considered suitable for the proposed large lot residential land use, with a low risk of harm to human health and the environment regarding potential contamination from the previous land uses.

This executive summary and the findings of this PSI is subject to limitations as stated in **Section 15**.

2.0 Objectives

The objective of this investigation is to:

- Provide information regarding potential contamination on site.
- Provide a factual record of the works completed and results.
- Undertake a risk assessment for health risk to future site users and the environment.
- Provide a statement of recommendations for further investigation, remediation, and/or ongoing site management or alternatively, suitability of the site for the proposed land use.
- To prepare the PSI in general accordance with the relevant guidelines and legislation, namely:
 - NSW EPA Contaminated land guidelines for Consultants reporting on contaminated sites (2020).
 - State Environmental Planning Policy 55 – Remediation of Land (SEPP 55).
 - National Environment Protection (Assessment of Site Contamination) Measure (NEPM), (2013).

3.0 Scope of work

The scope of work includes the following:

- Review the available information regarding historical, current, and proposed land use of the site and surrounds.
- Review the environmental setting of the site and surrounds.
- Assess the potential contamination sources and Chemicals of Potential Concerns (CoPCs).
- Assess the potential contamination source-pathway-receiver linkages from the CoPCs, environmental setting and land use.
- Formulate a Sampling, Analysis & Quality Plan (SAQP) to investigate the potential contamination.
- Conduct limited soil sampling across the site for the CoPCs to assess the requirement for further investigation.
- Collect soil samples for laboratory analysis of the CoPCs.
- Compare the laboratory results against the adopted criteria.
- Evaluate Quality Assurance/Quality Control (QA/QC) data to assess the sampling and analysis procedure.
- Refine a Conceptual Site Model (CSM) to assess potential contamination risk from the source-pathway-receiver linkages.
- Provide a clear statement on site suitability for the proposed land use or the need for further investigation, remediation, and/or ongoing site management.

4.0 Site identification

The site identification can be seen as follows, **Table 1**.

Table 1: *Site identification*

Identifier	Details
Property identification/address	50 Mid-Western Highway West Wyalong NSW 2671
Real property description	Lot 2 DP 625986
Centre co-ordinate	518025E 6116690N MGA GDA z55
Property size	4ha (approx.)
Owners	John and Mandy Hallahan
Local Government Area	Wagga Wagga
Present use	Commercial
Present zoning	RU1 Primary Production
Proposed zoning	R5 Large Lot Residential

5.0 Site history

From research of land titles, Council records, EPA records, aerial photography, and information provided by the owner, the following site history is offered:

Land titles

The land titles database was investigated for land use, ownership history, previous owner occupations and other notes of interest, **Table 2**.

Table 2: *Ownership*

Owner	Occupation	Year transferred
James Apps Cyril Apps	Pensioner Labourer	1963
George Perks	Contractor	1967
John and Mandy Hallahan	-	2009

Council records

A search of Council records returned the following:

- Planning Proposal – PPL2020/0002 – Amendment to BLEP.
- Occupation Certificate – OCC/2011/077 – Change of use from a storage shed to a residential dwelling including the installation and operation of an on-site sewer management system.
- Occupation Certificate – OCC/2013/038 – Carport and 2 Verandahs and 2 Skillions, [DA/2012/048 & CC/2012/025].
- S96 Modification - MOD/2011/005 – Modification of DA/2010/016 (addition of skillions to the Eastern and Western sides of the building and including extra windows.
- Development Application – DA/2012/048 – Carport, 2 Verandahs, 2 Skillions.
- Development Application – DA/2011/087 – Change of use from a storage shed to a residential dwelling including the installation and operation of an on-site sewer management system.
- Development Application – DA/2010/016 – Storage Shed.
- Construction Certificate – CC/2012/025 – Carport, 2 Verandahs, 2 Skillions.
- Construction Certificate – CC/2010/013 – Storage Shed.
- Building Certificate – BC/2011/002 – Residential Dwelling.

Section 10.7

A Section 10.7 Planning Certificate (Certificate No: ePL2020/0479) was obtained from Council on 29 September 2020 and Council have insufficient information to identify significantly contaminated land within the meaning of the Contaminated Land Management Act 1997.

EPA records

There are no records on the Contaminated Land Record Database for the site pertaining to Preliminary Investigation Orders, Declaration of Significantly Contaminated Land, Approved Voluntary Management Plans, Management Orders, Ongoing Maintenance Orders, Repeal Revocation or Variation Notice, Site Audit Statement, or Notice of Completion or Withdrawal of Approved VMP. The site has not been “notified” to the EPA on the list of NSW Contaminated sites as of September 2020. Three fuel depots in West Wyalong are notified but regulation under the CLM Act is not required.

Aerial photos

McMahon observed the following from a review of the available aerial photography.

1973 – There is small house fronting the Mid-Western Highway and a large dam in the middle of the lot. These are consistent with current site features. Farm tracks are visible through the vacant paddocks.

1983 – No change.

1989 – No change – image very blurry.

1993 – A small shed has been built on the eastern side of the house. Another shed has been built to the west of the large dam. These are consistent with current site features. The northern and eastern paddock have been cultivated. A house has been built next door to the west.

1997 – No change.

2005 – The dam has been enlarged. The paddocks are no longer cultivated.

2007 – No change.

2011 – No change.

2013 – Another larger house has been built next to the small house on the western side. There is a fence to the north of the house. Another large shed has been built next to the dam on the western side. The small shed next to the dam has been demolished. A track from the Mid-Western highway to the new large shed next to the dam has been formed. The driveways around the house have been asphalted/gravelled.

2015 – No change except for the track to the large shed near the dam from the Mid-Western Highway has been asphalted/gravelled.

2017 – No change.

2018 – The northern paddock appears to have been cultivated around the outside. No other change.

2020 – No change.

The aerial photographs can be seen in **Attachment B**.

Interviews

McMahon conducted an interview with Mandy Hallahan (current owner) and the following was forthcoming.

- Mandy's parents (George and Joan Perks) have owned the property since around the 1960s. They bought the property off the App's and before that Richard Grellman (solicitor) was the owner.
- The property has never been intensively farmed and the paddocks were used to hold horses and grow opportunist feed oats.
- The original small house fronting the Great Western Highway is around 100 years old. The small house is built of wood and corrugated iron with the rear extension potentially clad with fibrous cement sheeting or bonded Asbestos Containing Material (ACM).
- The original small house used to have a pan toilet but has a septic system now that is in the back yard.
- The new larger house was built in 2011 and is clad with Colourbond/corrugated iron.
- The new larger house has a septic system located in the back yard of the original small house.
- Roads and Maritime Service NSW (RMS) used the yard to the west of the new larger house as a temporary depot to park machinery overnight during the Mid-Western Highway upgrade in 2018.
- The large dam was desilted in 2018 and the silt from the dam was stockpiled and spread around the outside of the northern paddock.

- The driveways are gravelled with quarried material from Millers Metals (where John Hallahan works).

McMahon assesses that the information supplied by Mandy Hallahan is reliable based on comparable findings from the site inspection, research, and multiple lines of evidence.

6.0 Site condition and surrounding environment

McMahon notes the following observations of the site condition as part of this PSI:

Layout

- The site consists of two paddocks:
 - The front paddock (2.8ha) has three driveways off the Mid-Western Highway and has six buildings.
 - The rear paddock (1.2ha) is undeveloped agricultural land.
- There is a large (0.3ha) dam within the front paddock that is fed from agricultural land to the north west.

Buildings

- A small older house fronting the Mid-Western Highway built of timber cladding with a corrugated iron roof. A rear extension is clad with fibrous cement sheeting or bonded Asbestos Containing Material (ACM).
- A newer larger house is located next to the small older house on the western side and is built of Colourbond and corrugated iron.
- A steel garage to the east of the small older house.
- A steel carport behind the new larger house.
- A large steel shed on the western boundary half-way down the property.
- A small steel shade structure to the west of the large dam.

Septic systems

- There are two septic systems located in the rear yard behind the small older house. The systems appear to be a tank and rubble drain system and are regulated by Bland Shire Council.

Site surface

- Driveways are gravelled with quarried 20mm material.
- The carport and large shed are gravelled with quarried 20mm material.
- The yard around the small older house is kikuyu lawn.
- The paddocks consist of predominantly oats and ryegrass.
- The rear paddock had approximately 50mm of silt deposited and levelled around the boundary.
- The gravel in and next to the large shed on the western boundary had oil stains from leaking machinery.
- There is no visual evidence of former RMS temporary depot in the yard to the west of the new larger house.

Other

- There are two stockpiles of silt from the farm dam on the eastern boundary.
- There is vintage farm machinery displayed around the houses.
- There are empty 205L drums and 1,000L totes along the rear boundary.

Surrounds

- The site fronts the Mid-Western Highway.
- Kings Lane and the Cootamundra-Lake Cargelligo Railway form the eastern boundary.
- West Wyalong township lies across the Railway line.
- Semi-rural land lies to the west and north.

- Rural land lies to the wider north, south and west.

A map of the site features can be seen in **Attachment C**.

Site photographs can be seen in **Attachment D**.

A summary of the site environmental setting is as follows.

Topography

The Wyalong Topographic Map (8330-S) indicates that the site is located at an elevation of approximately 265m AHD. The site landform is classed as a flat and the slope is level to very gently inclined towards the south.

Vegetation

Vegetation in the yards and paddocks is typically grass in healthy condition.

Natural Resources Sensitivity

A search of the Bland Shire Council Local Environment Plan (LEP) 2011, found that the site is not located in a natural resource sensitivity area for groundwater vulnerability or terrestrial biodiversity.

Climate

The average rainfall for West Wyalong is approximately 486.8mm per annum, with the wettest months being November, December, and February. Annual mean evaporation for the region is 1642.5mm with mean daily evaporation ranges from 1.2mm in June to 8.7mm in January. West Wyalong is characterised by cold wet winters and hot dry summers.

Hydrology

The nearest named waterway is Yiddah Creek located around 2.8km to the south of the site with a very widely spaced stream channel occurrence. Flow direction is generally to the east with unidirectional, interrupted, and non-tributary channel patterns. Due to the relative incline of the site, rainfall will both infiltrate into the soil and run off the surface.

Soil & Landform

The site lies within the Mildil (mi) mapping unit from the Soil Landscapes of the Forbes 1:250 000 Sheet, (King, 1998). The map unit mi is described as Gently undulating side slopes, plains and drainage lines on Quaternary alluvium and colluvium. Dominant soils are moderately deep to deep (>100 cm), imperfectly to moderately well drained Red and Brown Solodic Soils and Sodic, Eutrophic and Calcic Red and Brown Chromosols on side slopes and drainage depressions.

Geology & Regolith

The underlying geology consists of Quaternary alluvium and minor Ordovician colluvium comprised of phyllites, schists, sandstones, siltstones and occasional volcanics.

Hydrogeology

From the Geoscience Australia hydrogeology dataset, the groundwater beneath the site is described as fractured or fissured extensive aquifers of low to moderate productivity.

From a search of the WaterNSW database there is one production bore located within 2km of the site which is constructed into fractured rock with a water bearing zone at 74m depth. From this McMahon assess that groundwater is likely to be very deep (50m+).

7.0 Conceptual site model

A Conceptual Site Model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors and is presented and follows.

List of contaminants of potential concern

The preliminary nature of the sampling in this PSI is to assess the requirement for further investigation, therefore a broad suite of CoPCs has been listed, namely:

Heavy metals [Arsenic (As), Boron (B), Barium (Ba), Beryllium (Be), Cadmium (Cd), Chromium (Cr), Chromium VI (Cr VI), Cobalt (Co), Copper (Cu), Manganese (Mn), Nickel (Ni), Lead (Pb), Selenium (Se), Vanadium (V), Zinc (Zn), Mercury (Hg)], cyanide, Organochlorines (OCPs) Organophosphates (OPPs), Total Recoverable Hydrocarbons (TRH), Benzene Toluene Ethylbenzene Xylenes Naphthalene (BTEXN), phenols and Polychlorinated Biphenyls (PCBs).

Potential and known sources of contamination

- Pesticide use on agricultural land.
- Oil spills in and next to the shed.
- Silt from the dam spread around the rear paddock.
- Stockpile of silt from the dam.
- Former RMS temporary depot in the front paddock.

Mechanism of contamination

The mechanism of contamination from the primary source is predominantly top down vertical and lateral migration into soil.

Potentially affected environmental media

- Surface and near surface soil from surface spills.
- Groundwater through soil media from surface spills but unlikely owing to deep depths (>50m).

Consideration of spatial and temporal variations

Spatial variation is possible owing to the limited nature of the sampling plan. Temporal variations are unlikely owing to the continued semi-rural land use.

Actual or potential exposure pathways

- Direct skin contact with soil.
- Inhalation and/or ingestion of soil, vapour, and dust.
- Direct groundwater contact but groundwater is deep (>50m) and unlikely to be contacted.
- Groundwater ingestion but no domestic groundwater bores currently exist on site.

Human and ecological receptors

- Current and future on-site residents.
- Future on-sites workers.
- Domestic groundwater users but no domestic groundwater bores currently exist on site.
- Down gradient ecological receptors such as Yiddah Creek.
- Current and future landscaping and ecological receptors.

Frequency of exposure

- Current and future residents are assessed to have a medium to long-term exposure risk.
- Future workers are assessed to be a short-term exposure risk.
- Future groundwater users are a medium to long-term exposure risk.
- Ecological receptors are assessed to be a medium to long-term exposure risk.

Source pathway receptor linkage assessment

- Current and future residents are at risk from contact with contaminated soil.
- Workers are at risk from contact with contaminated soil during shallow and intrusive works.
- Groundwater contact or ingestion is unlikely owing to deep depths (>50m) and no bores on site.
- On site ecological receptors for areas used for landscaping.

Discussion of multiple lines of evidence

A multiple lines of evidence approach is the process for evaluating and integrating information from different sources of data and uses best professional judgement to assess the consistency and plausibility of the conclusions which can be drawn, NEPM (2013).

Definitive information concerning the sources of potential contamination on site is satisfactory therefore the risk assessment will rely heavily on the information provided by this PSI and will be supplemented by analytical data collected from the sampling program.

8.0 Sampling and analysis quality plan and sampling methodology

The Data Quality Objectives (DQOs) of the site assessment have been developed to define the type and quality of data to meet the project objectives. The DQOs have been developed generally in accordance with the seven-step process as outlined in AS 4482.1:2005 and the USA EPA: Guidance on Systematic Planning Using the Data Quality Objectives Process (2006a). These DQOs are as follows:

1. **The problem**
2. **The goal of the study**
3. **Information inputs**
4. **Study boundaries**
5. **The analytical approach**
6. **Performance and acceptance criteria**
7. **Obtaining data**

These objectives have been further outlined in the following sections.

DQO 1 - The problem

There are possible sources of contamination from historical land uses which may pose risk to current and future users of the site. Insufficient data relating to these sources is currently available to determine residential land use suitability with the necessary level of confidence.

DQO 2 - The goal of the study

Goals of the study include:

- Undertake intrusive investigations to determine if there is contamination within soil associated with the identified potential contamination sources.
- Determine if any contamination, should it be identified, poses a risk to current and/or future receptors at the site or within potential exposure pathways from the site.
- Determining whether the site is currently, or can be made, suitable for the proposed development regarding contamination.

DQO 3 - Information inputs

- Desktop data provided by the PSI, including site inspections, site condition, history, geology, hydrogeology to characterise the site.
- Soil observational data including visual and olfactory conditions obtained from the proposed sampling program.
- Soil analytical data relative to assessment criteria.

DQO 4 - Study boundaries

- Intrusive soil investigations in the near surface soil will be conducted across the site.
- Temporal boundaries are limited to the proposed fieldwork timeframes.

DQO 5 - The analytical approach

Soil were tested against the following parameters as identified in the Conceptual Site Model (see **Section 7.0**), summarised in **Table 3**.

Table 3: Sample media and analytes

Material	Analytes	ALS suite code	Test method
Soil	Heavy metals	S-3	APHA 3120
	Chromium VI	EG048	APHA 3120
	Organochlorine & Organophosphate Pesticides (OCP/OPP)	P21/1	USEPA 3510/8270
	Total Recoverable Hydrocarbons (TRH)	P21/1	USEPA SW 846 - 8260B
	Benzene Toluene Ethylbenzene Xylene Naphthalene (BTEXN)	P21/1	USEPA SW 846 - 8260B
	Phenols	P21/1	USEPA SW 846 - 8270D
	Polychlorinated biphenyls (PCBs)	P21/1	USEPA SW 846 - 8270D

DQO 6 - Performance and acceptance criteria

Specific limits for the investigation are in accordance with the appropriate guidance made or endorsed by state and national regulations, appropriate indicators of data quality, and industry standard procedures for field sampling and handling.

To assess the validity of data for decision making, the data will be assessed against a set of data quality indicators, the following predetermined data quality indicators have been adopted.

The key decision rules for the investigation are:

- 1) Has the analytical data been collected as part of the testing and met the data quality indicators? If they have then the data can be used to answer the decision rule/s and the decision statements developed in Step 2 of the DQOs. If not, then the need to collect additional data may be required.
- 2) Do contaminant concentrations exceed the investigation and screening criteria? If not, then the potential contamination does not pose an above low level of risk. Where results exceed the investigation and screening criteria, this may indicate an unacceptable level of risk. Further risk assessment and investigations may be warranted to determine the potential for impacts.

The key decision errors for the investigation are:

- i. deciding that soil on site is contaminated when it truly is not, and
- ii. deciding that soil on site is not contaminated when it truly is.

The true state of nature for decision error (i) is that soil is not contaminated.

The true state of nature for decision error (ii) is that soil is contaminated.

The site acceptance criteria were specifically derived and incorporate the following:

- The samples were not composited so as the direct reading of contaminant levels will be found from each sample point on which an appropriate decision can be based off.
- QAQC duplicate should have a Relative Percentage Difference (RPD) for metals of <30% and <50% for all other analytes.
- If contaminant levels exceed acceptance criteria further investigation may be required.
- Specific Tier 1 acceptance criteria are as follows, **Table 4**.

Table 4: Tier 1 analysis acceptance criteria

Material	Analytes	Criteria
Soil	Heavy metals OCPs OPPs TRH BTEXN Phenols PCBs	Health Investigation Levels (HILs) -Residential A NEPM (2013) -Table 1A(1) Heavy metals, OCPs, OPPs, phenols and PCBs -Soils within 3m of surface Health Screening Levels (HSLs) -Residential A NEPM (2013) -TRH (F1 & F2) and BTEXN -Soils within 2 of surface -Clay soil Added Contaminants Limits (ACLs) -Residential A NEPM (2013) -Table 1B(1) Zinc -Table 1B(2) Copper -Table 1B(3) Nickel -Table 1B(4) Lead -Soils within 2m of surface -pH of 6.0 (CaCl ₂) assumed from King (1998) -CEC of 10 assumed from King (1998) Environmental Investigation Levels (EILs) -Residential A NEPM (2013) -Table 1B(5) Arsenic, DDT and naphthalene -Soils within 2m of surface Ecological Screening Levels (ESLs) -Residential A NEPM (2013) -Table 1B(6) TRH, BTEX, BaP -Soils within 2m of surface Health Screening Levels (HSLs) for direct contact -CRC Care Technical Report No. 10 (2011) -Table 4 TRH, BTEXN -Residential

The Tier 1 assessment criteria will be used as an initial screening of the data to determine whether further assessment is required. Where exceedances of Tier 1 criteria indicate a risk to human health or the environment, site specific risk assessment or remediation will be carried out as appropriate.

DQO 7 - Obtaining data

The sampling pattern and strategy identifies the occurrence of potential contamination for suitable site characterisation. The sampling pattern and strategy has been devised based on site history, land uses, aerial imagery, site inspections, McMahon PSI, sampling, amendments during field works, database searches and NEPM (2013).

Sampling pattern

A judgemental sampling pattern has been chosen based on potential contamination sources and previous land use. From this judgmental sampling a quantitative assessment of results compared to the adopted criteria can be made.

McMahon assesses that the sampling pattern is suitable to be used for decision making and site characterisation.

Key features of the sampling pattern include:

- Six soil sampling points.
- One near surface sample collected from each sample point.
- One soil duplicate.

By reference to the DQOs, a map of the sampling pattern can be seen in **Attachment E**.

The following table presents a summary of the sampling locations and rationale behind their selection, **Table 5**.

Table 5: *Sampling rationale*

Sample locations	Rationale
Point 1	Natural ground in the rear paddock to assess pesticide residue.
Point 2	Silt from the dam that is spread around the rear paddock to assess pesticide residue from run-on into the dam.
Point 3	Natural soil underneath the oil stained gravel next to the large shed on the western boundary to assess vertical migration of contaminants.
Point 4	Stockpile of silt to assess pesticide residue from run-on into the dam.
Point 5	Natural soil in the front paddock to assess pesticide residue.
Point 6	Natural soil in front paddock to assess impact from the use as an RMS temporary depot.

Soil sampling method

The sampling officers wore unused disposable nitrile gloves to extract samples directly from the test pit and placed into Teflon lined glass sample jars. Collected sample containers were placed into a chilled esky for preservation prior to analysis. All in-field observations and any relevant comments were detailed in the field sheets/bore logs and a Chain of Custody form produced to accompany the samples to the laboratory.

Soil sampling standards

Soil sampling and soil descriptions were undertaken by reference to:

- AS 4482.1:2005 - Guide to the investigation and sampling of sites with potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds.
- AS 4482.2:1999 - Guide to the sampling and investigation of potentially contaminated soil Part 2: Volatile substances; and
- AS1726:2017 – Geotechnical Site Investigations.

9.0 Results

Sampling was conducted over one day on Thursday 1 October 2020. The weather was warm and dry with light winds. A summary of the field observations and sample analytical results are as follows.

Soil

The surface and near surface natural soils on site are synonymous with the Quaternary alluvium of the Mildil soil landscape. The soil profile presented below is a generalised model of the conditions encountered to the investigated depth of 0.3m.

1. 0.0-0.2m

OL silt CLAY, red brown, low plasticity, firm.

Trace fine sand.

Moist ~ PL, Alluvial, TOPSOIL, Mildil soil landscape.

2. 0.2-0.3m

CL sand CLAY, red, medium plasticity, stiff.

Trace silt.

Moist < PL, Alluvial, Mildil soil landscape.

General soil observations are:

- The soil underlying the silt from the dam and the oil stained gravel was natural material with no staining or odours.
- The silt stockpile is assessed to be excavated natural soil from the dam.
- Soil descriptions, sampling depths, and observations can be seen in the field sheets, **Attachment F**.

Analytical results

A summary of the soil analytical results are as follows:

- Heavy metals are below the adopted criteria.
- OCPs & OPPs are below LORs and the adopted criteria.
- TRH are below LORs and the adopted criteria.
- BTEXN are below LORs and the adopted criteria.
- Phenols are below LORs and the adopted criteria.
- PCBs are below LORs and the adopted criteria.

The tabulated soil results with comparison against the adopted criteria can be seen in **Attachment G**.

Laboratory certificates and QA/QC reports can be seen in **Attachment H**.

10.0 Quality assurance/quality control data evaluation

Data quality indicators

To assess the validity of data for decision making, the data has been assessed against a set of Data Quality Indicators (DQIs), the following predetermined DQIs have been adopted, **Table 6** and **Table 7**.

Table 6: *Sampling Data Quality Indicators*

Adopted practices	Completeness	Comparability	Representativeness	Precision	Accuracy
Details of sampling team – David McMahon (Principal).	✓	✓			
Reference to sampling plan/method, including any deviations from it – sampling and analysis quality plan.	✓				
Decontamination procedures carried out between sampling events.			✓	✓	✓
Logs for each sample collected, including date, time, location (with GPS coordinates), sampler, duplicate samples, chemical analyses to be performed, site observations and weather/environmental (i.e. surroundings) conditions. Include any diagrams, maps, photos.		✓	✓		
Chain of Custody fully identifying – for each sample – the sampler, nature of the sample, collection date, analyses to be performed, sample preservation method, departure time from the site and dispatch courier(s) (where applicable).	✓	✓			
Field quality assurance/quality control results (not adopted as limited sampling to assess the requirement for further investigation).				-	-
Statement of duplicate and other QAQC sample frequencies – 1 per 20 samples for duplicates.			✓	✓	
Field instrument calibrations (when used) with supporting documentation.				-	-
Sampling devices and equipment appropriate to sampling requirements.	✓	✓			

Table 7: Analysis Data Quality Indicators

Adopted practices	Completeness	Comparability	Representativeness	Precision	Accuracy
A copy of signed Chain of Custody forms acknowledging receipt date and time, and identity of samples included in shipments.	✓	✓			
Analytical methods used, including any deviations.	✓	✓			
Calculation of Relative Percentage Difference for duplicate comparison - <30% for metals and <50% for organics.	✓	✓			✓
Laboratory accreditation for analytical methods used, also noting any methods used which are not covered by accreditation.	✓			✓	
Surrogates and spikes used throughout the full method process, or only in parts. Results are corrected for the recovery.	✓	✓			
A list of what spikes and surrogates were run with their recoveries and acceptance criteria (tabulate).		✓			✓
Practical quantification limits (PQL).	✓	✓			
Laboratory duplicate results (tabulated).	✓				✓
Evaluation of all quality assurance/control information listed above against the stated data quality objectives, including a quality assurance/control data evaluation.	✓	✓	✓	✓	✓

Data quality objectives

The following QA/QC samples were taken in accordance with the requirements of NEPM (2013), EPA (1995) & AS 4482.1-2005:

- One soil duplicate sample was taken during the sampling (7291/5 & 7291/D). All duplicate parameters returned Relative Percentage Differences (RPD) below 30%, except for arsenic (46%), chromium (58%), lead (48%) and zinc (104%). These RPD exceedances are not considered to significantly impact the reliability of the results due to the comparably low exceedance when compared to the adopted criteria and the low parameters concentrations.

In consideration of the adopted QA/QC procedures and the results from their subsequent analysis, McMahon assesses the QA/QC results are suitable for the investigation undertaken and reflect the analytical data is of a suitable quality to determine contamination risk with an appropriate level of confidence. Tabulated QA/QC comparisons with RPD calculations can be seen in **Attachment I**.

11.0 Conclusions and recommendations

This investigation met the objective of assessing whether contamination has the potential to exist on the site and whether further investigation is needed.

The results of the investigation returned no historical gross contaminating land use and soil contaminant levels were below the adopted human health and environmental criteria for residential land use.

Based on the above, the risk to future residential site users and the environment is low. Accordingly, it is McMahon's conclusion that the site is suitable for large lot residential land use and that further assessment is unnecessary.

12.0 Unexpected findings

If any unconsolidated, odorous, stained or deleterious soils are encountered during any further excavation, suspected historical contaminating activities are encountered, or conditions that are not alike the above descriptions, the site supervisor should be informed, the work stopped, and this office be contacted immediately for further evaluation by an appropriately qualified environmental consultant. The unexpected findings may trigger the need for more investigation and assessment dependant on the scope and context of the unexpected finding.

13.0 Limitations and disclaimer

DM McMahon Pty Ltd has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of the Combined Development Group and only those third parties who have been authorised by DM McMahon Pty Ltd to rely on this report.

This report is limited to investigations around the existing underground fuel tanks and fuel delivery system. There are other potential contamination sources on site that were not investigated as part of this report that could pose risk to human health and environment and DM McMahon Pty Ltd nor the Certified Site Contamination Specialist assume any responsibility for potential impacts from such.

The information contained in this report has been extracted from field and laboratory source believed to be reliable and accurate. DM McMahon Pty Ltd nor the Certified Site Contamination Specialist assume any responsibility for the misinterpretation of information supplied in this report. The accuracy and reliability of recommendations identified in this report need to be evaluated with due care according to individual circumstances. It should be noted that the recommendations and findings in this report are based solely upon the said site location and conditions at the time of testing. The results of the said investigations undertaken are an overall representation of the conditions encountered. The properties of the soil and groundwater within the location may change due to variations in ground conditions outside of the tested area. The author has no control or liability over site variability that may warrant further investigation that may lead to significant design changes.

14.0 Notice of copyright

The information contained in this report must not be copied, reproduced, or used for any purpose other than a purpose approved by DM McMahon Pty Ltd, except as permitted under the Copyright Act 1968. Information cannot be stored or recorded electronically in any form without such permission.

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16.0 Attachments

Attachments proceeding this document:

Attachments	Details
A. Location map	1 page
B. Aerial photographs	14 pages
C. Site map	1 page
D. Site photographs	4 pages
E. Sample location map	1 page
F. Field notes	1 page
G. Tabulated results	1 page
H. Laboratory reports	13 pages
I. QA/QC assessment	1 page



DOCUMENT ATTACHMENTS

REPORT **XXXX**

DM McMahon Pty Ltd
6 Jones Street, (PO Box 6118)
Wagga Wagga NSW 2650

t (02) 6931 0510
www.dmmcmahon.com.au



Attachment A : *Name of attachment document*

50 Mid-Western Highway West Wyalong

Aerial photograph 2020
Report No. 7291

Legend
□ Boundary



Google Earth

© 2020 Google
Image © 2020 CNES / Airbus
© 2020 Europa Technologies




Attachment B : *Aerial photographs*

50 Mid-Western Highway West Wyalong

Aerial photograph 1973
Report No. 7291

Legend

 Boundary



Google Earth


Image © 2020 Maxar Technologies

200 m

50 Mid-Western Highway West Wyalong

Aerial photograph 1983
Report No. 7291

Legend

 Boundary

Google Earth

Image © 2020 Maxar Technologies




300 m



50 Mid-Western Highway West Wyalong

Aerial photograph 1989
Report No. 7291

Legend

 Boundary



Google Earth


Image © 2020 Maxar Technologies

300 m

50 Mid-Western Highway West Wyalong

Aerial photograph 1993
Report No. 7291

Legend

 Boundary



Google Earth


Image © 2020 Maxar Technologies

300 m

50 Mid-Western Highway West Wyalong

Aerial photograph 1997
Report No. 7291

Legend

 Boundary



Google Earth

Image © 2020 Maxar Technologies

300 m

50 Mid-Western Highway West Wyalong

Aerial photograph 2005
Report No. 7291

Legend
Boundary



Google Earth

Image © 2020 Maxar Technologies


200 m



50 Mid-Western Highway West Wyalong

Aerial photograph 2006
Report No. 7291

Legend

 Boundary



Google Earth


Image © 2020 Maxar Technologies

200 m

50 Mid-Western Highway West Wyalong

Aerial photograph 2007
Report No. 7291

Legend

 Boundary



Google Earth

Image © 2020 Maxar Technologies

200 m



50 Mid-Western Highway West Wyalong

Aerial photograph 2011
Report No. 7291

Legend
□ Boundary



Google Earth

Image © 2020 Maxar Technologies


200 m



50 Mid-Western Highway West Wyalong

Aerial photograph 2013
Report No. 7291

Legend

 Boundary



Google Earth


Image © 2020 CNES / Airbus

200 m

50 Mid-Western Highway West Wyalong

Aerial photograph 2015
Report No. 7291

Legend

 Boundary



Google Earth

Image © 2020 CNES / Airbus

200 m

50 Mid-Western Highway West Wyalong

Aerial photograph 2017
Report No. 7291

Legend
Boundary



Google Earth

Image © 2020 Maxar Technologies




200 m

50 Mid-Western Highway West Wyalong

Aerial photograph 2018
Report No. 7291

Legend

 Boundary

Google Earth

Image © 2020 CNES / Airbus




200 m



50 Mid-Western Highway West Wyalong

Aerial photograph 2020
Report No. 7291

Legend

 Boundary



Google Earth

Image © 2020 CNES / Airbus

200 m



Attachment C : *Site map*

50 Mid-Western Highway West Wyalong

Aerial photograph 2020
Report No. 7291

Legend
Boundary



Drums and totes

Silt spread on surface

Rear paddock

Oil stains

Shed

Dam

Silt stockpile

Carport

New house

Septics

Garage

Old house

Former RMS depot

Kings Ln

Google Earth

Image © 2020 CNES / Airbus

© 2020 Google

B64

100 m





Attachment D : *Site photographs*



Figure 1: Old smaller house rear extension (potential bonded ACM cladding).



Figure 2: New larger house septic system.



Figure 3: Old smaller house septic system.



Figure 4: Oil stains next to the large shed on the western boundary.



Figure 5: Silt spread around the boundary of the rear paddock.



Figure 6: Silt stockpile on the eastern boundary.



Figure 7: Empty 205L drums along the rear boundary.



Attachment E : *Sample location map*

50 Mid-Western Highway West Wyalong

Aerial photograph 2020
Report No. 7291

Legend

- Boundary
- Sample point



Google Earth

Image © 2020 CNES / Airbus
© 2020 Google



Attachment F: *Field notes*

DM McMahon Pty Ltd
PO Box 6118
WAGGA WAGGA NSW 2650
Ph: 0269 310 510



Job Notes

Date: 1.10.20
Job No.: 7291.

CLIENT: Jack & Mandy Hallahan

JOB DESCRIPTION: PSI: 50 Mid-Western Highway West Wyalong

Point 1:

518033E
6246827N

- Natural ground in rear paddock.
Near surface soil.

7291/1 → 0-0.2m - OH CLAY, red brown, low plasticity, firm.
Moist ~ PL, Alluvial, TOPSOIL.
0.2-0.3m - CL sand CLAY, red, med plasticity, stiff.
Moist < PL, Alluvial, Mildil soil landscape.

Point 2:

517991E
6246837N

- Silt from dam spreader rear paddock.

7291/2 → 0-0.05m - OH SILT, brown, low plasticity, firm. FILL.
0.05-0.2m - OH CLAY, red brown, low plasticity, firm.
Moist ~ PL, Alluvial TOPSOIL + MILDIL soil landscape.

Point 3:

517966E
6246710N

- Soil under gravel (oil stain) next to large shed.

0-0.1m Gw grey, in plasticity very dense. 20mm angular.
0.1-0.3m - OH CLAY, red brown, low plasticity, firm.
+ trace fine sand. Moist ~ PL Alluvial TOPSOIL.
7291/3 → 0.3-0.4m CL sand CLAY, red, medium plasticity, stiff. Trace silt.
Moist < PL, Alluvial, Mildil soil landscape.

Point 4:

518082
6246690

- Silt stockpile.

7291/4 → OH SILT, brown, low plasticity, firm.
OM gravel, fine, 10% sub angular.
Moist ~ PL, Alluvial.

Point 5:

518098E
6246627N

- Front paddock.

0-0.2m OH CLAY red brown, low plasticity, firm.
Moist ~ PL, Alluvial, trace fine sand, Alluvial.
7291/5 → 0.2-0.3m CL sand CLAY, red, medium plasticity, stiff. trace silt.
7291/0 Moist < PL, Alluvial, Mildil soil landscape.

Point 6:

517991E
6246619N

- Front paddock (Former RMS temp. depot).

0-0.2 OH CLAY, red brown, low plasticity, firm.
Moist ~ PL, Alluvial, trace fine sand, Alluvial.
7291/6 → 0.2-0.3 CL sand CLAY, red, medium plasticity, stiff. trace silt.
Moist < PL, Alluvial, Mildil soil landscape.



Attachment G : *Location map*

	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Hexavalent chromium	PCBs	HCB	Heptachlor	Chlordane	Endrin	Endosulfan	Methoxychlor	Mirex
Unit of Measure	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit of Reporting	5	1	2	5	5	2	5	0.1	0.5	0.1	0.05	0.05	0.1	0.05	0.05	0.2	0.2
HILs A	100	20	-	6000	300	400	7400	40	100	1	10	6	50	10	270	300	10
ACLs	-	-	320	190	1100	170	400	-	-	-	-	-	-	-	-	-	-
EILs	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample Point	Sample ID	Sample depth	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Hexavalent chromium	PCBs	HCB	Heptachlor	Chlordane	Endrin	Endosulfan	Methoxychlor	Mirex
Point 1	7291/1	0.2-0.3	5	<1	33	<5	11	4	6	<0.1	0.9	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.20
Point 2	7291/2	0.0-0.05	<5	<1	24	9	24	3	12	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.20
Point 3	7291/3	0.3-0.4	<5	<1	19	6	14	3	36	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.20
Point 4	7291/4	Stockpile	<5	<1	23	21	64	4	17	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.20
Point 5	7291/5	0.2-0.3	7	<1	22	7	32	4	31	<0.1	0.6	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.20
Point 6	7291/6	0.2-0.3	<5	<1	15	<5	9	2	6	<0.1	1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.20

	Aldrin + Dieldrin	DDT + DDE + DDT	Chlorpyrifos	Atrazine	Bifenthrin	Phenol	Benzo(a)pyrene	PAHs	F1	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
Unit of Measure	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit of Reporting	0.05	0.05	0.05	0.05	0.05	0.5	0.5	0.5	10	50	100	100	0.2	0.5	0.5	0.5	1
HILs A	6	240	160	320	600	3000	3	300	-	-	-	-	-	-	-	-	-
HSLs A	-	-	-	-	-	-	-	-	50	280	-	-	0.7	480	NL	110	5
EILs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170
ESLs	-	-	-	-	-	-	0.7	-	180	120	1300	5600	65	105	125	45	-
CRC	-	-	-	-	-	-	-	-	4400	3300	4500	6300	100	14000	4500	12000	1400

Sample Point	Sample ID	Sample depth	Aldrin + Dieldrin	DDT + DDE + DDT	Chlorpyrifos	Atrazine	Bifenthrin	Phenol	Benzo(a)pyrene	PAHs	F1	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
Point 1	7291/1	0.2-0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<10	<10	<100	<100	<0.2	<0.5	<0.5	<0.5	<1
Point 2	7291/2	0.0-0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<10	<10	<100	<100	<0.2	<0.5	<0.5	<0.5	<1
Point 3	7291/3	0.3-0.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<10	<10	<100	<100	<0.2	<0.5	<0.5	<0.5	<1
Point 4	7291/4	Stockpile	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<10	<10	<100	<100	<0.2	<0.5	<0.5	<0.5	<1
Point 5	7291/5	0.2-0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<10	<10	<100	<100	<0.2	<0.5	<0.5	<0.5	<1
Point 6	7291/6	0.2-0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<10	<10	<100	<100	<0.2	<0.5	<0.5	<0.5	<1

HILs A - Table 1A(1) Residential A, NEPM (2013) <3M depth

HSLs A - Table 1A(3) Residential A, NEPM (2013) Clay 0m - <1m depth used (most conservative)

ACLs - Table 1B(1-4) Residential A, NEPM (2013) <2M depth , pH of 6.0, CEC of 10

EILs - Table 1B(5) Residential, NEPM (2013) <2M depth

ESLs - Table 1B(6) Residential, NEPM (2013) <2M depth

CRC - CRC CARE Technical Report no. 10: TABLE A4 - Soil health screening levels for direct contact, Residential



Attachment H : *Laboratory reports*

CERTIFICATE OF ANALYSIS

Work Order	: ES2034851	Page	: 1 of 13
Client	: DM MCMAHON PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: ADMIN	Contact	: Grace White
Address	: 6 JONES ST	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
	Wagga Wagga NSW, AUSTRALIA 2650		
Telephone	: +61 02 6931 0510	Telephone	: +61 2 8784 8555
Project	: 50 Mid-Western Highway West Wyalong	Date Samples Received	: 06-Oct-2020 10:30
Order number	: 7291	Date Analysis Commenced	: 07-Oct-2020
C-O-C number	: ----	Issue Date	: 12-Oct-2020 23:17
Sampler	: DAVID MCMAHON		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 7		
No. of samples analysed	: 7		



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, 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 Contact for details.

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above 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.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	7291/1	7291/2	7291/3	7291/4	7291/5
Client sampling date / time				01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	
Compound	CAS Number	LOR	Unit	ES2034851-001	ES2034851-002	ES2034851-003	ES2034851-004	ES2034851-005	
				Result	Result	Result	Result	Result	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	10.5	4.8	12.6	12.9	9.5	
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	5	<5	<5	<5	7	
Barium	7440-39-3	10	mg/kg	20	80	70	70	50	
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1	
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	33	24	19	23	22	
Cobalt	7440-48-4	2	mg/kg	<2	2	2	3	<2	
Copper	7440-50-8	5	mg/kg	<5	9	6	21	7	
Lead	7439-92-1	5	mg/kg	11	24	14	64	32	
Manganese	7439-96-5	5	mg/kg	99	127	87	188	119	
Nickel	7440-02-0	2	mg/kg	4	3	3	4	4	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Vanadium	7440-62-2	5	mg/kg	56	70	60	90	41	
Zinc	7440-66-6	5	mg/kg	6	12	36	17	31	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	0.9	<0.5	<0.5	<0.5	0.6	
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	<1	<1	<1	<1	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	7291/1	7291/2	7291/3	7291/4	7291/5
Client sampling date / time					01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00
Compound	CAS Number	LOR	Unit		ES2034851-001	ES2034851-002	ES2034851-003	ES2034851-004	ES2034851-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Mirex	2385-85-5	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	7291/1	7291/2	7291/3	7291/4	7291/5
Client sampling date / time					01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00
Compound	CAS Number	LOR	Unit	ES2034851-001	ES2034851-002	ES2034851-003	ES2034851-004	ES2034851-005	
				Result	Result	Result	Result	Result	
EP068B: Organophosphorus Pesticides (OP) - Continued									
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
EP068C: Triazines									
Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
EP068D: Pyrethroids									
Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1	
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2	
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)				Client sample ID				
				7291/1	7291/2	7291/3	7291/4	7291/5
Client sampling date / time				01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00
Compound	CAS Number	LOR	Unit	ES2034851-001	ES2034851-002	ES2034851-003	ES2034851-004	ES2034851-005
				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
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
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	85.5	97.6	78.0	85.2	107
EP068S: Organochlorine Pesticide Surrogate								



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	7291/1	7291/2	7291/3	7291/4	7291/5
Client sampling date / time				01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	
Compound	CAS Number	LOR	Unit	ES2034851-001	ES2034851-002	ES2034851-003	ES2034851-004	ES2034851-005	
				Result	Result	Result	Result	Result	
EP068S: Organochlorine Pesticide Surrogate - Continued									
Dibromo-DDE	21655-73-2	0.05	%	136	104	114	81.8	85.1	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	85.3	53.6	68.6	62.5	57.8	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	82.6	81.6	82.5	82.2	84.0	
2-Chlorophenol-D4	93951-73-6	0.5	%	83.9	82.8	83.5	84.0	84.9	
2,4,6-Tribromophenol	118-79-6	0.5	%	53.3	53.0	56.3	54.4	55.8	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	91.0	89.0	89.5	89.8	91.5	
Anthracene-d10	1719-06-8	0.5	%	97.2	95.7	96.6	98.0	99.1	
4-Terphenyl-d14	1718-51-0	0.5	%	89.8	88.3	89.2	90.3	91.5	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	101	106	94.5	104	106	
Toluene-D8	2037-26-5	0.2	%	89.5	96.7	86.3	94.0	96.6	
4-Bromofluorobenzene	460-00-4	0.2	%	80.8	85.0	75.5	87.2	84.9	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			7291/6	7291/D	----	----	----
		Client sampling date / time			01-Oct-2020 00:00	01-Oct-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2034851-006	ES2034851-007	-----	-----	-----	
				Result	Result	----	----	----	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	7.6	11.8	----	----	----	
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	8	----	----	----	
Barium	7440-39-3	10	mg/kg	10	----	----	----	----	
Beryllium	7440-41-7	1	mg/kg	<1	----	----	----	----	
Boron	7440-42-8	50	mg/kg	<50	----	----	----	----	
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----	
Chromium	7440-47-3	2	mg/kg	15	18	----	----	----	
Cobalt	7440-48-4	2	mg/kg	<2	----	----	----	----	
Copper	7440-50-8	5	mg/kg	<5	<5	----	----	----	
Lead	7439-92-1	5	mg/kg	9	18	----	----	----	
Manganese	7439-96-5	5	mg/kg	29	----	----	----	----	
Nickel	7440-02-0	2	mg/kg	2	4	----	----	----	
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	
Vanadium	7440-62-2	5	mg/kg	49	----	----	----	----	
Zinc	7440-66-6	5	mg/kg	6	19	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	1.0	----	----	----	----	
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	----	----	----	----	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----	
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----	
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----	
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----	
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----	
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----	
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	7291/6	7291/D	----	----	----
Client sampling date / time				01-Oct-2020 00:00	01-Oct-2020 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	ES2034851-006	ES2034851-007	-----	-----	-----	
				Result	Result	----	----	----	
EP068A: Organochlorine Pesticides (OC) - Continued									
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----	----
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----	----
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----	----
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----	----
Mirex	2385-85-5	0.20	mg/kg	<0.20	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.05	mg/kg	<0.05	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	7291/6	7291/D	----	----	----
Client sampling date / time				01-Oct-2020 00:00	01-Oct-2020 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	ES2034851-006	ES2034851-007	-----	-----	-----	
				Result	Result	----	----	----	
EP068B: Organophosphorus Pesticides (OP) - Continued									
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----	----
EP068C: Triazines									
Atrazine	1912-24-9	0.05	mg/kg	<0.05	----	----	----	----	----
EP068D: Pyrethroids									
Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	----	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID		7291/6	7291/D	----	----	----
Client sampling date / time				01-Oct-2020 00:00	01-Oct-2020 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2034851-006	ES2034851-007	-----	-----	-----	-----	-----
				Result	Result	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued										
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----	----
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	----	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	----	----
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	----	----	----	----	----	----
EP066S: PCB Surrogate										
Decachlorobiphenyl	2051-24-3	0.1	%	114	----	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate										



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	7291/6	7291/D	----	----	----
Client sampling date / time				01-Oct-2020 00:00	01-Oct-2020 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	ES2034851-006	ES2034851-007	-----	-----	-----	
				Result	Result	----	----	----	
EP068S: Organochlorine Pesticide Surrogate - Continued									
Dibromo-DDE	21655-73-2	0.05	%	119	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	85.5	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	83.9	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	85.1	----	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%	54.3	----	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	91.0	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	98.8	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	92.1	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	104	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	93.0	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	88.3	----	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
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	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130



Attachment I : QA/QC assessment

Sample ID		Sample Point	Sample depth	Parameter							
				Arsenic	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury
Sample	7291/5	Point 5	0.2-0.3	5	<1	33	<5	4	11	6	<0.1
Duplicate	7291/D		0.2-0.3	8	<1	18	<5	4	18	19	<0.1
RPD Calculation (%)				46	0	58	0	0	48	104	0