REPORT PREPARED FOR:
Fulton Hogan Land Development Ltd

PRELIMINARY SITE INVESTIGATION
WASTEWATER TREATMENT PLANT
LOT 4 DP 353309
WAINUI

Prepared by:
Groundwater and Environmental Services
PO Box 190
Cambridge
24 February 2025

EXECUTIVE SUMMARY

This preliminary environmental investigation has evaluated the potential for site contamination due to past and present activities across and around the proposed wastewater treatment plant location at Lot 4 DP 353309 on the northeast side of Lysnar Road.

Auckland Council contaminated site databases did not contain records of actual or potential contamination within the subject property and there were no items of actual or potential environmental concern identified for the investigation area in the Auckland Council property file for Lot 4 DP 353309.

Multiple previous environmental investigations have been carried out for the wider Milldale development. Some of the investigations were for land adjoining the current investigation area and extending into the edges of the area.

Previous investigations by Tonkin & Taylor did not identify any potential environmental issues within the investigation area or in the area immediately surrounding it. GES investigations at 72 Lysnar Road identified areas of contamination towards the eastern end of that property which are highly unlikely to have had any potential environmental effects on the current investigation area.

A 2018 4Sight Consulting investigation carried out for installation of public wastewater services (including part of Lot 4 DP 353309) confirmed that no HAIL activities had occurred in the area and that contaminants across the site were considered highly unlikely to present a risk to human health.

Investigation, remediation, and validation carried out by GES in 2023 dealt with uncontrolled fill to the south of Lot 4 DP 353309. Asbestos-containing fibrolite fragments, lead and PAH contamination remained in fill south of Lysnar Road. The contamination to the south of Lysnar Road is highly unlikely to have had any effect on the investigation area within Lot 4 DP 353309.

The June 2024 GES investigation of parts of 36 Sidwell Road and Lot 4 DP 353309 did not identify issues that would be likely to have resulted in contamination of the ground within Lot 4 DP 353309. The investigation area within Lot 4 DP 353309 was used as a contractor's yard and stockpiles of soil, road millings, and gravel were observed on site. There were no indications of contamination within the stockpiles.

Historic aerial photographs largely confirmed information from other sources indicating that the investigation area had historically been undeveloped, and surrounding land was predominantly used for pastoral grazing. The remnants of a pear orchard and a later block that may have been plantation forestry were visible to the south of the investigation area. Filling in the area south of Lysnar Road and creation of a pond on the unnamed tributary was noted in 1988. A contractor's yard and track alongside Waterloo stream established on Lot 4 DP 353309 appeared to be associated with construction of a public wastewater pipe and pump station. The

aerial photographs did not provide any visible indications of potential contamination within the investigation area.

A walkover inspection of the area was carried out 24 May 2024, when much of the investigation area within Lot 4 DP 353309 was used as a contractor's yard. No indications of contamination were found during the walkover. An inspection on 7 November 2024 did not identify any identified at the site or in the surrounding area that would be likely to have resulted in significant contamination of the ground within the investigation area.

A small area of recent rubbish burning was noted on the gravel hardstand. There appeared to be less than 1 m^3 of residue from the burning which is considered to be *de minimus* in terms of potential site contamination. This material should however be removed for appropriate off-site disposal prior to any earthworks in the area.

Five reconnaissance soil samples were collected on 7 November 2024 and analysed for potential contaminants. Four samples were collected from stockpiles on a further sample was collected from the base of a test pit in the yard. The soil samples contained heavy metals at levels that were within their normal background ranges and there were no detectable polycyclic aromatic hydrocarbons (PAHs) in any of the samples. Based on the results of the limited reconnaissance sampling, the potential for significant contamination at the site appears low.

No HAIL activities were identified within the investigation area. The conceptual site model therefore determined that the source, pathway, receptor linkages for contamination were incomplete.

Future activities within the investigation area are likely to be permitted activities under the NES.

As with any assessment of this nature, there is always the possibility that additional items not visible during the investigation may be revealed during subsequent investigations or during redevelopment of the site. Any such items should be evaluated by a suitably qualified environmental consultant in accordance with the requirements of Auckland Council.

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LIMITATIONS

No liability is assumed for misrepresentation of data or for items not visible, accessible or present at the time of the site investigations conducted by Groundwater and Environmental Services that may affect the validity and/or accuracy of the interpretation of environmental data.

Interpretations and conclusions presented herein are based on data presented in this report, information from others and experience on similar projects. The available data does not preclude the presence of materials at other locations at the site, which presently or in the future may be considered hazardous. Services in respect of this investigation have been performed in accordance with professional standards for investigations of contamination assessment. No guarantees are either expressed or implied.

This document and the information contained herein have been prepared for the use of Fulton Hogan Land Development Ltd in relation to proposed wastewater treatment plant at Lot 4 DP 353309, and should not be used or relied upon by any other person or entity for any other project, with the exception that the relevant territorial authority can rely on it for the purpose of processing those consent applications for which this report has been prepared. Any reliance on this report by any other parties shall be at such party's sole risk.

This document has been prepared by a suitably qualified and experienced practitioner as required by the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (2011).

Report Version: **Revision A – Issued for Consent**

Report prepared on: 24 February 2025

Report prepared by:

Andrew MacDonald, MSc(Hons), Principal

Statement of Qualifications and Experience - Andrew James MacDonald

I am an environmental consultant trading as **Groundwater and Environmental Services (GES)**. GES is an environmental consultancy specialising in ground and groundwater contamination assessment, management and remediation. I have been trading as **GES** since September 1995.

I hold the qualifications of Bachelor of Science, and Master of Science (Honours) degrees from Auckland University, which I completed in 1989 and 1991 respectively. I am recognised as a Suitably Qualified and Experienced Practitioner (SQEP) in contaminated land and groundwater assessment, management, and remediation under both the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) and the contaminated land provisions of the Auckland Unitary Plan.

I have 34 years of professional experience in the environmental consulting, including roles such as environmental scientist at Woodward Clyde NZ Ltd. My experience includes:

- Preliminary and detailed environmental site investigations at a wide range of potentially contaminated sites.
- Remedial action and site management plans for contaminated sites.
- Organisation and supervision of remediation at contaminated sites.
- Validation of remediation at contaminated sites and preparation of site validation reports.
- Long-term contaminated site monitoring and management plans.
- Resource consents for site remediation and ongoing discharges of contaminants to ground at contaminated sites.
- Provision of expert evidence related to contamination issues.
- Peer review of contaminated site investigations.

I have worked extensively on earlier stages of the Milldale development as well as the nearby Millwater development. I have provided consulting services to private, commercial/industrial, local government, and central government clients.

I confirm that, in my capacity as author of this report, I have read and abide by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses Practice Note 2023.

1 Introduction

This report has been prepared in support of the application by Fulton Hogan Land Development (FHLD) for a resource consent to the Environmental Protection Authority (EPA) under the Fast-Track Approvals Act 2024 (FTAA).

Resource consent is required for the construction and operation of a Wastewater Treatment Plant (WWTP) involving earthworks, wastewater discharges and vegetation removal.

Groundwater and Environmental Services (GES) was engaged to carry out a preliminary site investigation (PSI) to assess the potential for environmental contamination within and around the proposed wastewater treatment plant site at Lot 4 DP 353309.

The investigation is required to determine the potential for contamination across the area due to past or present activities and has been undertaken in accordance with the requirements of the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) and the contaminated land sections of the Auckland Unitary Plan (AUP).

1.1 Scope

Significant activities undertaken as part of this investigation included:

- Review of aerial photographs of the investigation area and surrounding land;
- Review of council property file information for Lot 4 DP 353309 and the council response to a site contamination enquiry;
- Review of existing relevant environmental reports for the Milldale development;
- Walkover inspection of the subject area to check for indicators of potential contamination;
- Collection and analysis of reconnaissance soil samples to check specific areas for potential contamination and
- Preparation of this PSI report in accordance with the requirements of the MFE guidelines for reporting on contaminated sites, the NES and the relevant sections of the AUP.

1.2 Site Description

The Wastewater Treatment Plan site (the Site) is located within Lot 4 DP 353309 which has a total area of 10.45 ha. The Site is on the northern side of Lysnar Road, Wainui and is located directly adjacent to the Milldale development and just outside the Wainui Precinct.

The parent site is characterised by undeveloped rural land that has historically been used for farming. The topography of the parent site generally slopes from north-west to south-east and has two stands of poplar trees. There is an unnamed tributary of the Waterloo stream that bisects the southern portion of the site.

The area subject to the works and enhancement planting covers a total land area of approximately 1.21 ha and has been positioned in the southern corner of the parent site, directly adjacent to Lysnar Road as illustrated in Figure 1. The works site is generally flat and has

been utilised as a construction compound supporting the delivery of ongoing delivery of the Milldale development.

A full description of the Site and surrounds is provided in the application AEE.

The property details for Lot 4 DP 353309 are summarised below:

Address:	Lot 4 DP 353309, Wainui Road, Upper Orewa
Legal Description:	Lot 4 DP 353309
Title Number:	218138
Area:	10.4451 Hectares

1.3 Background

The investigation area is located within land that has historically been predominantly used for rural grazing as part of farms and lifestyle blocks. Much of the investigation area was historically covered in vegetation around the margins of Waterloo Stream and its unnamed tributary.

A public wastewater pipeline and pump station were recently installed towards the eastern end of Lot 4 DP 353309, immediately west of Waterloo Stream.

Significant earthworks, including re-contouring of an unnamed tributary of Waterloo Stream, have been carried out to the south of Lot 4 DP 353309 as part of the Milldale development.

There do not appear to be any significant potentially contaminating activities currently being carried out across the investigation area.

1.4 Nature of Proposed Activity

FHLD is seeking approval to authorise the construction and operation of a Wastewater Treatment Plant (WWTP) on Lysnar Road, Wainui. The key elements of the proposal include:

- Site compound;
- Wastewater Treatment Plant;
- Site Establishment;
- Ownership & Operation; and
- Duration & Disestablishment.

A full description of the project is provided in the application AEE.

1.5 Reason for Investigation

This investigation has been carried out on behalf of FHLD to determine whether any potentially hazardous activities had been carried out on, or around, Lot 4 DP 353309 that could have resulted in contamination of the ground within the subject area. This work has been carried out consent application purposes.

1.6 Geology

The geology of the investigation area is dominated by the Mangakahia Complex[1], described as closely fractured to sheared, light or dark coloured, siliceous and locally calcareous mudstone with micaceous sandstone, siltstone, green and brown shale, and some muddy limestone.

The Mangakahia Complex commonly occurs as a melange of mixed lithologies, with a sheared mudstone matrix.

Low-lying areas around Waterloo Stream and it's tributary may include Tauranga Group Alluvium/Colluvium (described as Pleistocene-aged clays and silts along with swamp and colluvium deposits).

1.7 Hydrology & Hydrogeology

The most significant potentially sensitive receiving environments for any contamination within the investigation area would be surface water and underlying groundwater.

Surface water from the investigation area within Lot 4 DP 355509 drains towards Waterloo Stream, which runs north-east and then discharges to the east into Orewa River.

Orewa River discharges to Whangaparaoa Bay through a tidal estuary located immediately south of Orewa.

Groundwater in the investigation area is also expected to eventually discharge to Orewa River.

There is no specific information about depth to groundwater within the investigation area however, in general, groundwater it is likely to be perched above Northland Allochthon rock.

[1] Edbrooke, S.W. (2001). Geology of the Auckland Area. Institute of Geological and Nuclear Sciences 1:250,000 Geological Map 3.

2 Site History

The available site history has been gathered from several sources and is set out in the following sections.

2.1 Review of Auckland Council Environmental databases

A request for available site contamination information relating to Lot 4 DP 353309 (and the neighbouring property to the east at 36 Sidwell Road) was made to Auckland Council in May 2024 for a previous investigation.

The searched information came from the Auckland Council records system, including information currently held by the Auckland Council Natural Resources and Specialist Input Unit. This excluded council property file information, which was requested separately and is discussed in the following section. A copy of the Auckland Council response to the site contamination enquiry is attached to this report as Appendix A.

Auckland Council was unable to locate any information in its files regarding spills or contamination within the subject properties and no pollution incident files were found for the investigation area.

The former Auckland Regional Council and current Auckland Council Natural Resources and Specialist Input Unit databases were searched for contaminated site discharge consents, environmental assessments, landfill, air discharge, borelog and industrial trade process consents within approximately 200 metres of the site.

No activities were identified in the surrounding area that were likely to cause significant contamination within the current investigation area.

2.2 Review of Auckland Council Property Files

An electronic copy of the Auckland Council property file for Lot 4 DP 353309 was reviewed for this investigation. Information from the property file is discussed below:

The property file for Lot 4 DP 353309 confirms that it had primarily been used for grazing purposes, including deer farming. The property file did not contain any information relating to potential contamination either within the proposed wastewater treatment plant area or across the wider property.

The current lot was created in 2005 as part of a boundary readjustment subdivision of original Lots 1 and 2 DP 142193, Lot 1 DP 142194 and Allot 5153 Parish or Waiwera. The subject property was vacant grazing land at the time of subdivision.

The property file for Lot 4 DP 353309 included information relating to the installation of the Stage 6 Milldale wastewater line, which runs through the southeast end of the property. A targeted detailed site investigation (DSI) prepared by 4Sight Consulting and a 2020 assessment of environmental effects for construction of a pump-out station on 56 Lysnar Road were included. Information from the targeted DSI is discussed in Section 2.4 of this report.

The AEE for the pump-out station noted that the proposed facility did not involve any discharge or overflows to the environment. Wastewater was to be pumped to a temporary wastewater storage tank and pumped out to a wastewater storage truck for off-site disposal. Overall, any actual and potential adverse effects on the environment of constructing the pump-out station were considered to be less than minor.

No other potential environmental issues were identified in the property files within, or immediately around, Lot 4 DP 353309.

2.3 Dangerous Goods Licences

No known dangerous goods licences have been held for the property under investigation.

2.4 Previous Environmental Reports

There have been multiple previous environmental investigations carried out for the wider Milldale development, some of which have covered part of the current investigation area or adjacent land. Previous reports include:

- Tonkin & Taylor (September 2015). Wainui East- Stage 1, Ground contamination assessment. Prepared for Fulton Hogan Ltd.
- Tonkin & Taylor (January 2016). Wainui East Tranche 1, Ground contamination assessment. Prepared for Fulton Hogan Ltd.
- Tonkin & Taylor (June 2016). Argent Lane Special Housing Area - Ground contamination assessment. Prepared for Fulton Hogan Ltd.
- Tonkin & Taylor (August 2016). Argent Lane Special Housing Area, Qualifying Development Area – Ground contamination assessment. Prepared for Fulton Hogan Ltd.
- Tonkin & Taylor (May 2017). Wainui East: Earthworks 2 Area – Ground Contamination Assessment. Prepared for Fulton Hogan Ltd
- Tonkin & Taylor (August 2017). Preliminary Site Investigation (ground contamination), Wainui East Residential Subdivision, Argent Lane Special Housing Area. Prepared for Fulton Hogan Ltd.
- Tonkin & Taylor (December 2017). Wainui East Residential Subdivision. Removal of burning and asbestos wastes. Prepared for Fulton Hogan Ltd.
- 4Sight Consulting Ltd (October 2018). Wainui Wastewater Line Targeted Detailed Site Investigation (DSI). Prepared for Wood and Partners Consultants.
- Tonkin & Taylor (June 2020). Preliminary Site Investigation for ground contamination, Milldale Earthworks Precincts 2 and 3. Prepared for Fulton Hogan Land Development Ltd.
- Groundwater & Environmental Services (31 March 2022). Preliminary and Detailed Site Investigation. 72 Lysnar Road, Upper Orewa. Report prepared for Fulton Hogan Land Development Limited.
- Groundwater & Environmental Services (18 May 2022). Site Management & Remedial Action Plan. 72 Lysnar Road, Upper Orewa. Report prepared for Fulton Hogan Land Development Limited.

- Groundwater & Environmental Services (14 November 2023). Preliminary and Detailed Site Investigation. Part 131 Argent Lane, Milldale Stage 8, Wainui. Report prepared for Fulton Hogan Land Development Limited.
- Groundwater & Environmental Services (9 June 2024). Preliminary Site Investigation. Part 36 Sidwell Road & Lot 4 DP 353309, Milldale Stage 8, Wainui. Report prepared for Fulton Hogan Land Development Limited.

Key points from the Tonkin and Taylor reports include:

1. The assessments identified that the area had been used predominately for pastoral farming purposes, with supporting residences and infrastructure, mostly developed after the 1990s.
2. An historic pear orchard was identified on part of 56 Lysnar Road and adjoining land to the west. The site buildings and east edge of the orchard were around 80 m south-west of the current investigation area. The bulk of the orchard appeared to already be disused by the time of the 1940 aerial photograph however the closest part to the investigation area remained in use longer. Soil sampling and analysis carried out on the remnant area of the pear orchard (closest to the current investigation area) found heavy metals within expected background ranges and no detectable pesticide residues.
3. Aside from the historic pear orchard, no potentially contaminating activities were identified within the surrounding area. Background information did not identify any buildings or other significant structures within the investigation area.
4. Except for the operation of a pear orchard, available evidence suggested that the residential and pastoral faming activities that occurred in the surrounding area should not be considered HAIL activities.
5. Figures from the T&T reports showing features identified in the surrounding area and the location of the former orchard are attached in Appendix B.
6. The available evidence indicated that there was a low likelihood of asbestos having been used widely across the surrounding area. Identified areas of isolated asbestos contamination and burning wastes (well outside the current investigation area) were remediated and validated in 2017.

Results from the GES investigations at 72 Lysnar Road included:

1. Heavy metal contamination was found in a small rubbish dumping site at levels above the NES guideline value for residential land use with 10% home-grown produce consumption and/or the permitted activity criteria. Low-level PAHs were also found at that location. The contamination is approximately 200 m downhill from the southern boundary of 36 Sidwell Road.
2. Low-level PAH contamination (below the NES guideline values and permitted activity criteria) was found in an area south and west of the former dwelling in the southeast of the site and in a hardstand area in the southwest. The contamination is approximately 40 m downhill from the southern boundary of 36 Sidwell Road.
3. The detected contamination at 72 Lysnar Road it is highly unlikely to have resulted in any contamination of the current investigation area. A figure showing the locations of contamination at 72 Lysnar Road is attached in Appendix B.

Result from the recent GES investigation covering part of 36 Sidwell Road & Lot 4 DP 353309 included:

1. Previous investigations by Tonkin & Taylor did not identify any potential environmental issues within Lot 4 DP 353309.
2. GES investigations at 72 Lysnar Road identified areas of contamination towards the eastern end of that property which are highly unlikely to have had any potential environmental effects on Lot 4 DP 353309.
3. The 2018 4Sight Consulting investigation carried out for installation of public wastewater services (including on part of Lot 4 DP 353309) confirmed that no HAIL activities had occurred did not identify any contaminants across the site.
4. Contamination in fill to the south of Lysnar Road was highly unlikely to have had any effect on Lot 4 DP 353309.
5. Much of the investigation area within Lot 4 DP 353309 was used as a contractor's yard. Stockpiles of soil, road millings, and gravel were observed on site however there were no indications of contamination within the stockpiles. There were no issues identified in the surrounding area that would be likely to have resulted in contamination of the ground within the investigation area.

The 4Sight Consulting report confirmed that no HAIL activities had occurred on the part of the site covered by their investigation, and contaminants across the site were considered highly unlikely to present a risk to human health. A figure from the 4Sight report showing the wastewater pipe path and investigation extent through the current investigation area is attached in Appendix B.

Land on the opposite side of Lysnar Road from Lot 4 was assessed during investigation, remediation, and validation of contaminated unconsented fill removal in 2023. Reports on that work included:

- Groundwater & Environmental Services (2 May 2023). Contamination Assessment – Stream Diversion Stockpile & Dam, Milldale Stage 6, 56 Lysnar Road, Upper Orewa. Letter report prepared for Kerry Dines Ltd.
- Groundwater & Environmental Services (23 August 2023). Site Validation Report, Stream Diversion Stockpile & Dam, 56 Lysnar Road, Upper Orewa. Report prepared for Fulton Hogan Land Development Limited.

Results from the 2023 assessment include:

- A stream diversion channel had been excavated through the subject property (and land to the north) to allow earthworks within the original stream and removal of the existing dam.
- Fill was encountered during excavations for the stream diversion and placed in a stockpile on site.
- The base and sides of the stream diversion were then covered with geotextile however further fill material remained beneath the cover.

- Inspection of the north side of the diversion excavation above the geotextile cloth found in situ fragments of asbestos-containing fibrolite, and previously excavated fill with isolated fibrolite pieces.
- A soil sample (FH23008) was collected from the ground on the north side of the diversion excavation, above the geotextile cloth, in an area where asbestos cement sheet fragments had been observed. The sample had heavy metal (lead) and PAH contamination at levels below applicable guidelines but no detectable asbestos fibres.

Results from the 2023 remediation and validation include:

- No contamination was found in the fill materials at levels above the permitted activity criteria for environmental protection or the NES guideline values for residential land use and outdoor worker protection.
- Remediation of the identified contamination in the fill stockpile and former dam area at 56 Lysnar Road was carried out in accordance with the approved site management plan and an asbestos removal control plan prepared specifically for the works.
- The remediation removed the **494 m³** stockpile and a further **467 m³** from the dam area.
- Excavated material was taken to Redvale Landfill for disposal.
- Validation of the remediation found no detectable asbestos, PAH or TPH contamination within the soil stockpile area or the former dam area in the south-west of the subject site.
- An inspection was carried out in the stream area immediately downstream of the diversion on 22 May 2023. No fill material was observed in the base or margins of the stream.
- Visible parts of the north bank of the diversion were also inspected on 22 May 2023. Isolated ACM sheet pieces were noted below (east of) an earthworks strip-line peg. Additional isolated ACM pieces were noted above the strip line. Fill was confirmed as being present beneath geotextile cloth in the north bank of the diversion (timber, concrete, and concrete fence posts were observed in the fill).
- The SVR noted that remaining contamination was to be remediated as part of Milldale Stage 8 earthworks.
- The contamination in fill to the south of Lysnar Road was highly unlikely to have had any effect on Lot 4 DP 353309.

No previous environmental investigations had been carried out specifically for the entire proposed wastewater treatment plant area or the balance of Lot 4 DP 353309.

2.5 Review of Aerial Photographs

A review of aerial photographs of the current investigation area and surrounding land was undertaken to determine past land use practices. Photographs from 1940 onwards were reviewed. No earlier photographs were available at the time of the review. Observations from the aerial photographs are discussed below. Historical aerial photographs from Retrolens, the Auckland Council Geomaps system, and Google Earth Pro were reviewed for this investigation.

Copies of the photographs obtained from Retrolens for the years 1940, 1961, 1963, 1973, 1981, and 1988 are included in Appendix C, along with Geomaps photographs from 1996, 2010/11 and 2017.

Observations from the photographs are provided below.

1940
The investigation area appears to be covered with scrub or bush. Waterloo Stream runs alongside the southeast boundary of Lot 4 DP 353309. Surrounding land is mostly in pasture although the remnants of the pear orchard are visible on 131 Argent Lane, approximately 80 m south-west of Lot 4 DP 353309. Parts of the orchard appear to have already been abandoned by 1940. There are no buildings, or other structures present in the investigation area or the surrounding area. There are no indications of potentially contaminating activities within the investigation area.

1961
In the 1961 photograph, Lot 4 DP 353309 is in pasture. The layout of the surrounding area is largely unchanged from the 1940 photograph. A small part of the orchard on 131 Argent Lane, where trees appear to still be surviving, remains south-west of Lot 4 DP 353309. There are no indications of potentially contaminating activities within, or around, the investigation area.

1963
The investigation area is unchanged from the previous photograph. Lot 4 DP 353309 is in pasture and there are no indications of potentially contaminating activities.

1973
The investigation area is largely unchanged from the previous photographs. The property remains in pasture and there are no indications of any potentially contaminating activities.

1981
The investigation area appears unchanged from the previous photographs. There are no other indications of potentially contaminating activities within or around the investigation area.

1988
The investigation area appears unchanged from the previous photographs. There are no indications of potentially contaminating activities within the investigation area. Recent earthworks/filling is visible to the south-west of Lot 4 DP 353309. The earthworks created a pond on the tributary of Waterloo Stream. A cropped portion of the 1988 aerial photograph showing the earthworks/pond area is reproduced below.

1996
The investigation area it is largely unchanged from the previous photograph. A small farm shed/barn has been constructed within Lot 4 DP353309. There are no indications of any potentially contaminating activities within, or immediately around, the investigation area.

2004
Plantation forestry has been established on parts of Lot 4 DP 353309. The balance of the investigation area appears unchanged from the previous photographs.

2010/11
The investigation area appears unchanged from the previous photograph. There are no indications of any potentially contaminating activities.

2017
The investigation area appears unchanged from the previous photograph. There are no indications of any potentially contaminating activities.

May 2019
The investigation area appears unchanged from the previous photograph. There are no indications of any potentially contaminating activities.

January 2021
A contractor's yard has been established within the investigation area on Lot 4 DP 353309. An access track leads to the north-east from the depot.

January 2022
The contractor's yard remains on Lot 4 DP 353309. A pipe is visible across the unnamed tributary stream to the south of Lot 4 DP 353309.

April 2023
The investigation area is largely unchanged from the previous photograph. There is a gravel hard stand on the opposite side of Lysnar Road, south of Lot 4 DP 353309. A stream diversion has been excavated south of Lysnar Road. Stockpiles of material from the diversion excavation are visible to the west of hard stand area near the road. There are no indications of any other potentially contaminating activities within or around the investigation area.

November 2024
The investigation area is largely unchanged from the previous photograph. The site appears to still be used as a contractor's yard and material is stored on site. There is a stockpile on the western part of the hardstand. Stockpiles are also visible to the north and northeast of the yard. Works appear to have been completed on the opposite side of Lysnar Road from the site. There are no indications of any other potentially contaminating activities within or around the investigation area.

2.5.1 Summary

Historic aerial photographs largely confirmed information from other sources indicating that the investigation area had historically been undeveloped, and surrounding land was predominantly used for pastoral grazing. The remnants of a pear orchard and a later block that may have been plantation forestry were visible to the south of the investigation area. Filling in the area south of Lysnar Road and creation of a pond on the unnamed tributary was noted in 1988. This work did not extend into Lot 4 DP 353309.

A contractor's yard and track alongside Waterloo stream established on Lot 4 DP 353309 appeared to be associated with construction of a public wastewater pipe and pump station. The aerial photographs did not provide any visible indications of potential contamination within the investigation area.

2.6 Information from Property Owners

The current property owner for Lot 4 DP 353309 (Fulton Hogan Land Development Ltd) is not aware of any actual or potential contamination issues within the investigation area.

The previous owner (Paul Wigglesworth) is also not aware of any actual or potential contamination issues within the investigation area.

Previous owners of the property were unable to be interviewed as part of this investigation.

Site Walkover Inspection Results

A walkover inspection of part of the investigation area was carried out on 24 May 2024. A full walkover of the property was carried out on 7 November 2024. Observations from the walkover are discussed below.

2.7 Nature and Extent of Anticipated Contamination

At the time of the inspection, available information suggested that there were no obvious sources of historic or recent contamination within Lot 4 DP 353309 other than the presence of a contractor's yard in the southeast of the property.

2.8 Walkover Observations

Observations from the walkover inspections of the property are provided below. Selected photographs taken during the site inspections are attached to this report in Appendix D.

24 May 2024

- The contractor's yard remained in use within the investigation area. It was used for storage of concrete pipes and other construction material.
- Topsoil appeared to have been scraped up into bunds around part of the yard and compacted gravel had been placed across the yard.
- There were stockpiles of gravel, soil, and road millings within the yard. There was no visible evidence of potentially contaminated material within the stockpiles.
- The barn on site had a gravel floor. There were no indications of chemical/fuel leaks or spills within the barn.
- No fill materials were observed in the banks of Waterloo stream at the east end of the property.
- There were no visual indications of any potentially contamination across the investigation area.

During the May 2024 inspection, much of the investigation area within Lot 4 DP 353309 was used as a contractor's yard. Stockpiles of soil, road millings, and gravel were observed on site however there were no indications of contamination within the stockpiles. There were no issues identified in the surrounding area that would be likely to have resulted in contamination of the ground within the investigation area.

7 November 2024

- There were two open test pits in the yard that extended through a variable thickness compacted gravel layer with rare concrete and asphalt pieces. The test pits extended through the gravel to in-situ silt. No potential contamination was noted in the test pits.
- A small rubbish burning area was noted in the northwest of the yard area. The burning had been carried out within an area of around 3 m by 2 m on compacted gravel surrounded by large concrete blocks. There was less than 1 m^3 of ash residue and no spread of material outside the area. **Surface material should be removed from the**

rubbish burning area for appropriate disposal prior to other site earthworks and the underlying ground should be tested for selected heavy metals and polycyclic aromatic hydrocarbons to confirm that there is no residual contamination.

- A gravel to boulder sized rock stockpile was located immediately west of the yard. Some silt and pieces of concrete slab were present in the stockpile however no potentially hazardous materials were observed.
- The open 2-bay board and batten shed with thick gravel floor remained in the yard. The shed was empty and there were no visible indications of contamination on the shed floor.
- A large topsoil and silt stockpile was present immediately north of gravelled yard. There were no visible indications of contamination within the stockpile surface.
- A gravel and silt stockpile with common concrete fragments was located northeast of the investigation area. There were no visible indications of contamination within the stockpile surface.
- Two areas of plantation forestry were noted on Lot 3 DP 353309, outside of the investigation area.
- A walkover of the balance of the property did not find any indications of potential contamination.

At the time of the November 2024 inspection, the area of the proposed wastewater treatment plant within Lot 4 DP 353309 was not currently being used as a contractor's yard. Stockpiles of soil, road millings, and gravel remained on site however there were no indications of contamination within the stockpiles. The ash in the small area of rubbish burning on the compacted gravel was the only visible contamination observed on site. There were no issues identified in the surrounding area that would be likely to have resulted in contamination of the ground within the investigation area.

3 HAIL Activities

The Ministry for the Environment's Hazardous Activities and Industries List (HAIL) specifies activities/industries that have the potential to result in contamination. Where current or former HAIL activities are identified on a property, intrusive investigation is generally required prior to a change in land use or redevelopment of those areas. Actual and potential HAIL activities for the investigation area are evaluated in Table 1 below using the information gathered for this investigation. The selection of potential HAIL activities was based on information gathered about the site and experience on sites with similar history.

Table 1 Potential HAIL Activities

HAIL ID	Description	Assessment
A.8	Livestock dip or spray race operations	Highly Unlikely No evidence for the presence of livestock dip or spray race structures within the investigation area.
A.10	Persistent pesticide bulk storage or use	Highly Unlikely A pre-1940 pear orchard (over 100 m away) was the only commercial horticulture activity identified in the surrounding area. Previous testing of soil within the orchard found no detectable contamination implying that there was no significant use of horticultural chemicals.
A.17	Storage tanks or drums for fuel, chemicals or liquid-based	Highly Unlikely No evidence of fuel or chemical storage on within, or immediately around, the investigation area.
E.1	Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition	Highly Unlikely No evidence for the presence of fill within the investigation area that could potentially contain asbestos products.
G.3	Landfill sites	Highly unlikely Historic aerial photographs and walkover inspections did not provide any indications of potential landfill sites within the investigation area.
G.5	Waste disposal to land (excluding where biosolids have been used as soil conditioners)	Highly Unlikely No indications for any waste disposal to land within the investigation area.
H	Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment	Highly Unlikely Contamination was identified on land to the south of Lot 4 DP 353309 however no mechanisms identified for migration of the contamination to the investigation area. No potentially hazardous substances that would be likely to affect the investigation area are likely to be present on other

		adjacent land
I	Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment	Highly Unlikely No evidence to suggest that there would have been any releases of hazardous substances to land within the investigation area. Ash from rubbish burning (<1 m^2) on gravel hardstand is considered to be *de minimus* and unlikely to have resulted in any significant releases of hazardous substances to land

3.1 Preliminary Conceptual Site Model

The information gathered for this PSI has been used to prepare a preliminary conceptual site model (CSM) for the investigation area to aid in determining whether intrusive investigation is likely to be required. The CSM provided in Table 2 evaluates contaminant source, pathway, and receptor linkages for potential items of concern during redevelopment or under future commercial/industrial, residential, or recreational land use.

Table 2 Preliminary Conceptual Site Model

Potential Source	**Potential Pathways**	**Potential Receptors**	**Assessment**
Contaminated Soil due to HAIL Activities	Dermal contact with contaminated soils	Human Health - residential and outdoor worker	Incomplete: No HAIL Activities identified within the investigation area
	Ingestion of contaminated soils	Human Health - residential and outdoor worker	
	Inhalation of vapours	Human Health - residential and outdoor worker	
	Surface water run-off	Ecological receptors – Waterloo Stream	
	Migration of groundwater	Ecological receptors – Waterloo Stream	

The preliminary conceptual site model identifies that the source, pathway, receptor linkages as incomplete as no HAIL activities were identified within the investigation. Future activities on this piece of land are likely to be permitted activities under the NES.

4 Intrusive Investigation and Sampling

Limited reconnaissance intrusive investigation and sampling was carried out on 7 November 2024 in conjunction with the walkover inspection.

The investigation and sampling included:

- Hand auger drilling through the stockpile on the north side of the yard and collection of samples for analysis from two different depth ranges (0 to 0.5 m and 0.5 to 1.0 m).
- Hand auger drilling through the stockpile to the northeast of the yard and collection of samples for analysis from two different depth ranges (0 to 1 m and 1 to 2.0 m).
- Collection of a composite sample for analysis from the base material in the deeper test pit in the southeast of the yard.
- Analysis of soil samples for selected heavy metals and polycyclic aromatic hydrocarbons (PAHs).

General observations and details of sampling procedures, material logs and analytical results are provided in the following sections.

4.1 General Observations

The stockpiles and test pits were as described in Section 2.8 above.

There were no visual or odour indications of potential contamination within the sampled materials.

4.2 Soil Sampling

The reconnaissance samples were collected according to the methods outlined in the following sections. Sample locations are shown on Figure 2. The sampling was carried out in accordance with the requirements of the Ministry for the Environment's Contaminated Land Management Guidelines No. 5: Site Investigation and Analysis of Soils (June 2021).

4.2.1 Sampling Method

Each sampling location was set out prior to the start of sampling.

The samples were collected using a stainless-steel trowel or hand auger as appropriate. Each sample was placed into a stainless-steel mixing bowl before being homogenised and placed into the appropriate sample jar.

The sample jars were supplied by Hill Laboratories.

No duplicate samples were collected for the reconnaissance sampling.

4.2.2 Sample Handling

The samples were placed into 250 ml glass jars, sealed, and put directly into a cold chilly bin. The samples were kept in cold storage for delivery to Hill Laboratories under chain of custody documentation.

Each sample was given a unique identification number as follows:

Site Identifier/Year Reference/Sample Number

The client identifier was "MDL", the year reference was "24", and the sample number was a 3-digit number from 052 to 056.

4.2.3 Equipment Decontamination

The sampling equipment was decontaminated prior to use at each sample location by rinsing in a potable water bath, washing in a solution of potable water and Decon 90 (a zero-residue analytical detergent), and rinsing in another bath of potable water.

The nature of hand auger sampling means that there is potential for contamination of deeper samples with material from the shallower part of the hole. Efforts were made during sampling to minimise any such contamination.

4.3 Material Descriptions

The sample locations, depth ranges, and geologic materials encountered during the sampling are provided in **Table 3** below.

Attention was paid to the possible presence of indicators of chemical contamination. Typical chemical contamination indicators would usually include unusual colouring, visible chemical residues, the presence of refuse, and noticeable odours. Attention was also paid to the possible presence of visible asbestos containing materials such as asbestos cement sheet pieces.

There were no visible indications of potential contamination in any of the samples.

Table 3 Sample Descriptions

Sample Name	Depth Range m	Description
MDL24052	0-0.5	Soil stockpile north side of yard Medium orange mottled silt to weakly clayey silt with minor gravel
MDL24053	0.5-1.0	Greenish grey to orange-brown weakly clayey soft silt with minor gravel
MDL24054	0-1	Large stockpile north-east of yard Medium brown mottled silt with minor clayey silt
MDL24055	1-2	Medium brown mottled silt with minor clayey silt
MDL24056	0.5-0.6	Test pit in yard Light to medium brown silt to weakly clayey silt

5 Analytical Results

Samples were delivered under cold storage to Hill laboratories for chemical analysis as soon as possible following their collection. The samples were analysed for the parameters discussed in the sections above.

The requested analyses targeted likely potentially significant contaminants.

The analytical results for the chemical analyses are summarised in Table 3 below.

The laboratory analytical report from Hill Laboratories is reproduced in full in Appendix E.

The analytical results are discussed in following sections with reference to the appropriate guidelines.

5.1 Quality Assurance/Quality Control

No duplicate samples were collected for quality assurance/quality control (QA/QC) during the sampling carried out on 7 November 2024 as fewer than 10 samples were collected for analysis.

Standard QA/QC procedures were followed during sample analysis in the laboratory.

5.2 Site Contamination Guidelines

A range of numerical guidelines have been published, against which site contaminant concentrations can be compared to determine the degree of risk that they present to human health and the environment. Representative values have also been published for the normal range of concentrations of metals in both non-volcanic-derived and volcanic-derived soils from the Auckland Region.

For the purposes of this investigation, heavy metal concentrations have been compared to the non-volcanic-derived background ranges for soils from the Auckland region.

Contaminant concentrations are compared to the permitted activity criteria for potential discharges of contaminants to the environment as specified in E30.6.1.4 of the Auckland Unitary Plan.

The concentrations are also compared to the National Environmental Standards for the protection of human health on commercial/industrial land and for outdoor worker protection. Standards for residential land with 10% home-grown produce consumption were included to reflect the planned eventual redevelopment of the site for future residential land use. A change to a more sensitive land use would require a review of the standards used.

The relevant background concentrations, permitted activity criteria, and national environmental standards are provided in the analytical results table (**Table 4**).

The comparison of guidelines with actual site contamination provides guidance on the potential risks presented by the site contamination.

The need for remediation or controls on access to contamination is established by evaluating the actual risk on a site-specific basis. Factors involved in this evaluation include the physical and chemical characteristics of the contaminants, their toxicity, and the ease of exposure of humans, plants, and animals to contaminants in soil, air, and water.

5.3 Discussion of Analytical Results

All five soil samples contained heavy metals at levels that were within their normal background ranges and there were no detectable PAHs in any of the samples.

The sampled material in the two stockpiles and the test pit base is therefore considered to be free from detectable contamination.

Based on the results of the limited reconnaissance sampling, the potential for significant contamination at the site appears low.

Table 4 Analytical Results (mg/kg)

Sample Name	Depth m	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Total PAH	BAP eq
MDL24052	0-0.5	3	< 0.10	13	16	7.7	7	22	< 0.4	< 0.031
MDL24053	0.5-1.0	3	< 0.10	11	18	8.3	7	24	< 0.4	< 0.033
MDL24054	0-1	3	< 0.10	13	19	7	9	31	< 0.3	< 0.030
MDL24055	1-2	3	< 0.10	13	22	6.1	13	42	< 0.3	< 0.030
MDL24056	0.5-0.6	< 2	< 0.10	3	3	5.4	< 2	< 4	< 0.3	< 0.027
Background - Non-Volcanic		**0.4-12**	**<0.1-0.65**	**2-55**	**1-45**	**<1.5-65**	**0.9-35**	**9-180**	**-**	**-**
NES–Residential – 10%		**20**	**3**	**460**	**NL**	**210**	**400**	**7400**	-	**10**
NES – Commercial/Industrial/ Outdoor Worker		**70**	**1300**	**6300**	**NL**	**3300**	**4000**	**400000**		**35**
Permitted Activity Criteria		**100**	**7.5**	**400**	**325**	**250**	**105**	**400**	**-**	**20**

Notes:

1. NL denotes “Not Limited” (>10,000 mg/kg).
2. Bold heavy metal values exceed the upper end of the natural background range for Auckland Region non-volcanic soils
3. Shaded values exceed the National Environmental Standard for residential land use with 10% home-grown produce consumption.
4. Red values exceed the Auckland Unitary Plan permitted activity criteria for environmental protection

5.4 Conceptual Site Model

The information gathered for this investigation has been used to revise and expand on the preliminary conceptual site model to aid in determining whether the NES applies to the site and whether contamination remediation or management is likely to be required.

The identified potential contaminants evaluated in the conceptual site model (CSM) shown in Table 5 below were limited to a selected suite of heavy metals and PAHs.

Table 5 Conceptual Site Model

Potential Source	Potential Pathways	Potential Receptors	Assessment
Soil Stockpile north of yard	Dermal contact with contaminated soils	Human Health - residential and outdoor worker	Incomplete: concentrations of contaminants are below applicable guidelines
	Ingestion of contaminated soils	Human Health - residential and outdoor worker	Incomplete: concentrations of contaminants are below applicable guidelines
	Inhalation of vapours	Human Health - residential and outdoor worker	Incomplete: concentrations of contaminants are below applicable guidelines
	Surface water run-off	Ecological receptors – public stormwater and Waterloo Creek	Incomplete: concentrations of contaminants are below applicable guidelines
	Migration of groundwater	Ecological receptors – Waterloo Creek	Incomplete: concentrations of contaminants are below applicable guidelines
Soil Stockpile northeast of yard	Dermal contact with contaminated soils	Human Health - residential and outdoor worker	Incomplete: concentrations of contaminants are below applicable guidelines
	Ingestion of contaminated soils	Human Health - residential and outdoor worker	Incomplete: concentrations of contaminants are below applicable guidelines
	Inhalation of vapours/fibres	Human Health - residential and outdoor worker	Incomplete: concentrations of contaminants are below applicable guidelines
	Surface water run-off	Ecological receptors – public stormwater and Waterloo Creek	Incomplete: concentrations of contaminants are below applicable guidelines
	Migration of groundwater	Ecological receptors – Waterloo Creek	Incomplete: concentrations of contaminants are below applicable guidelines
Silt beneath gravel yard	Dermal contact with contaminated soils	Human Health - residential and outdoor worker	Incomplete: concentrations of contaminants are below applicable guidelines

	Ingestion of contaminated soils	Human Health - residential and outdoor worker	Incomplete: concentrations of contaminants are below applicable guidelines
	Inhalation of vapours/fibres	Human Health - residential and outdoor worker	Incomplete: concentrations of contaminants are below applicable guidelines
	Surface water run-off	Ecological receptors – public stormwater and Waterloo Creek	Incomplete: concentrations of contaminants are below applicable guidelines
	Migration of groundwater	Ecological receptors – Waterloo Creek	Incomplete: concentrations of contaminants are below applicable guidelines

The conceptual site model based on limited reconnaissance sampling indicates that it is highly unlikely that potential contamination at the site will have significant effects on human health or ecological receptors as the source, pathway and receptor linkages are incomplete.

The absence of identified contamination on site implies that the NES will not apply to the proposed WWTP project at the site.

6 Summary and Recommendations

This preliminary environmental investigation has evaluated the potential for site contamination due to past and present activities across and around the proposed wastewater treatment plant location at Lot 4 DP 353309 on the northeast side of Lysnar Road.

Auckland Council contaminated site databases did not contain records of actual or potential contamination within the subject property and there were no items of actual or potential environmental concern identified for the investigation area in the Auckland Council property file for Lot 4 DP 353309.

Multiple previous environmental investigations have been carried out for the wider Milldale development. Some of the investigations were for land adjoining the current investigation area and extending into the edges of the area.

Previous investigations by Tonkin & Taylor did not identify any potential environmental issues within the investigation area or in the area immediately surrounding it. GES investigations at 72 Lysnar Road identified areas of contamination towards the eastern end of that property which are highly unlikely to have had any potential environmental effects on the current investigation area.

A 2018 4Sight Consulting investigation carried out for installation of public wastewater services (including part of Lot 4 DP 353309) confirmed that no HAIL activities had occurred in the area and that contaminants across the site were considered highly unlikely to present a risk to human health.

Investigation, remediation, and validation carried out by GES in 2023 dealt with uncontrolled fill to the south of Lot 4 DP 353309. Asbestos-containing fibrolite fragments, lead and PAH contamination remained in fill south of Lysnar Road. The contamination to the south of Lysnar Road is highly unlikely to have had any effect on the investigation area within Lot 4 DP 353309.

The June 2024 GES investigation of parts of 36 Sidwell Road and Lot 4 DP 353309 did not identify issues that would be likely to have resulted in contamination of the ground within Lot 4 DP 353309. The investigation area within Lot 4 DP 353309 was used as a contractor's yard and stockpiles of soil, road millings, and gravel were observed on site. There were no indications of contamination within the stockpiles.

Historic aerial photographs largely confirmed information from other sources indicating that the investigation area had historically been undeveloped, and surrounding land was predominantly used for pastoral grazing. The remnants of a pear orchard and a later block that may have been plantation forestry were visible to the south of the investigation area. Filling in the area south of Lysnar Road and creation of a pond on the unnamed tributary was noted in 1988. A contractor's yard and track alongside Waterloo stream established on Lot 4 DP 353309 appeared to be associated with construction of a public wastewater pipe and pump station. The aerial photographs did not provide any visible indications of potential contamination within the investigation area.

A walkover inspection of the area was carried out 24 May 2024, when much of the investigation area within Lot 4 DP 353309 was used as a contractor's yard. No indications of contamination were found during the walkover. An inspection on 7 November 2024 did not identify any identified at the site or in the surrounding area that would be likely to have resulted in significant contamination of the ground within the investigation area.

A small area of recent rubbish burning was noted on the gravel hardstand. There appeared to be less than 1 m^3 of residue from the burning which is considered to be *de minimus* in terms of potential site contamination. This material should however be removed for appropriate off-site disposal prior to any earthworks in the area.

Five reconnaissance soil samples were collected on 7 November 2024 and analysed for potential contaminants. Four samples were collected from stockpiles on a further sample was collected from the base of a test pit in the yard. The soil samples contained heavy metals at levels that were within their normal background ranges and there were no detectable polycyclic aromatic hydrocarbons (PAHs) in any of the samples. Based on the results of the limited reconnaissance sampling, the potential for significant contamination at the site appears low.

No HAIL activities were identified within the investigation area. The conceptual site model therefore determined that the source, pathway, receptor linkages for contamination were incomplete.

Future activities within the investigation area are likely to be permitted activities under the NES.

As with any assessment of this nature, there is always the possibility that additional items not visible during the investigation may be revealed during subsequent investigations or during redevelopment of the site. Any such items should be evaluated by a suitably qualified environmental consultant in accordance with the requirements of Auckland Council.

7 PSI Certifying Statement

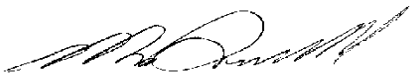
I **Andrew James MacDonald** of Groundwater and Environmental Services certify that:

This preliminary site investigation report meets the requirements of the Resource Management (National Environmental Standard for assessing and managing contaminants in soil to protect human health) Regulations 2011 because it has been:

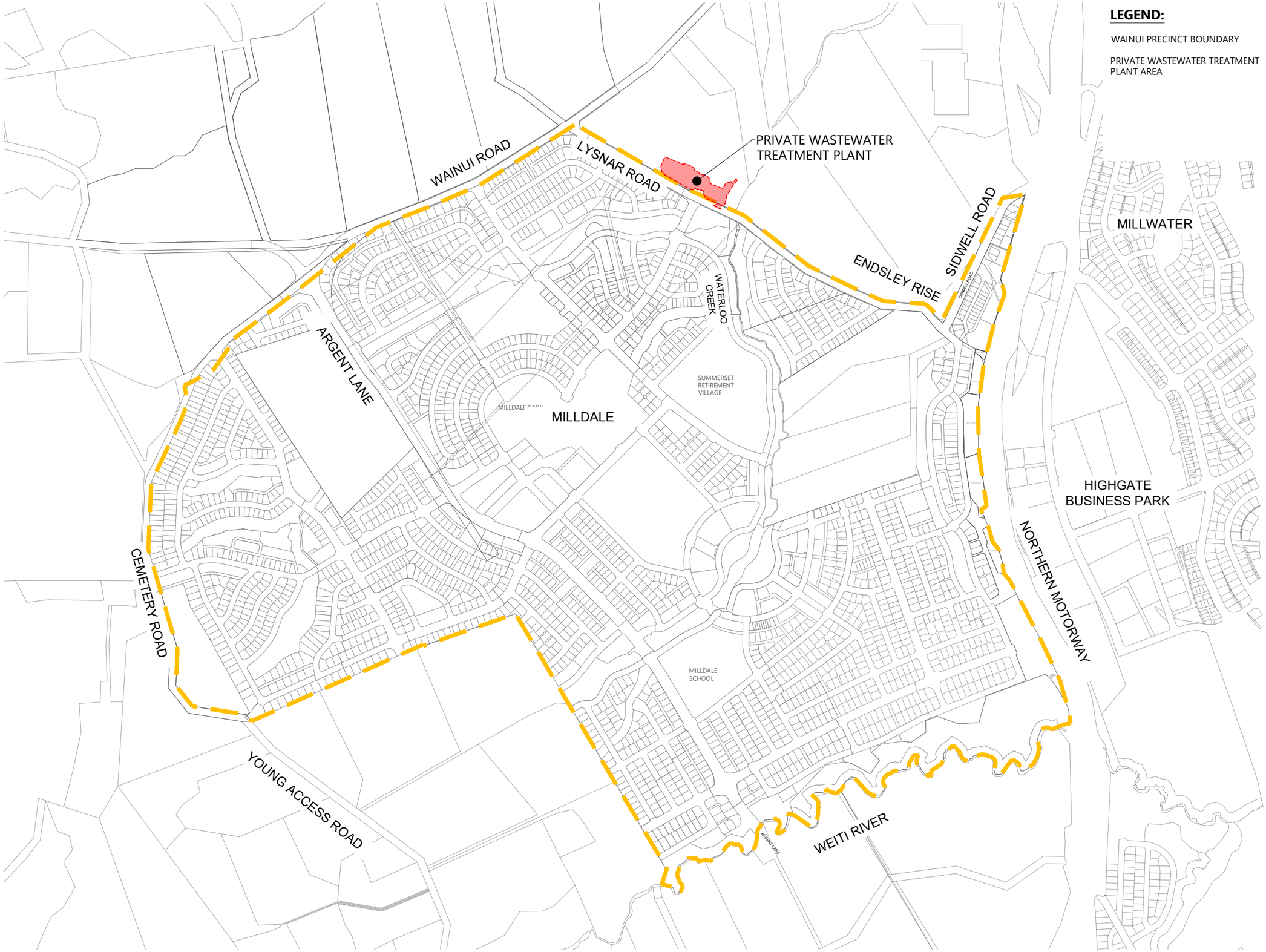
- Carried out by a suitably qualified and experienced practitioner;
- Reported on in accordance with the current edition of Contaminant Land Management Guidelines No 1 – Reporting on Contaminated Sites in New Zealand (June 2021); and
- Certified by a suitably qualified and experienced practitioner.

Evidence of the qualifications and experience of the suitably qualified and experienced practitioner who has carried out this investigation and has certified this report is appended to this report in Appendix F.

Signed and dated:



24 February2025



REVISION DETAILS		INT	DATE	SURVEYED	WOODS
1	ISSUED FOR RESOURCE CONSENT	YC	13/01/2025	DESIGNED	YC
				DRAWN	YC
				CHECKED	TR
				APPROVED	TR

BUILDING B, LEVEL 1
8 NUGENT ST, GRAFTON,
AUCKLAND 1023
+64 9 308 9229
WOODS.CO.NZ

MILLDALE
Connecting Lifestyles

MILLDALE WASTEWATER TREATMENT PLANT

SITE LOCATION PLAN

N

STATUS	ISSUED FOR CONSENT	REV
SCALE	1:10000 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P24-189-0100-GE-WWTP	

Plot Date: 1:55:03 pm,6 January 2025, YANGC

File: C:\12DSYNERGY\DATA\WP-PEN-APP-01\P24-189 - MILLDALE TREATMENT PLANT_21668\02 DRAWINGS\01 ENG\P24-189-0100-GE-SITE LOCATION PLAN.DWG


Figure 2
Sample Locations
KEY
+52/53
Sample Location
+52/53
+54/55
+56
Lysnar Rd
Google Earth
Image Landsat / Copernicus
N
100 m

Appendix A
Site Contamination Enquiry Response

23/05/2024

Groundwater & Environmental Services
PO Box Number: 190
Cambridge

Attention: Andrew MacDonald

Dear Andrew,

Site Contamination Enquiry – *36 Sidwell Road & Lot 4 DP 353309, Upper Orewa*

This letter is in response to your enquiry requesting available site contamination information within Auckland Council records for the above site. Please note this report does not constitute a site investigation report; such reports are required to be prepared by a (third-party) Suitably Qualified and Experienced Practitioner.

The following details are based on information available to the Contamination, Air & Noise Team in the Resource Consent Department. The details provided may be from former regional council information, as well as property information held by the former district/city councils. For completeness the relevant property file should also be requested to obtain all historical records and reports via 09 3010101 or online at:

https://www.aucklandcouncil.govt.nz/buying-property/order-property-report/Pages/order-property-file.aspx.

1. Hazardous Activities and Industries List (HAIL) Information

This list published by the Ministry for the Environment (MfE) comprises activities and industries that are considered likely to cause land contamination as a result of hazardous substance use, storage, and/or disposal.

There is no contamination information held within Council's records for the sites (36 Sidwell Road & Lot 4 DP 353309, Upper Orewa).

Please note:

- *If you are demolishing any building that may have asbestos containing materials (ACM) in it, you have obligations under the Health and Safety at Work (Asbestos) Regulations 2016 for the management and removal of asbestos, including the need to engage a Competent Asbestos Surveyor to confirm the presence or absence of any ACM.*
- *Paints used on external parts of properties up until the mid-1970's routinely contained lead, a poison and a persistent environmental pollutant. You are advised to ensure that soils affected by old, peeling or flaking paint are assessed in relation to the proposed use of the property, including high risk use by young children.*

2. Consents and Incidents Information (200m radius of the selected site)

The Council database was searched for records of the following activities within approximately 200 metres of the site and results are displayed in Figure 1 below:

- Pollution Incidents (including air discharges, oil or diesel spills)
- Bores

- Contaminated site and air discharges, and industrial trade process consents
- Closed Landfills
- Air quality permitted activities
- Identified HAIL activities

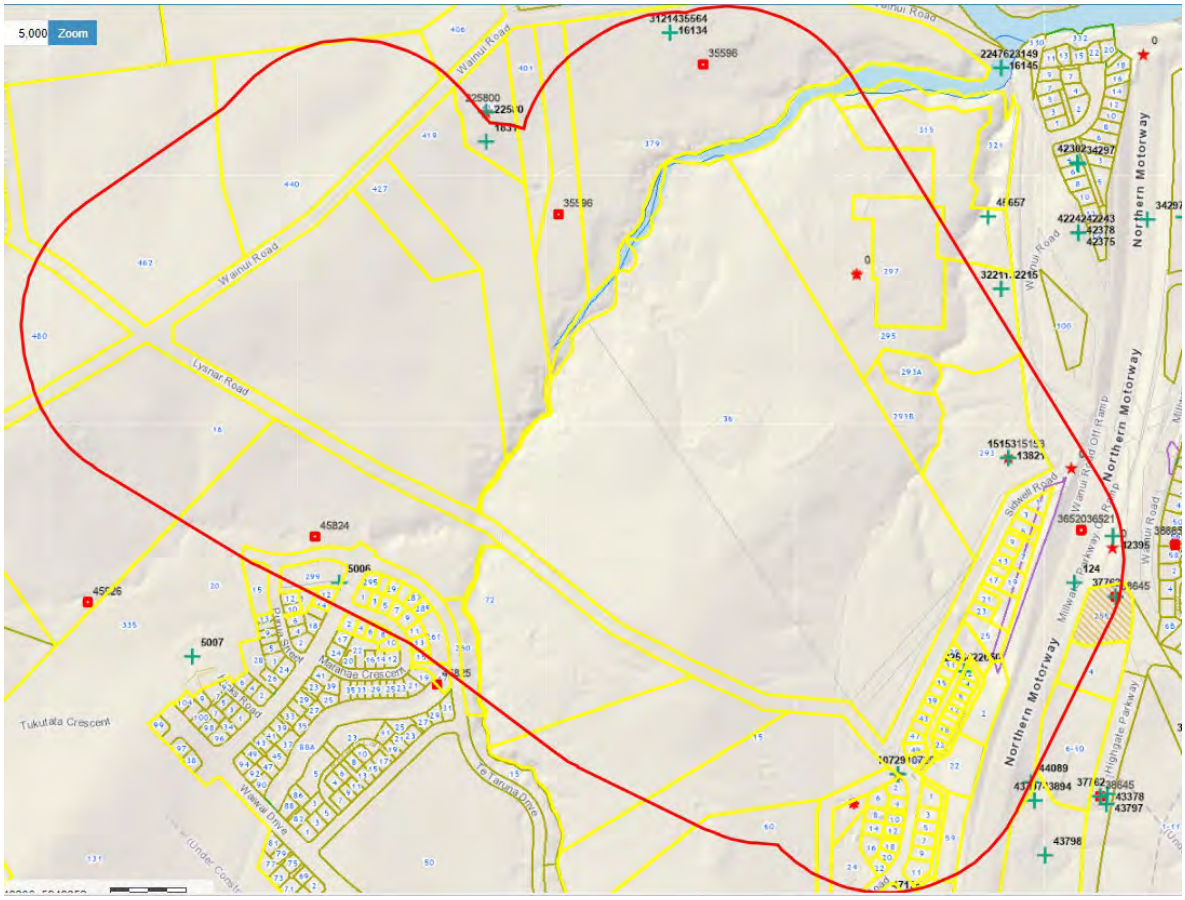


Figure 1: Selected Consents, Incidents and HAIL activities within approximately 200m of the subject site

Legend:

All Consents
All Applications
All Permitted Activities
All Bores
Closed Landfill (Auckland Council owned)
Closed Landfill (Privately owned)
All Incidents
HAIL activities

Relevant details of any pollution incidents and consents and HAIL activities are appended to this letter (Attachment A). Please refer to the column titled ‘Property Address’ on the spreadsheet to aid in identifying corresponding data on the map.

For any identified HAIL sites, please refer to the tab “HAIL activities” for more information (Column C and D include HAIL activity details where these are available).

Please note:

The HAIL activity hatching in Figure 1 only reflects whether a site has been identified as a HAIL site (both verified and non-verified) by the Council and the type of HAIL associated with the site. This does not confirm whether the site has been formally investigated or the contamination status of the property (e.g. contaminated, remediated etc.). Additionally, due to limitations within Council's records, the specific HAIL activity is not included in the data for all properties. For further information on any of these known HAIL sites, a subsequent site contamination enquiry can be lodged for the specific property (up to 5 adjacent properties can be covered in one request).

While the Auckland Council has carried out the above search using its best practical endeavours, it does not warrant its completeness or accuracy and disclaims any responsibility or liability in respect of the information. If you or any other person wishes to act or to rely on this information, or make any financial commitment based upon it, it is recommended that you seek appropriate technical and/or professional advice.

If you wish to clarify anything in this letter that relates to this site, please contact contaminatedsites@aucklandcouncil.govt.nz. Any follow up requests for information on other sites must go through the online order process.

Should you wish to request any of the files referenced above and/or listed in the attached spreadsheet for viewing, please contact the Auckland Council Call Centre on 301 0101 and note you are requesting former Auckland Regional Council records (the records department requires three working days' notice to ensure the files will be available).

Please note Auckland Council cost recovers officer's time for all site enquiries. As such an invoice for the time involved in this enquiry will follow shortly.

Yours Sincerely,

Contamination, Air and Noise Team
Specialist Unit | Resource Consents
Auckland Council

Appendix B
Previous Investigation Figures

T:\CAD\30868\30868.011\WorkingMaterial\CAD\FIG\30868.011-F2.1.dwg 2020-Jun-25 9:47:00 AM Plotted By: ROSEMARY SUTTON

A3 SCALE 1:7500

0 0.1 0.2 0.3 0.4 (km)

ORIGINAL IN COLOUR

Tonkin+Taylor

Exceptional thinking together www.tonkintaylor.co.nz

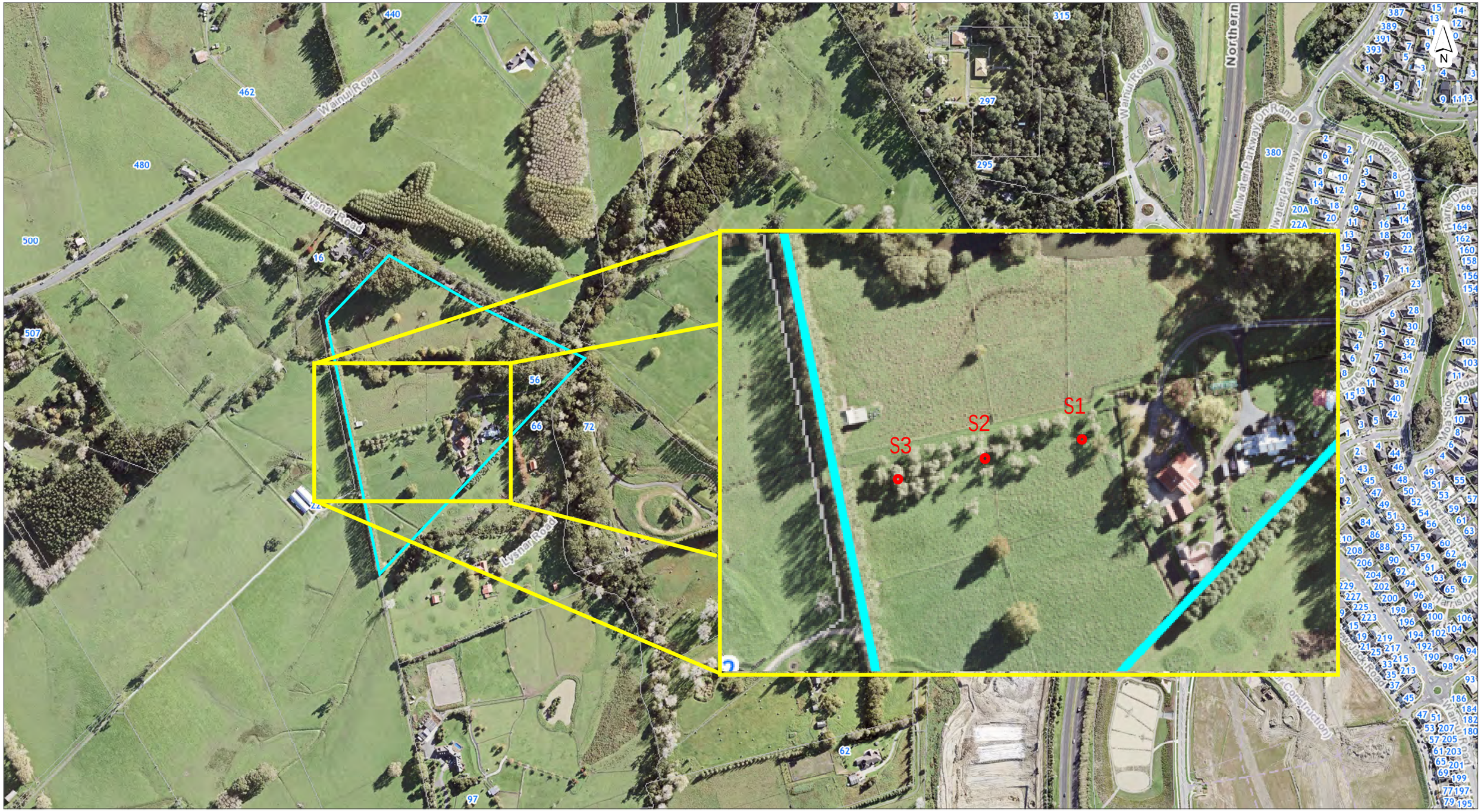
PROJECT No.	30868.011	
DESIGNED	SM	Jun.20
DRAWN	RBS	Jun.20
CHECKED		
APPROVED		DATE

CLIENT **FULTON HOGAN LIMITED**

PROJECT **SITE INVESTIGATION**

TITLE EARTHWORKS 2 & 3
Key Site Features

SCALE (A3) 1:7500 FIG No. Figure 2.1 REV 1



DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information.
Height datum: Auckland 1946.

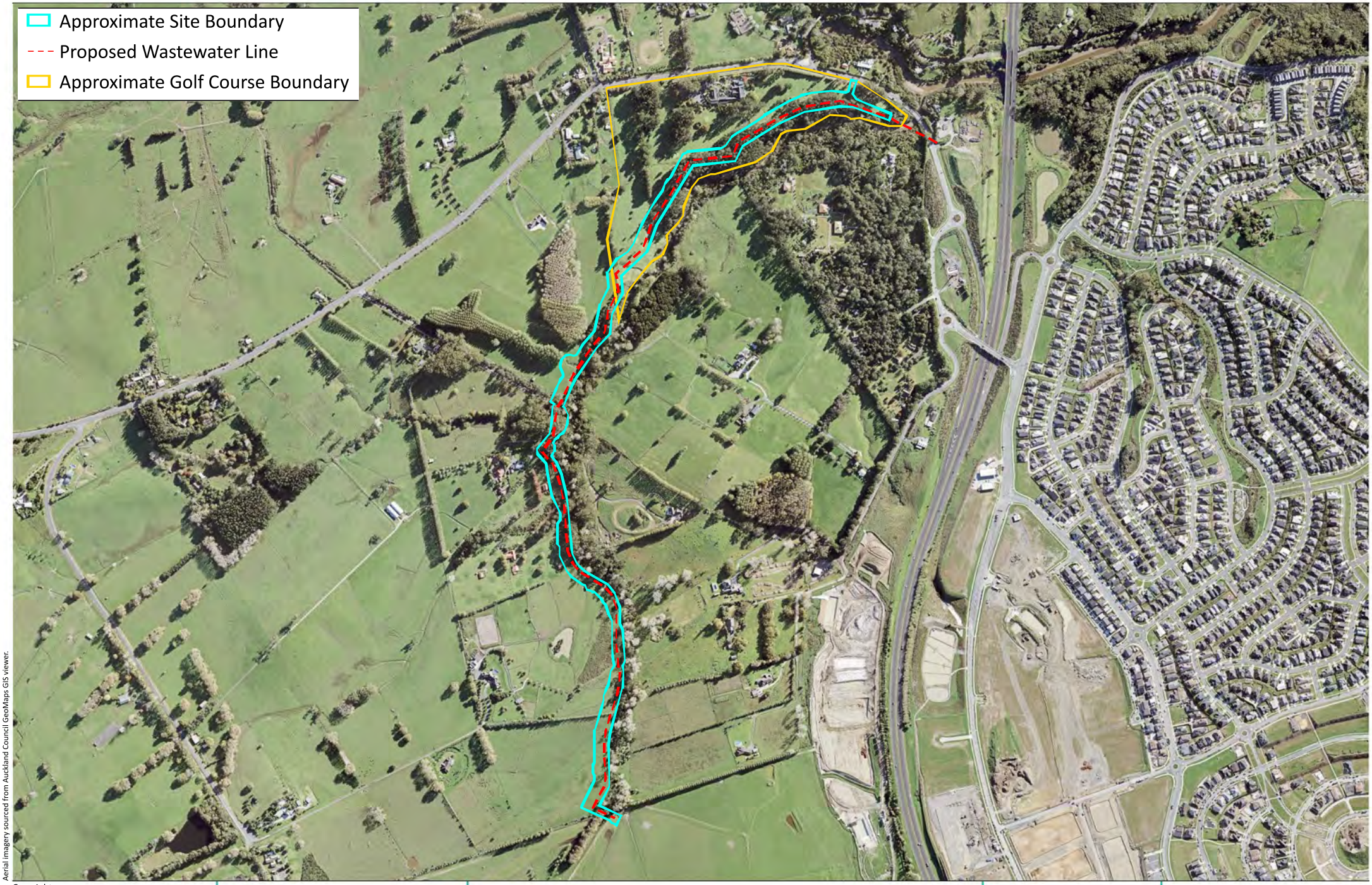
Orchard soil sampling locations

0 50 100 150
Meters

Scale @ A3
= 1:5,000

Date Printed:
4/06/2019

Auckland Council
Te Kaunihera o Tāmaki Makaurau



Aerial imagery sourced from Auckland Council GeoMaps GIS viewer.

N

Scale 1:10,000 @ A4

0 200 400m

AA3835 – Wainui WW DSI

Figure 1: Site Location Plan

Figure prepared for Wood and Partners Consultants by 4Sight Consulting.

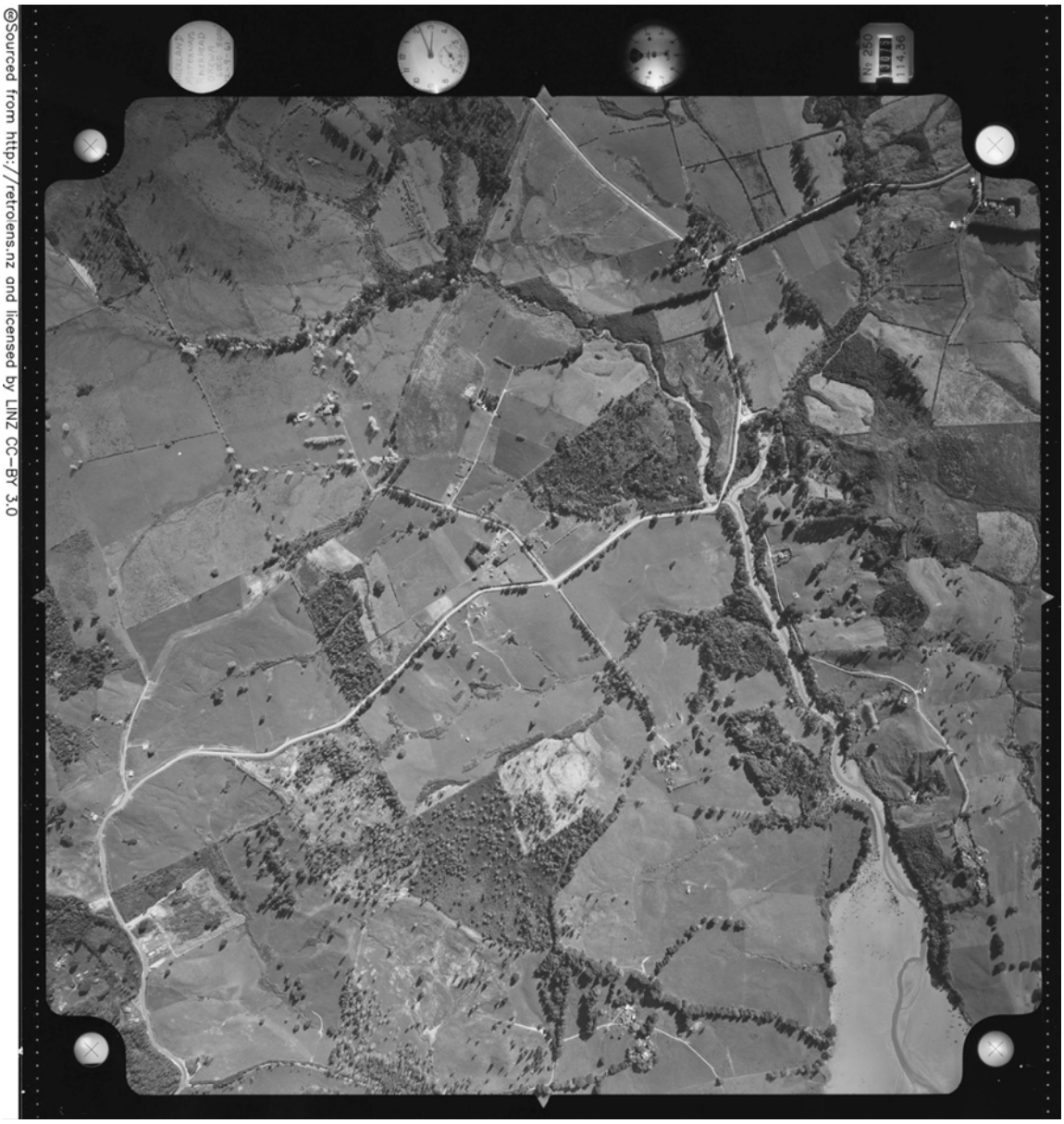
Date: 02/10/2018
Version: 0.4
Drawn: Sam Hendrikse
Checked: Kyle Redshaw
Approved: Nigel Mather

4SIGHT CONSULTING

Appendix C
Historic Aerial Photographs

1940

1961

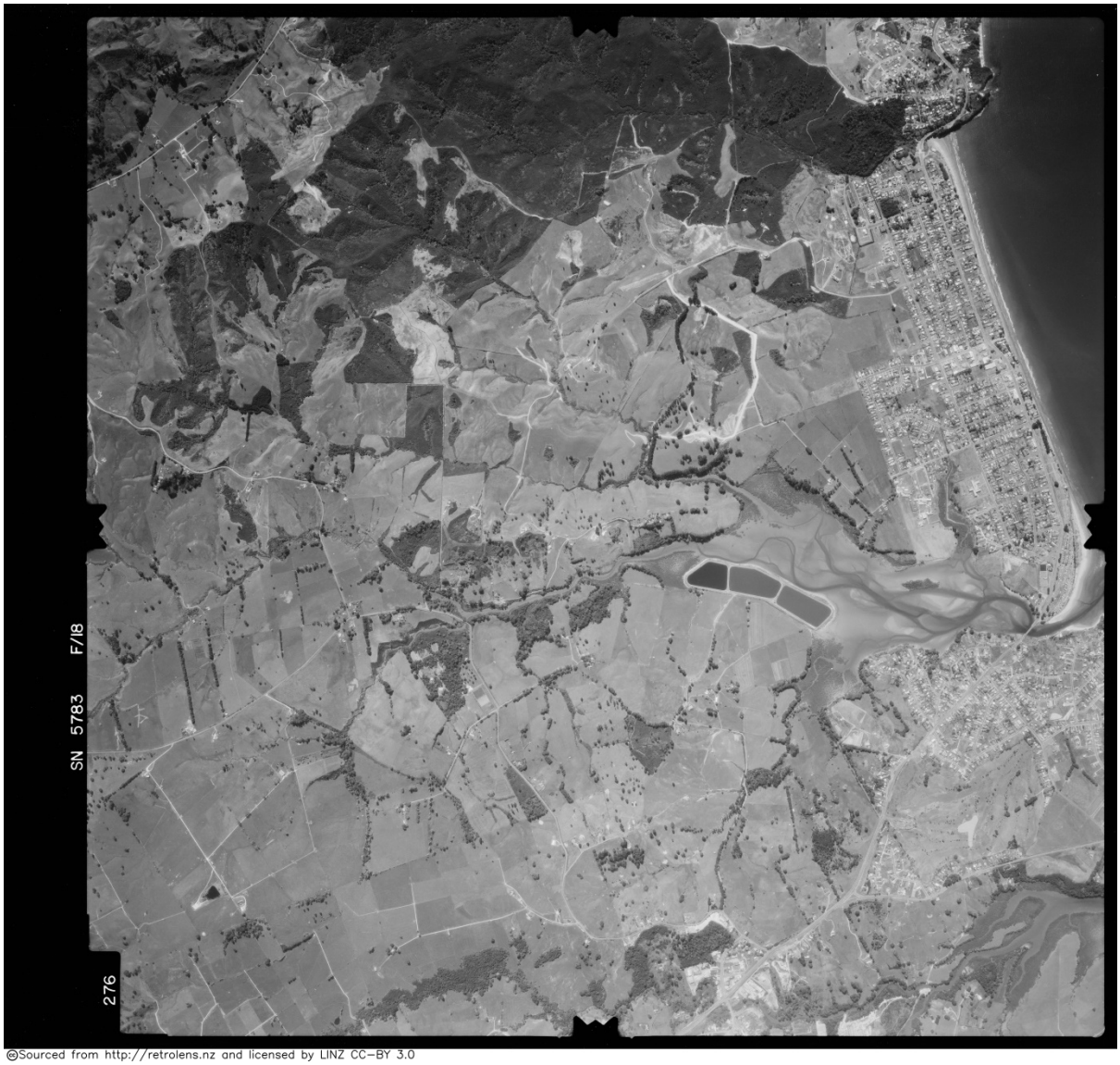


1963

1973


3618
4640/6
©Sourced from http://retrolens.nz and licensed by LINZ CC-BY 3.0

1981



1988

Appendix D
Site Inspection Photographs

West bank of Waterloo stream

Concrete pipes and other material within yard on Lot 4 DP 353309 – May 2024

Stockpile of gravel and road milling material on Lot 4 DP 353309 – May 2024

Barn in yard on Lot 4 DP 353309 – May 2024

View to east across southern portion of yard on Lot 4 DP 353309 – May 2024

Earth bund on the southern side of yard on Lot 4 DP 353309 – May 2024

7 November 2024

Deeper test pit in southeast of yard

Shallower test pit in southeast of yard

Concrete pipes in northwest of yard

Rubbish burning area in northwest of yard

Rubbish burning area in northwest of yard

View to southeast across yard (soil stockpile on left)

Open shed

Gate & track north of yard

Tack shed north of yard

Appendix E
Laboratory Analytical Report

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Client:	Groundwater & Environmental Services	**Lab No:**	3711038	SPv3
Contact:	Mr A MacDonald	**Date Received:**	07-Nov-2024	
	C/- Groundwater & Environmental Services	**Date Reported:**	18-Dec-2024	**(Amended)**
	PO Box 190	**Quote No:**	82855	
	Cambridge 3450	**Order No:**		
		Client Reference:	MILLDALE	
		Submitted By:	Mr A MacDonald	

Sample Type: Soil

Sample Name:		MDL24001 06-Nov-2024	MDL24003 06-Nov-2024	MDL24005 06-Nov-2024	MDL24007 06-Nov-2024	MDL24009 06-Nov-2024
Lab Number:		3711038.1	3711038.2	3711038.3	3711038.4	3711038.5
Individual Tests						
Dry Matter	g/100g as rcvd	64	74	-	81	83
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	2	2	2	53	3
Total Recoverable Cadmium	mg/kg dry wt	0.20	< 0.10	0.16	0.83	0.61
Total Recoverable Chromium	mg/kg dry wt	7	7	6	27	7
Total Recoverable Copper	mg/kg dry wt	38	52	8	63	5
Total Recoverable Lead	mg/kg dry wt	9.6	6.8	7.1	20	20
Total Recoverable Nickel	mg/kg dry wt	9	17	6	20	2
Total Recoverable Zinc	mg/kg dry wt	131	49	45	450	47
Multiresidue Pesticides in Soil samples by GCMS						
Acetochlor	mg/kg dry wt	-	-	-	-	< 0.009
Alachlor	mg/kg dry wt	-	-	-	-	< 0.006
Aldrin	mg/kg dry wt	-	-	-	-	< 0.012
Atrazine	mg/kg dry wt	-	-	-	-	< 0.009
Atrazine-desethyl	mg/kg dry wt	-	-	-	-	< 0.009
Atrazine-desisopropyl	mg/kg dry wt	-	-	-	-	< 0.017
Azaconazole	mg/kg dry wt	-	-	-	-	< 0.005
Azinphos-methyl	mg/kg dry wt	-	-	-	-	< 0.017
Benalaxyl	mg/kg dry wt	-	-	-	-	< 0.005
Bendiocarb	mg/kg dry wt	-	-	-	-	< 0.009
Benodanil	mg/kg dry wt	-	-	-	-	< 0.017
alpha-BHC	mg/kg dry wt	-	-	-	-	< 0.012
beta-BHC	mg/kg dry wt	-	-	-	-	< 0.012
delta-BHC	mg/kg dry wt	-	-	-	-	< 0.012
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	-	< 0.012
Bifenthrin	mg/kg dry wt	-	-	-	-	< 0.005
Bitertanol	mg/kg dry wt	-	-	-	-	< 0.017
Bromacil	mg/kg dry wt	-	-	-	-	< 0.009
Bromophos-ethyl	mg/kg dry wt	-	-	-	-	< 0.009
Bromopropylate	mg/kg dry wt	-	-	-	-	< 0.009
Bupirimate	mg/kg dry wt	-	-	-	-	< 0.009
Buprofezin	mg/kg dry wt	-	-	-	-	< 0.009
Butachlor	mg/kg dry wt	-	-	-	-	< 0.009
Captafol	mg/kg dry wt	-	-	-	-	< 0.05
Captan	mg/kg dry wt	-	-	-	-	< 0.017
Carbaryl	mg/kg dry wt	-	-	-	-	< 0.009
Carbofenothion	mg/kg dry wt	-	-	-	-	< 0.009
Carbofuran	mg/kg dry wt	-	-	-	-	< 0.009

Sample Type: Soil						
Sample Name:		MDL24001 06-Nov-2024	MDL24003 06-Nov-2024	MDL24005 06-Nov-2024	MDL24007 06-Nov-2024	MDL24009 06-Nov-2024
Lab Number:		3711038.1	3711038.2	3711038.3	3711038.4	3711038.5
Multiresidue Pesticides in Soil samples by GCMS						
cis-Chlordane	mg/kg dry wt	-	-	-	-	< 0.012
trans-Chlordane	mg/kg dry wt	-	-	-	-	< 0.012
Chlorfenvinphos	mg/kg dry wt	-	-	-	-	< 0.012
Chlorfluazuron	mg/kg dry wt	-	-	-	-	< 0.009
Chlorothalonil	mg/kg dry wt	-	-	-	-	< 0.009
Chlorpropham	mg/kg dry wt	-	-	-	-	< 0.017
Chlorpyrifos	mg/kg dry wt	-	-	-	-	< 0.009
Chlorpyrifos-methyl	mg/kg dry wt	-	-	-	-	< 0.009
Chlortoluron	mg/kg dry wt	-	-	-	-	< 0.017
Chlozolinate	mg/kg dry wt	-	-	-	-	< 0.009
Coumaphos	mg/kg dry wt	-	-	-	-	< 0.017
Cyanazine	mg/kg dry wt	-	-	-	-	< 0.009
Cyfluthrin	mg/kg dry wt	-	-	-	-	< 0.011
Cyhalothrin	mg/kg dry wt	-	-	-	-	< 0.009
Cypermethrin	mg/kg dry wt	-	-	-	-	< 0.03
Cyproconazole	mg/kg dry wt	-	-	-	-	< 0.017
Cyprodinil	mg/kg dry wt	-	-	-	-	< 0.009
2,4'-DDD	mg/kg dry wt	-	-	-	-	< 0.012
4,4'-DDD	mg/kg dry wt	-	-	-	-	< 0.012
2,4'-DDE	mg/kg dry wt	-	-	-	-	< 0.012
4,4'-DDE	mg/kg dry wt	-	-	-	-	< 0.012
2,4'-DDT	mg/kg dry wt	-	-	-	-	< 0.012
4,4'-DDT	mg/kg dry wt	-	-	-	-	< 0.012
Total DDT Isomers	mg/kg dry wt	-	-	-	-	< 0.08
Deltamethrin (including Tralomethrin)	mg/kg dry wt	-	-	-	-	< 0.009
Diazinon	mg/kg dry wt	-	-	-	-	< 0.005
Dichlobenil	mg/kg dry wt	-	-	-	-	< 0.009
Dichlofenthion	mg/kg dry wt	-	-	-	-	< 0.009
Dichlofluanid	mg/kg dry wt	-	-	-	-	< 0.009
Dichloran	mg/kg dry wt	-	-	-	-	< 0.03
Dichlorvos	mg/kg dry wt	-	-	-	-	< 0.010
Dicofol	mg/kg dry wt	-	-	-	-	< 0.05
Dicrotophos	mg/kg dry wt	-	-	-	-	< 0.009
Dieldrin	mg/kg dry wt	-	-	-	-	< 0.012
Difenoconazole	mg/kg dry wt	-	-	-	-	< 0.012
Dimethoate	mg/kg dry wt	-	-	-	-	< 0.017
Dinocap	mg/kg dry wt	-	-	-	-	< 0.10
Diphenylamine	mg/kg dry wt	-	-	-	-	< 0.017
Diuron	mg/kg dry wt	-	-	-	-	< 0.009
Endosulfan I	mg/kg dry wt	-	-	-	-	< 0.012
Endosulfan II	mg/kg dry wt	-	-	-	-	< 0.012
Endosulfan sulphate	mg/kg dry wt	-	-	-	-	< 0.012
Endrin	mg/kg dry wt	-	-	-	-	< 0.012
Endrin aldehyde	mg/kg dry wt	-	-	-	-	< 0.012
Endrin ketone	mg/kg dry wt	-	-	-	-	< 0.012
EPN	mg/kg dry wt	-	-	-	-	< 0.009
Ethion	mg/kg dry wt	-	-	-	-	< 0.009
Etrimfos	mg/kg dry wt	-	-	-	-	< 0.009
Famphur	mg/kg dry wt	-	-	-	-	< 0.009
Fenarimol	mg/kg dry wt	-	-	-	-	< 0.009
Fenitrothion	mg/kg dry wt	-	-	-	-	< 0.009
Fenpropathrin	mg/kg dry wt	-	-	-	-	< 0.009
Fenpropimorph	mg/kg dry wt	-	-	-	-	< 0.009
Fensulfothion	mg/kg dry wt	-	-	-	-	< 0.009

Sample Type: Soil							
Sample Name:		MDL24001 06-Nov-2024	MDL24003 06-Nov-2024	MDL24005 06-Nov-2024	MDL24007 06-Nov-2024	MDL24009 06-Nov-2024
Lab Number:		3711038.1	3711038.2	3711038.3	3711038.4	3711038.5
Multiresidue Pesticides in Soil samples by GCMS						
Fenvalerate (including Esfenvalerate)	mg/kg dry wt	-	-	-	-	< 0.012
Fluazifop-butyl	mg/kg dry wt	-	-	-	-	< 0.009
Fluometuron	mg/kg dry wt	-	-	-	-	< 0.009
Flusilazole	mg/kg dry wt	-	-	-	-	< 0.009
Fluvalinate	mg/kg dry wt	-	-	-	-	< 0.006
Folpet	mg/kg dry wt	-	-	-	-	< 0.017
Furalaxyl	mg/kg dry wt	-	-	-	-	< 0.005
Haloxyfop-methyl	mg/kg dry wt	-	-	-	-	< 0.009
Heptachlor	mg/kg dry wt	-	-	-	-	< 0.012
Heptachlor epoxide	mg/kg dry wt	-	-	-	-	< 0.012
Hexachlorobenzene	mg/kg dry wt	-	-	-	-	< 0.012
Hexaconazole	mg/kg dry wt	-	-	-	-	< 0.009
Hexazinone	mg/kg dry wt	-	-	-	-	< 0.005
Hexythiazox	mg/kg dry wt	-	-	-	-	< 0.05
Imazalil	mg/kg dry wt	-	-	-	-	< 0.05
Indoxacarb	mg/kg dry wt	-	-	-	-	< 0.009
Iodofenphos	mg/kg dry wt	-	-	-	-	< 0.009
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	-	-	-	-	< 0.05
Isazophos	mg/kg dry wt	-	-	-	-	< 0.009
Isofenphos	mg/kg dry wt	-	-	-	-	< 0.005
Kresoxim-methyl	mg/kg dry wt	-	-	-	-	< 0.005
Leptophos	mg/kg dry wt	-	-	-	-	< 0.009
Linuron	mg/kg dry wt	-	-	-	-	< 0.009
Malathion	mg/kg dry wt	-	-	-	-	< 0.009
Metalaxyl	mg/kg dry wt	-	-	-	-	< 0.009
Methacrifos	mg/kg dry wt	-	-	-	-	< 0.009
Methamidophos	mg/kg dry wt	-	-	-	-	< 0.05
Methidathion	mg/kg dry wt	-	-	-	-	< 0.009
Methiocarb	mg/kg dry wt	-	-	-	-	< 0.009
Methoxychlor	mg/kg dry wt	-	-	-	-	< 0.012
Metolachlor	mg/kg dry wt	-	-	-	-	< 0.006
Metribuzin	mg/kg dry wt	-	-	-	-	< 0.009
Mevinphos	mg/kg dry wt	-	-	-	-	< 0.017
Molinate	mg/kg dry wt	-	-	-	-	< 0.017
Myclobutanil	mg/kg dry wt	-	-	-	-	< 0.009
Naled	mg/kg dry wt	-	-	-	-	< 0.05
Nitrofen	mg/kg dry wt	-	-	-	-	< 0.017
Nitrothal-isopropyl	mg/kg dry wt	-	-	-	-	< 0.009
Norflurazon	mg/kg dry wt	-	-	-	-	< 0.017
Omethoate	mg/kg dry wt	-	-	-	-	< 0.05
Oxadiazon	mg/kg dry wt	-	-	-	-	< 0.009
Oxychlordane	mg/kg dry wt	-	-	-	-	< 0.005
Oxyfluorfen	mg/kg dry wt	-	-	-	-	< 0.005
Paclobutrazol	mg/kg dry wt	-	-	-	-	< 0.009
Parathion-ethyl	mg/kg dry wt	-	-	-	-	< 0.009
Parathion-methyl	mg/kg dry wt	-	-	-	-	< 0.009
Penconazole	mg/kg dry wt	-	-	-	-	< 0.009
Pendimethalin	mg/kg dry wt	-	-	-	-	< 0.009
Permethrin	mg/kg dry wt	-	-	-	-	< 0.003
Phosmet	mg/kg dry wt	-	-	-	-	< 0.009
Phosphamidon	mg/kg dry wt	-	-	-	-	< 0.009
Pirimicarb	mg/kg dry wt	-	-	-	-	< 0.009
Pirimiphos-methyl	mg/kg dry wt	-	-	-	-	< 0.009

Sample Type: Soil						
Sample Name:		MDL24001 06-Nov-2024	MDL24003 06-Nov-2024	MDL24005 06-Nov-2024	MDL24007 06-Nov-2024	MDL24009 06-Nov-2024
Lab Number:		3711038.1	3711038.2	3711038.3	3711038.4	3711038.5
Multiresidue Pesticides in Soil samples by GCMS						
Prochloraz	mg/kg dry wt	-	-	-	-	< 0.05
Procymidone	mg/kg dry wt	-	-	-	-	< 0.009
Prometryn	mg/kg dry wt	-	-	-	-	< 0.005
Propachlor	mg/kg dry wt	-	-	-	-	< 0.009
Propanil	mg/kg dry wt	-	-	-	-	< 0.03
Propazine	mg/kg dry wt	-	-	-	-	< 0.005
Propetamphos	mg/kg dry wt	-	-	-	-	< 0.009
Propham	mg/kg dry wt	-	-	-	-	< 0.009
Propiconazole	mg/kg dry wt	-	-	-	-	< 0.006
Prothiofos	mg/kg dry wt	-	-	-	-	< 0.009
Pyrazophos	mg/kg dry wt	-	-	-	-	< 0.009
Pyrifenox	mg/kg dry wt	-	-	-	-	< 0.012
Pyrimethanil	mg/kg dry wt	-	-	-	-	< 0.009
Pyriproxyfen	mg/kg dry wt	-	-	-	-	< 0.009
Quintozene	mg/kg dry wt	-	-	-	-	< 0.017
Quizalofop-ethyl	mg/kg dry wt	-	-	-	-	< 0.009
Simazine	mg/kg dry wt	-	-	-	-	< 0.009
Simetryn	mg/kg dry wt	-	-	-	-	< 0.009
Sulfentrazone	mg/kg dry wt	-	-	-	-	< 0.05
Sulfotep	mg/kg dry wt	-	-	-	-	< 0.009
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	-	-	-	-	< 0.017
Tebuconazole	mg/kg dry wt	-	-	-	-	< 0.009
Tebufenpyrad	mg/kg dry wt	-	-	-	-	< 0.005
Terbacil	mg/kg dry wt	-	-	-	-	< 0.009
Terbumeton	mg/kg dry wt	-	-	-	-	< 0.009
Terbuthylazine	mg/kg dry wt	-	-	-	-	< 0.005
Terbuthylazine-desethyl	mg/kg dry wt	-	-	-	-	< 0.009
Terbutryn	mg/kg dry wt	-	-	-	-	< 0.009
Tetrachlorvinphos	mg/kg dry wt	-	-	-	-	< 0.009
Thiabendazole	mg/kg dry wt	-	-	-	-	< 0.05
Thiobencarb	mg/kg dry wt	-	-	-	-	< 0.009
Tolylfluanid	mg/kg dry wt	-	-	-	-	< 0.005
Triadimefon	mg/kg dry wt	-	-	-	-	< 0.009
Triazophos	mg/kg dry wt	-	-	-	-	< 0.009
Trifluralin	mg/kg dry wt	-	-	-	-	< 0.009
Vinclozolin	mg/kg dry wt	-	-	-	-	< 0.009
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.4	-	< 0.3	-
1-Methylnaphthalene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
2-Methylnaphthalene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Acenaphthylene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Acenaphthene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Anthracene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Benzo[a]anthracene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.038	< 0.032	-	< 0.029	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.037	< 0.032	-	< 0.029	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Benzo[e]pyrene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Chrysene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-

Sample Type: Soil						
Sample Name:		MDL24001 06-Nov-2024	MDL24003 06-Nov-2024	MDL24005 06-Nov-2024	MDL24007 06-Nov-2024	MDL24009 06-Nov-2024
Lab Number:		3711038.1	3711038.2	3711038.3	3711038.4	3711038.5
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Fluoranthene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Fluorene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Naphthalene	mg/kg dry wt	< 0.08	< 0.07	-	< 0.06	-
Perylene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Phenanthrene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-
Pyrene	mg/kg dry wt	< 0.016	< 0.014	-	< 0.012	-

Sample Name:		MDL24017 06-Nov-2024	MDL24021 06-Nov-2024	MDL24023 06-Nov-2024	MDL24025 06-Nov-2024	MDL24026 06-Nov-2024
Lab Number:		3711038.6	3711038.7	3711038.8	3711038.9	3711038.10
Individual Tests						
Dry Matter	g/100g as rcvd	70	73	73	64	65
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	4	29	3	3
Total Recoverable Cadmium	mg/kg dry wt	0.55	0.19	0.28	0.12	0.15
Total Recoverable Chromium	mg/kg dry wt	10	6	27	5	5
Total Recoverable Copper	mg/kg dry wt	41	10	50	5	6
Total Recoverable Lead	mg/kg dry wt	41	9.6	14.5	3.9	4.2
Total Recoverable Nickel	mg/kg dry wt	15	8	11	< 2	< 2
Total Recoverable Zinc	mg/kg dry wt	730	49	160	27	29
Multiresidue Pesticides in Soil samples by GCMS						
Acetochlor	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Alachlor	mg/kg dry wt	-	< 0.006	< 0.006	< 0.006	< 0.006
Aldrin	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Atrazine	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Atrazine-desethyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Atrazine-desisopropyl	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Azaconazole	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Azinphos-methyl	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Benalaxyl	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Bendiocarb	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Benodanil	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
alpha-BHC	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
beta-BHC	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
delta-BHC	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
gamma-BHC (Lindane)	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Bifenthrin	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Bitertanol	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Bromacil	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Bromophos-ethyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Bromopropylate	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Bupirimate	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Buprofezin	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Butachlor	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Captafol	mg/kg dry wt	-	< 0.05	< 0.05	< 0.06	< 0.06
Captan	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Carbaryl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Carbofenothion	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Carbofuran	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
cis-Chlordane	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
trans-Chlordane	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Chlorfenvinphos	mg/kg dry wt	-	< 0.013	< 0.013	< 0.015	< 0.015
Chlorfluazuron	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Chlorothalonil	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011

Sample Type: Soil						
Sample Name:		MDL24017 06-Nov-2024	MDL24021 06-Nov-2024	MDL24023 06-Nov-2024	MDL24025 06-Nov-2024	MDL24026 06-Nov-2024
Lab Number:		3711038.6	3711038.7	3711038.8	3711038.9	3711038.10
Multiresidue Pesticides in Soil samples by GCMS						
Chlorpropham	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Chlorpyrifos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Chlorpyrifos-methyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Chlortoluron	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Chlozolinate	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Coumaphos	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Cyanazine	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Cyfluthrin	mg/kg dry wt	-	< 0.012	< 0.012	< 0.013	< 0.013
Cyhalothrin	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Cypermethrin	mg/kg dry wt	-	< 0.03	< 0.03	< 0.03	< 0.03
Cyproconazole	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Cyprodinil	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
2,4'-DDD	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
4,4'-DDD	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
2,4'-DDE	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
4,4'-DDE	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
2,4'-DDT	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
4,4'-DDT	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Total DDT Isomers	mg/kg dry wt	-	< 0.08	< 0.08	< 0.10	< 0.10
Deltamethrin (including Tralomethrin)	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Diazinon	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Dichlobenil	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Dichlofenthion	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Dichlofluanid	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Dichloran	mg/kg dry wt	-	< 0.03	< 0.03	< 0.03	< 0.03
Dichlorvos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Dicofol	mg/kg dry wt	-	< 0.05	< 0.05	< 0.06	< 0.06
Dicrotophos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Dieldrin	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Difenoconazole	mg/kg dry wt	-	< 0.013	< 0.013	< 0.015	< 0.015
Dimethoate	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Dinocap	mg/kg dry wt	-	< 0.11	< 0.11	< 0.12	< 0.12
Diphenylamine	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Diuron	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Endosulfan I	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Endosulfan II	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Endosulfan sulphate	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Endrin	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Endrin aldehyde	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Endrin ketone	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
EPN	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Ethion	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Etrimfos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Famphur	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Fenarimol	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Fenitrothion	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Fenpropathrin	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Fenpropimorph	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Fensulfothion	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Fenvalerate (including Esfenvalerate)	mg/kg dry wt	-	< 0.013	< 0.013	< 0.015	< 0.015
Fluazifop-butyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Fluometuron	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Flusilazole	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011

Sample Type: Soil						
Sample Name:		MDL24017 06-Nov-2024	MDL24021 06-Nov-2024	MDL24023 06-Nov-2024	MDL24025 06-Nov-2024	MDL24026 06-Nov-2024
Lab Number:		3711038.6	3711038.7	3711038.8	3711038.9	3711038.10
Multiresidue Pesticides in Soil samples by GCMS						
Fluvalinate	mg/kg dry wt	-	< 0.007	< 0.007	< 0.008	< 0.008
Folpet	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Furalaxyl	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Haloxyfop-methyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Heptachlor	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Heptachlor epoxide	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Hexachlorobenzene	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Hexaconazole	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Hexazinone	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Hexythiazox	mg/kg dry wt	-	< 0.05	< 0.05	< 0.06	< 0.06
Imazalil	mg/kg dry wt	-	< 0.05	< 0.05	< 0.06	< 0.06
Indoxacarb	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Iodofenphos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	-	< 0.05	< 0.05	< 0.06	< 0.06
Isazophos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Isofenphos	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Kresoxim-methyl	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Leptophos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Linuron	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Malathion	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Metalaxyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Methacrifos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Methamidophos	mg/kg dry wt	-	< 0.05	< 0.05	< 0.06	< 0.06
Methidathion	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Methiocarb	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Methoxychlor	mg/kg dry wt	-	< 0.014	< 0.014	< 0.016	< 0.016
Metolachlor	mg/kg dry wt	-	< 0.006	< 0.006	< 0.006	< 0.006
Metribuzin	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Mevinphos	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Molinate	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Myclobutanil	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Naled	mg/kg dry wt	-	< 0.05	< 0.05	< 0.06	< 0.06
Nitrofen	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Nitrothal-isopropyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Norflurazon	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Omethoate	mg/kg dry wt	-	< 0.05	< 0.05	< 0.06	< 0.06
Oxadiazon	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Oxychlordane	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Oxyfluorfen	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Paclobutrazol	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Parathion-ethyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Parathion-methyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Penconazole	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Pendimethalin	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Permethrin	mg/kg dry wt	-	< 0.003	< 0.003	< 0.003	< 0.003
Phosmet	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Phosphamidon	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Pirimicarb	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Pirimiphos-methyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Prochloraz	mg/kg dry wt	-	< 0.05	< 0.05	< 0.06	< 0.06
Procymidone	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Prometryn	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Propachlor	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Propanil	mg/kg dry wt	-	< 0.03	< 0.03	< 0.03	< 0.03

Sample Type: Soil						
Sample Name:		MDL24017 06-Nov-2024	MDL24021 06-Nov-2024	MDL24023 06-Nov-2024	MDL24025 06-Nov-2024	MDL24026 06-Nov-2024
Lab Number:		3711038.6	3711038.7	3711038.8	3711038.9	3711038.10
Multiresidue Pesticides in Soil samples by GCMS						
Propazine	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Propetamphos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Propham	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Propiconazole	mg/kg dry wt	-	< 0.007	< 0.007	< 0.008	< 0.008
Prothiofos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Pyrazophos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Pyrifenox	mg/kg dry wt	-	< 0.013	< 0.013	< 0.015	< 0.015
Pyrimethanil	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Pyriproxyfen	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Quintozene	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Quizalofop-ethyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Simazine	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Simetryn	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Sulfentrazone	mg/kg dry wt	-	< 0.05	< 0.05	< 0.06	< 0.06
Sulfotep	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	-	< 0.019	< 0.019	< 0.03	< 0.03
Tebuconazole	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Tebufenpyrad	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Terbacil	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Terbumeton	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Terbuthylazine	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Terbuthylazine-desethyl	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Terbutryn	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Tetrachlorvinphos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Thiabendazole	mg/kg dry wt	-	< 0.05	< 0.05	< 0.06	< 0.06
Thiobencarb	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Tolylfluanid	mg/kg dry wt	-	< 0.005	< 0.005	< 0.006	< 0.006
Triadimefon	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Triazophos	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Trifluralin	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Vinclozolin	mg/kg dry wt	-	< 0.010	< 0.010	< 0.011	< 0.011
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	-	-	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.014	-	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.014	-	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.014	-	-	-	-
Acenaphthene	mg/kg dry wt	< 0.014	-	-	-	-
Anthracene	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.034	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.034	-	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.014	-	-	-	-
Chrysene	mg/kg dry wt	< 0.014	-	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.014	-	-	-	-
Fluoranthene	mg/kg dry wt	< 0.014	-	-	-	-
Fluorene	mg/kg dry wt	< 0.014	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.014	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.07	-	-	-	-

Sample Type: Soil						
Sample Name:		MDL24017 06-Nov-2024	MDL24021 06-Nov-2024	MDL24023 06-Nov-2024	MDL24025 06-Nov-2024	MDL24026 06-Nov-2024
Lab Number:		3711038.6	3711038.7	3711038.8	3711038.9	3711038.10
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Perylene	mg/kg dry wt	< 0.014	-	-	-	-
Phenanthrene	mg/kg dry wt	< 0.014	-	-	-	-
Pyrene	mg/kg dry wt	< 0.014	-	-	-	-

Sample Name:		MDL24028 06-Nov-2024	MDL24030 07-Nov-2024	MDL24032 07-Nov-2024	MDL24034 07-Nov-2024	MDL24036 07-Nov-2024
Lab Number:		3711038.11	3711038.12	3711038.13	3711038.14	3711038.15
Individual Tests						
Dry Matter	g/100g as rcvd	78	-	-	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	4	2	3	< 2
Total Recoverable Cadmium	mg/kg dry wt	0.14	0.12	0.19	0.15	< 0.10
Total Recoverable Chromium	mg/kg dry wt	9	7	5	5	3
Total Recoverable Copper	mg/kg dry wt	11	4	4	3	< 2
Total Recoverable Lead	mg/kg dry wt	3.3	8.5	7.0	10.8	3.5
Total Recoverable Nickel	mg/kg dry wt	< 2	2	< 2	< 2	< 2
Total Recoverable Zinc	mg/kg dry wt	38	20	17	14	4
Multiresidue Pesticides in Soil samples by GCMS						
Acetochlor	mg/kg dry wt	< 0.009	-	-	-	-
Alachlor	mg/kg dry wt	< 0.006	-	-	-	-
Aldrin	mg/kg dry wt	< 0.013	-	-	-	-
Atrazine	mg/kg dry wt	< 0.009	-	-	-	-
Atrazine-desethyl	mg/kg dry wt	< 0.009	-	-	-	-
Atrazine-desisopropyl	mg/kg dry wt	< 0.018	-	-	-	-
Azaconazole	mg/kg dry wt	< 0.005	-	-	-	-
Azinphos-methyl	mg/kg dry wt	< 0.018	-	-	-	-
Benalaxyl	mg/kg dry wt	< 0.005	-	-	-	-
Bendiocarb	mg/kg dry wt	< 0.009	-	-	-	-
Benodanil	mg/kg dry wt	< 0.018	-	-	-	-
alpha-BHC	mg/kg dry wt	< 0.013	-	-	-	-
beta-BHC	mg/kg dry wt	< 0.013	-	-	-	-
delta-BHC	mg/kg dry wt	< 0.013	-	-	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	-	-	-	-
Bifenthrin	mg/kg dry wt	< 0.005	-	-	-	-
Bitertanol	mg/kg dry wt	< 0.018	-	-	-	-
Bromacil	mg/kg dry wt	< 0.009	-	-	-	-
Bromophos-ethyl	mg/kg dry wt	< 0.009	-	-	-	-
Bromopropylate	mg/kg dry wt	< 0.009	-	-	-	-
Bupirimate	mg/kg dry wt	< 0.009	-	-	-	-
Buprofezin	mg/kg dry wt	< 0.009	-	-	-	-
Butachlor	mg/kg dry wt	< 0.009	-	-	-	-
Captafol	mg/kg dry wt	< 0.05	-	-	-	-
Captan	mg/kg dry wt	< 0.018	-	-	-	-
Carbaryl	mg/kg dry wt	< 0.009	-	-	-	-
Carbofenothion	mg/kg dry wt	< 0.009	-	-	-	-
Carbofuran	mg/kg dry wt	< 0.009	-	-	-	-
cis-Chlordane	mg/kg dry wt	< 0.013	-	-	-	-
trans-Chlordane	mg/kg dry wt	< 0.013	-	-	-	-
Chlorfenvinphos	mg/kg dry wt	< 0.013	-	-	-	-
Chlorfluazuron	mg/kg dry wt	< 0.009	-	-	-	-
Chlorothalonil	mg/kg dry wt	< 0.009	-	-	-	-
Chlorpropham	mg/kg dry wt	< 0.018	-	-	-	-
Chlorpyrifos	mg/kg dry wt	< 0.009	-	-	-	-
Chlorpyrifos-methyl	mg/kg dry wt	< 0.009	-	-	-	-
Chlortoluron	mg/kg dry wt	< 0.018	-	-	-	-
Chlozolinate	mg/kg dry wt	< 0.009	-	-	-	-

Sample Type: Soil						
Sample Name:		MDL24028 06-Nov-2024	MDL24030 07-Nov-2024	MDL24032 07-Nov-2024	MDL24034 07-Nov-2024	MDL24036 07-Nov-2024
Lab Number:		3711038.11	3711038.12	3711038.13	3711038.14	3711038.15
Multiresidue Pesticides in Soil samples by GCMS						
Coumaphos	mg/kg dry wt	< 0.018	-	-	-	-
Cyanazine	mg/kg dry wt	< 0.009	-	-	-	-
Cyfluthrin	mg/kg dry wt	< 0.011	-	-	-	-
Cyhalothrin	mg/kg dry wt	< 0.009	-	-	-	-
Cypermethrin	mg/kg dry wt	< 0.03	-	-	-	-
Cyproconazole	mg/kg dry wt	< 0.018	-	-	-	-
Cyprodinil	mg/kg dry wt	< 0.009	-	-	-	-
2,4'-DDD	mg/kg dry wt	< 0.013	-	-	-	-
4,4'-DDD	mg/kg dry wt	< 0.013	-	-	-	-
2,4'-DDE	mg/kg dry wt	< 0.013	-	-	-	-
4,4'-DDE	mg/kg dry wt	< 0.013	-	-	-	-
2,4'-DDT	mg/kg dry wt	< 0.013	-	-	-	-
4,4'-DDT	mg/kg dry wt	< 0.013	-	-	-	-
Total DDT Isomers	mg/kg dry wt	< 0.08	-	-	-	-
Deltamethrin (including Tralomethrin)	mg/kg dry wt	< 0.009	-	-	-	-
Diazinon	mg/kg dry wt	< 0.005	-	-	-	-
Dichlobenil	mg/kg dry wt	< 0.009	-	-	-	-
Dichlofenthion	mg/kg dry wt	< 0.009	-	-	-	-
Dichlofluanid	mg/kg dry wt	< 0.009	-	-	-	-
Dichloran	mg/kg dry wt	< 0.03	-	-	-	-
Dichlorvos	mg/kg dry wt	< 0.010	-	-	-	-
Dicofol	mg/kg dry wt	< 0.05	-	-	-	-
Dicrotophos	mg/kg dry wt	< 0.009	-	-	-	-
Dieldrin	mg/kg dry wt	< 0.013	-	-	-	-
Difenoconazole	mg/kg dry wt	< 0.013	-	-	-	-
Dimethoate	mg/kg dry wt	< 0.018	-	-	-	-
Dinocap	mg/kg dry wt	< 0.10	-	-	-	-
Diphenylamine	mg/kg dry wt	< 0.018	-	-	-	-
Diuron	mg/kg dry wt	< 0.009	-	-	-	-
Endosulfan I	mg/kg dry wt	< 0.013	-	-	-	-
Endosulfan II	mg/kg dry wt	< 0.013	-	-	-	-
Endosulfan sulphate	mg/kg dry wt	< 0.013	-	-	-	-
Endrin	mg/kg dry wt	< 0.013	-	-	-	-
Endrin aldehyde	mg/kg dry wt	< 0.013	-	-	-	-
Endrin ketone	mg/kg dry wt	< 0.013	-	-	-	-
EPN	mg/kg dry wt	< 0.009	-	-	-	-
Ethion	mg/kg dry wt	< 0.009	-	-	-	-
Etrimfos	mg/kg dry wt	< 0.009	-	-	-	-
Famphur	mg/kg dry wt	< 0.009	-	-	-	-
Fenarimol	mg/kg dry wt	< 0.009	-	-	-	-
Fenitrothion	mg/kg dry wt	< 0.009	-	-	-	-
Fenpropathrin	mg/kg dry wt	< 0.009	-	-	-	-
Fenpropimorph	mg/kg dry wt	< 0.009	-	-	-	-
Fensulfothion	mg/kg dry wt	< 0.009	-	-	-	-
Fenvalerate (including Esfenvalerate)	mg/kg dry wt	< 0.013	-	-	-	-
Fluazifop-butyl	mg/kg dry wt	< 0.009	-	-	-	-
Fluometuron	mg/kg dry wt	< 0.009	-	-	-	-
Flusilazole	mg/kg dry wt	< 0.009	-	-	-	-
Fluvalinate	mg/kg dry wt	< 0.007	-	-	-	-
Folpet	mg/kg dry wt	< 0.018	-	-	-	-
Furalaxyl	mg/kg dry wt	< 0.005	-	-	-	-
Haloxyfop-methyl	mg/kg dry wt	< 0.009	-	-	-	-
Heptachlor	mg/kg dry wt	< 0.013	-	-	-	-

Sample Type: Soil						
Sample Name:		MDL24028 06-Nov-2024	MDL24030 07-Nov-2024	MDL24032 07-Nov-2024	MDL24034 07-Nov-2024	MDL24036 07-Nov-2024
Lab Number:		3711038.11	3711038.12	3711038.13	3711038.14	3711038.15
Multiresidue Pesticides in Soil samples by GCMS						
Heptachlor epoxide	mg/kg dry wt	< 0.013	-	-	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.013	-	-	-	-
Hexaconazole	mg/kg dry wt	< 0.009	-	-	-	-
Hexazinone	mg/kg dry wt	< 0.005	-	-	-	-
Hexythiazox	mg/kg dry wt	< 0.05	-	-	-	-
Imazalil	mg/kg dry wt	< 0.05	-	-	-	-
Indoxacarb	mg/kg dry wt	< 0.009	-	-	-	-
Iodofenphos	mg/kg dry wt	< 0.009	-	-	-	-
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.05	-	-	-	-
Isazophos	mg/kg dry wt	< 0.009	-	-	-	-
Isofenphos	mg/kg dry wt	< 0.005	-	-	-	-
Kresoxim-methyl	mg/kg dry wt	< 0.005	-	-	-	-
Leptophos	mg/kg dry wt	< 0.009	-	-	-	-
Linuron	mg/kg dry wt	< 0.009	-	-	-	-
Malathion	mg/kg dry wt	< 0.009	-	-	-	-
Metalaxyl	mg/kg dry wt	< 0.009	-	-	-	-
Methacrifos	mg/kg dry wt	< 0.009	-	-	-	-
Methamidophos	mg/kg dry wt	< 0.05	-	-	-	-
Methidathion	mg/kg dry wt	< 0.009	-	-	-	-
Methiocarb	mg/kg dry wt	< 0.009	-	-	-	-
Methoxychlor	mg/kg dry wt	< 0.013	-	-	-	-
Metolachlor	mg/kg dry wt	< 0.006	-	-	-	-
Metribuzin	mg/kg dry wt	< 0.009	-	-	-	-
Mevinphos	mg/kg dry wt	< 0.018	-	-	-	-
Molinate	mg/kg dry wt	< 0.018	-	-	-	-
Myclobutanil	mg/kg dry wt	< 0.009	-	-	-	-
Naled	mg/kg dry wt	< 0.05	-	-	-	-
Nitrofen	mg/kg dry wt	< 0.018	-	-	-	-
Nitrothal-isopropyl	mg/kg dry wt	< 0.009	-	-	-	-
Norflurazon	mg/kg dry wt	< 0.018	-	-	-	-
Omethoate	mg/kg dry wt	< 0.05	-	-	-	-
Oxadiazon	mg/kg dry wt	< 0.009	-	-	-	-
Oxychlordane	mg/kg dry wt	< 0.005	-	-	-	-
Oxyfluorfen	mg/kg dry wt	< 0.005	-	-	-	-
Paclobutrazol	mg/kg dry wt	< 0.009	-	-	-	-
Parathion-ethyl	mg/kg dry wt	< 0.009	-	-	-	-
Parathion-methyl	mg/kg dry wt	< 0.009	-	-	-	-
Penconazole	mg/kg dry wt	< 0.009	-	-	-	-
Pendimethalin	mg/kg dry wt	< 0.009	-	-	-	-
Permethrin	mg/kg dry wt	< 0.003	-	-	-	-
Phosmet	mg/kg dry wt	< 0.009	-	-	-	-
Phosphamidon	mg/kg dry wt	< 0.009	-	-	-	-
Pirimicarb	mg/kg dry wt	< 0.009	-	-	-	-
Pirimiphos-methyl	mg/kg dry wt	< 0.009	-	-	-	-
Prochloraz	mg/kg dry wt	< 0.05	-	-	-	-
Procymidone	mg/kg dry wt	< 0.009	-	-	-	-
Prometryn	mg/kg dry wt	< 0.005	-	-	-	-
Propachlor	mg/kg dry wt	< 0.009	-	-	-	-
Propanil	mg/kg dry wt	< 0.03	-	-	-	-
Propazine	mg/kg dry wt	< 0.005	-	-	-	-
Propetamphos	mg/kg dry wt	< 0.009	-	-	-	-
Propham	mg/kg dry wt	< 0.009	-	-	-	-
Propiconazole	mg/kg dry wt	< 0.007	-	-	-	-
Prothiofos	mg/kg dry wt	< 0.009	-	-	-	-

Sample Type: Soil						
Sample Name:		MDL24028 06-Nov-2024	MDL24030 07-Nov-2024	MDL24032 07-Nov-2024	MDL24034 07-Nov-2024	MDL24036 07-Nov-2024
Lab Number:		3711038.11	3711038.12	3711038.13	3711038.14	3711038.15
Multiresidue Pesticides in Soil samples by GCMS						
Pyrazophos	mg/kg dry wt	< 0.009	-	-	-	-
Pyrifenox	mg/kg dry wt	< 0.013	-	-	-	-
Pyrimethanil	mg/kg dry wt	< 0.009	-	-	-	-
Pyriproxyfen	mg/kg dry wt	< 0.009	-	-	-	-
Quintozene	mg/kg dry wt	< 0.018	-	-	-	-
Quizalofop-ethyl	mg/kg dry wt	< 0.009	-	-	-	-
Simazine	mg/kg dry wt	< 0.009	-	-	-	-
Simetryn	mg/kg dry wt	< 0.009	-	-	-	-
Sulfentrazone	mg/kg dry wt	< 0.05	-	-	-	-
Sulfotep	mg/kg dry wt	< 0.009	-	-	-	-
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	< 0.018	-	-	-	-
Tebuconazole	mg/kg dry wt	< 0.009	-	-	-	-
Tebufenpyrad	mg/kg dry wt	< 0.005	-	-	-	-
Terbacil	mg/kg dry wt	< 0.009	-	-	-	-
Terbumeton	mg/kg dry wt	< 0.009	-	-	-	-
Terbuthylazine	mg/kg dry wt	< 0.005	-	-	-	-
Terbuthylazine-desethyl	mg/kg dry wt	< 0.009	-	-	-	-
Terbutryn	mg/kg dry wt	< 0.009	-	-	-	-
Tetrachlorvinphos	mg/kg dry wt	< 0.009	-	-	-	-
Thiabendazole	mg/kg dry wt	< 0.05	-	-	-	-
Thiobencarb	mg/kg dry wt	< 0.009	-	-	-	-
Tolylfluanid	mg/kg dry wt	< 0.005	-	-	-	-
Triadimefon	mg/kg dry wt	< 0.009	-	-	-	-
Triazophos	mg/kg dry wt	< 0.009	-	-	-	-
Trifluralin	mg/kg dry wt	< 0.009	-	-	-	-
Vinclozolin	mg/kg dry wt	< 0.009	-	-	-	-

Sample Name:		MDL24038 07-Nov-2024	MDL24040 07-Nov-2024	MDL24041 07-Nov-2024	MDL24043 07-Nov-2024	MDL24045 07-Nov-2024
Lab Number:		3711038.16	3711038.17	3711038.18	3711038.19	3711038.20
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	2	7	< 2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	0.13	< 0.10	0.11	< 0.10	0.14
Total Recoverable Chromium	mg/kg dry wt	3	7	2	3	5
Total Recoverable Copper	mg/kg dry wt	6	< 2	3	< 2	3
Total Recoverable Lead	mg/kg dry wt	12.1	6.8	10.2	3.9	7.9
Total Recoverable Nickel	mg/kg dry wt	3	< 2	< 2	< 2	14
Total Recoverable Zinc	mg/kg dry wt	18	6	15	6	8

Sample Name:		MDL24047 07-Nov-2024	MDL24050 07-Nov-2024	MDL24049 07-Nov-2024	MDL24008 07-Nov-2024	MDL24018 07-Nov-2024
Lab Number:		3711038.21	3711038.22	3711038.23	3711038.27	3711038.29
Individual Tests						
Total Recoverable Arsenic	mg/kg dry wt	-	-	-	7	-
Total Recoverable Cadmium	mg/kg dry wt	-	-	-	0.14	-
Total Recoverable Zinc	mg/kg dry wt	-	-	-	98	1,000
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	4	4	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.13	0.14	0.13	-	-
Total Recoverable Chromium	mg/kg dry wt	3	6	6	-	-
Total Recoverable Copper	mg/kg dry wt	< 2	5	4	-	-
Total Recoverable Lead	mg/kg dry wt	7.3	10.9	10.3	-	-
Total Recoverable Nickel	mg/kg dry wt	< 2	3	3	-	-
Total Recoverable Zinc	mg/kg dry wt	10	25	22	-	-

Sample Type: Soil						
Sample Name:		MDL24024 07-Nov-2024	MDL24042 07-Nov-2024	MDL24052 07-Nov-2024	MDL24053 07-Nov-2024	MDL24054 07-Nov-2024
Lab Number:		3711038.31	3711038.39	3711038.44	3711038.45	3711038.46
Individual Tests						
Dry Matter	g/100g as rcvd	-	-	77	74	82
Total Recoverable Arsenic	mg/kg dry wt	21	-	-	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	-	2	3	3	3
Total Recoverable Cadmium	mg/kg dry wt	-	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	-	5	13	11	13
Total Recoverable Copper	mg/kg dry wt	-	< 2	16	18	19
Total Recoverable Lead	mg/kg dry wt	-	6.1	7.7	8.3	7.0
Total Recoverable Nickel	mg/kg dry wt	-	< 2	7	7	9
Total Recoverable Zinc	mg/kg dry wt	-	6	22	24	31
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	-	-	< 0.4	< 0.4	< 0.3
1-Methylnaphthalene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
2-Methylnaphthalene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Acenaphthylene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Acenaphthene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Anthracene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Benzo[a]anthracene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	< 0.031	< 0.033	< 0.030
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	< 0.031	< 0.033	< 0.029
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Benzo[e]pyrene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Benzo[k]fluoranthene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Chrysene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Fluoranthene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Fluorene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Naphthalene	mg/kg dry wt	-	-	< 0.07	< 0.07	< 0.06
Perylene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Phenanthrene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012
Pyrene	mg/kg dry wt	-	-	< 0.013	< 0.014	< 0.012

Sample Name:		MDL24055 07-Nov-2024	MDL24056 07-Nov-2024	Composite of MDL24030 & MDL24032	Composite of MDL24034 & MDL24036	Composite of MDL24038 & MDL24040
Lab Number:		3711038.47	3711038.48	3711038.49	3711038.50	3711038.51
Individual Tests						
Dry Matter	g/100g as rcvd	79	88	73	80	78
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	< 2	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	-	-	-
Total Recoverable Chromium	mg/kg dry wt	13	3	-	-	-
Total Recoverable Copper	mg/kg dry wt	22	3	-	-	-
Total Recoverable Lead	mg/kg dry wt	6.1	5.4	-	-	-
Total Recoverable Nickel	mg/kg dry wt	13	< 2	-	-	-
Total Recoverable Zinc	mg/kg dry wt	42	< 4	-	-	-
Multiresidue Pesticides in Soil samples by GCMS						
Acetochlor	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Alachlor	mg/kg dry wt	-	-	< 0.006	< 0.006	< 0.006
Aldrin	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013

Sample Type: Soil						
Sample Name:		MDL24055 07-Nov-2024	MDL24056 07-Nov-2024	Composite of MDL24030 & MDL24032	Composite of MDL24034 & MDL24036	Composite of MDL24038 & MDL24040
Lab Number:		3711038.47	3711038.48	3711038.49	3711038.50	3711038.51
Multiresidue Pesticides in Soil samples by GCMS						
Atrazine	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Atrazine-desethyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Atrazine-desisopropyl	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Azaconazole	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Azinphos-methyl	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Benalaxyl	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Bendiocarb	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Benodanil	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
alpha-BHC	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
beta-BHC	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
delta-BHC	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Bifenthrin	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Bitertanol	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Bromacil	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Bromophos-ethyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Bromopropylate	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Bupirimate	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Buprofezin	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Butachlor	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Captafol	mg/kg dry wt	-	-	< 0.05	< 0.05	< 0.05
Captan	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Carbaryl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Carbofenothion	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Carbofuran	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
cis-Chlordane	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
trans-Chlordane	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Chlorfenvinphos	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Chlorfluazuron	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Chlorothalonil	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Chlorpropham	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Chlorpyrifos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Chlorpyrifos-methyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Chlortoluron	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Chlozolinate	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Coumaphos	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Cyanazine	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Cyfluthrin	mg/kg dry wt	-	-	< 0.012	< 0.011	< 0.011
Cyhalothrin	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Cypermethrin	mg/kg dry wt	-	-	< 0.03	< 0.03	< 0.03
Cyproconazole	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Cyprodinil	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
2,4'-DDD	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
4,4'-DDD	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
2,4'-DDE	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
4,4'-DDE	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
2,4'-DDT	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
4,4'-DDT	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Total DDT Isomers	mg/kg dry wt	-	-	< 0.09	< 0.08	< 0.08
Deltamethrin (including Tralomethrin)	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Diazinon	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Dichlobenil	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Dichlofenthion	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009

Sample Type: Soil						
Sample Name:		MDL24055 07-Nov-2024	MDL24056 07-Nov-2024	Composite of MDL24030 & MDL24032	Composite of MDL24034 & MDL24036	Composite of MDL24038 & MDL24040
Lab Number:		3711038.47	3711038.48	3711038.49	3711038.50	3711038.51
Multiresidue Pesticides in Soil samples by GCMS						
Dichlofluanid	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Dichloran	mg/kg dry wt	-	-	< 0.03	< 0.03	< 0.03
Dichlorvos	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Dicofol	mg/kg dry wt	-	-	< 0.05	< 0.05	< 0.05
Dicrotophos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Dieldrin	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Difenoconazole	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Dimethoate	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Dinocap	mg/kg dry wt	-	-	< 0.11	< 0.10	< 0.10
Diphenylamine	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Diuron	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Endosulfan I	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Endosulfan II	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Endosulfan sulphate	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Endrin	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Endrin aldehyde	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Endrin ketone	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
EPN	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Ethion	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Etrimfos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Famphur	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Fenarimol	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Fenitrothion	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Fenpropathrin	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Fenpropimorph	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Fensulfothion	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Fenvalerate (including Esfenvalerate)	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Fluazifop-butyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Fluometuron	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Flusilazole	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Fluvalinate	mg/kg dry wt	-	-	< 0.007	< 0.006	< 0.007
Folpet	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Furalaxyl	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Haloxyfop-methyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Heptachlor	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Heptachlor epoxide	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Hexachlorobenzene	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Hexaconazole	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Hexazinone	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Hexythiazox	mg/kg dry wt	-	-	< 0.05	< 0.05	< 0.05
Imazalil	mg/kg dry wt	-	-	< 0.05	< 0.05	< 0.05
Indoxacarb	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Iodofenphos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	-	-	< 0.05	< 0.05	< 0.05
Isazophos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Isofenphos	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Kresoxim-methyl	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Leptophos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Linuron	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Malathion	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Metalaxyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Methacrifos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Methamidophos	mg/kg dry wt	-	-	< 0.05	< 0.05	< 0.05

Sample Type: Soil						
Sample Name:		MDL24055 07-Nov-2024	MDL24056 07-Nov-2024	Composite of MDL24030 & MDL24032	Composite of MDL24034 & MDL24036	Composite of MDL24038 & MDL24040
Lab Number:		3711038.47	3711038.48	3711038.49	3711038.50	3711038.51
Multiresidue Pesticides in Soil samples by GCMS						
Methidathion	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Methiocarb	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Methoxychlor	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Metolachlor	mg/kg dry wt	-	-	< 0.006	< 0.006	< 0.006
Metribuzin	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Mevinphos	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Molinate	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Myclobutanil	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Naled	mg/kg dry wt	-	-	< 0.05	< 0.05	< 0.05
Nitrofen	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Nitrothal-isopropyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Norflurazon	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Omethoate	mg/kg dry wt	-	-	< 0.05	< 0.05	< 0.05
Oxadiazon	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Oxychlordane	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Oxyfluorfen	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Paclobutrazol	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Parathion-ethyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Parathion-methyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Penconazole	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Pendimethalin	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Permethrin	mg/kg dry wt	-	-	< 0.003	< 0.003	< 0.003
Phosmet	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Phosphamidon	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Pirimicarb	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Pirimiphos-methyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Prochloraz	mg/kg dry wt	-	-	< 0.05	< 0.05	< 0.05
Procymidone	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Prometryn	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Propachlor	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Propanil	mg/kg dry wt	-	-	< 0.03	< 0.03	< 0.03
Propazine	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Propetamphos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Propham	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Propiconazole	mg/kg dry wt	-	-	< 0.007	< 0.006	< 0.007
Prothiofos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Pyrazophos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Pyrifenox	mg/kg dry wt	-	-	< 0.014	< 0.012	< 0.013
Pyrimethanil	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Pyriproxyfen	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Quintozene	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Quizalofop-ethyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Simazine	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Simetryn	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Sulfentrazone	mg/kg dry wt	-	-	< 0.05	< 0.05	< 0.05
Sulfotep	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	-	-	< 0.019	< 0.017	< 0.018
Tebuconazole	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Tebufenpyrad	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Terbacil	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Terbumeton	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Terbuthylazine	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Terbuthylazine-desethyl	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009

Sample Type: Soil						
Sample Name:		MDL24055 07-Nov-2024	MDL24056 07-Nov-2024	Composite of MDL24030 & MDL24032	Composite of MDL24034 & MDL24036	Composite of MDL24038 & MDL24040
Lab Number:		3711038.47	3711038.48	3711038.49	3711038.50	3711038.51
Multiresidue Pesticides in Soil samples by GCMS						
Terbutryn	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Tetrachlorvinphos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Thiabendazole	mg/kg dry wt	-	-	< 0.05	< 0.05	< 0.05
Thiobencarb	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Tolylfluanid	mg/kg dry wt	-	-	< 0.005	< 0.005	< 0.005
Triadimefon	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Triazophos	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Trifluralin	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Vinclozolin	mg/kg dry wt	-	-	< 0.010	< 0.009	< 0.009
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	< 0.3	-	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Acenaphthene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Anthracene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.030	< 0.027	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.030	< 0.027	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Chrysene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Fluoranthene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Fluorene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Naphthalene	mg/kg dry wt	< 0.07	< 0.06	-	-	-
Perylene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Phenanthrene	mg/kg dry wt	< 0.013	< 0.011	-	-	-
Pyrene	mg/kg dry wt	< 0.013	< 0.011	-	-	-

Sample Name:		Composite of MDL24043 & MDL24045	Composite of MDL24047 & MDL24049
Lab Number:		3711038.52	3711038.53
Individual Tests			
Dry Matter	g/100g as rcvd	78	75
Multiresidue Pesticides in Soil samples by GCMS			
Acetochlor	mg/kg dry wt	< 0.009	< 0.009
Alachlor	mg/kg dry wt	< 0.006	< 0.006
Aldrin	mg/kg dry wt	< 0.013	< 0.013
Atrazine	mg/kg dry wt	< 0.009	< 0.009
Atrazine-desethyl	mg/kg dry wt	< 0.009	< 0.009
Atrazine-desisopropyl	mg/kg dry wt	< 0.018	< 0.018
Azaconazole	mg/kg dry wt	< 0.005	< 0.005
Azinphos-methyl	mg/kg dry wt	< 0.018	< 0.018
Benalaxyl	mg/kg dry wt	< 0.005	< 0.005
Bendiocarb	mg/kg dry wt	< 0.009	< 0.009
Benodanil	mg/kg dry wt	< 0.018	< 0.018
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013

Sample Type: Soil			
Sample Name:		Composite of MDL24043 & MDL24045	Composite of MDL24047 & MDL24049
Lab Number:		3711038.52	3711038.53
Multiresidue Pesticides in Soil samples by GCMS			
delta-BHC	mg/kg dry wt	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013
Bifenthrin	mg/kg dry wt	< 0.005	< 0.005
Bitertanol	mg/kg dry wt	< 0.018	< 0.018
Bromacil	mg/kg dry wt	< 0.009	< 0.009
Bromophos-ethyl	mg/kg dry wt	< 0.009	< 0.009
Bromopropylate	mg/kg dry wt	< 0.009	< 0.009
Bupirimate	mg/kg dry wt	< 0.009	< 0.009
Buprofezin	mg/kg dry wt	< 0.009	< 0.009
Butachlor	mg/kg dry wt	< 0.009	< 0.009
Captafol	mg/kg dry wt	< 0.05	< 0.05
Captan	mg/kg dry wt	< 0.018	< 0.018
Carbaryl	mg/kg dry wt	< 0.009	< 0.009
Carbofenothion	mg/kg dry wt	< 0.009	< 0.009
Carbofuran	mg/kg dry wt	< 0.009	< 0.009
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013
Chlorfenvinphos	mg/kg dry wt	< 0.013	< 0.013
Chlorfluazuron	mg/kg dry wt	< 0.009	< 0.009
Chlorothalonil	mg/kg dry wt	< 0.009	< 0.009
Chlorpropham	mg/kg dry wt	< 0.018	< 0.018
Chlorpyrifos	mg/kg dry wt	< 0.009	< 0.009
Chlorpyrifos-methyl	mg/kg dry wt	< 0.009	< 0.009
Chlortoluron	mg/kg dry wt	< 0.018	< 0.018
Chlozolinate	mg/kg dry wt	< 0.009	< 0.009
Coumaphos	mg/kg dry wt	< 0.018	< 0.018
Cyanazine	mg/kg dry wt	< 0.009	< 0.009
Cyfluthrin	mg/kg dry wt	< 0.011	< 0.012
Cyhalothrin	mg/kg dry wt	< 0.009	< 0.009
Cypermethrin	mg/kg dry wt	< 0.03	< 0.03
Cyproconazole	mg/kg dry wt	< 0.018	< 0.018
Cyprodinil	mg/kg dry wt	< 0.009	< 0.009
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08
Deltamethrin (including Tralomethrin)	mg/kg dry wt	< 0.009	< 0.009
Diazinon	mg/kg dry wt	< 0.005	< 0.005
Dichlobenil	mg/kg dry wt	< 0.009	< 0.009
Dichlofenthion	mg/kg dry wt	< 0.009	< 0.009
Dichlofluanid	mg/kg dry wt	< 0.009	< 0.009
Dichloran	mg/kg dry wt	< 0.03	< 0.03
Dichlorvos	mg/kg dry wt	< 0.010	< 0.010
Dicofol	mg/kg dry wt	< 0.05	< 0.05
Dicrotophos	mg/kg dry wt	< 0.009	< 0.009
Dieldrin	mg/kg dry wt	< 0.013	< 0.013
Difenoconazole	mg/kg dry wt	< 0.013	< 0.013
Dimethoate	mg/kg dry wt	< 0.018	< 0.018
Dinocap	mg/kg dry wt	< 0.10	< 0.11
Diphenylamine	mg/kg dry wt	< 0.018	< 0.018
Diuron	mg/kg dry wt	< 0.009	< 0.009
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013

Sample Type: Soil			
	Sample Name:	Composite of MDL24043 & MDL24045	Composite of MDL24047 & MDL24049
	Lab Number:	3711038.52	3711038.53
Multiresidue Pesticides in Soil samples by GCMS			
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013
EPN	mg/kg dry wt	< 0.009	< 0.009
Ethion	mg/kg dry wt	< 0.009	< 0.009
Etrimfos	mg/kg dry wt	< 0.009	< 0.009
Famphur	mg/kg dry wt	< 0.009	< 0.009
Fenarimol	mg/kg dry wt	< 0.009	< 0.009
Fenitrothion	mg/kg dry wt	< 0.009	< 0.009
Fenpropathrin	mg/kg dry wt	< 0.009	< 0.009
Fenpropimorph	mg/kg dry wt	< 0.009	< 0.009
Fensulfothion	mg/kg dry wt	< 0.009	< 0.009
Fenvalerate (including Esfenvalerate)	mg/kg dry wt	< 0.013	< 0.013
Fluazifop-butyl	mg/kg dry wt	< 0.009	< 0.009
Fluometuron	mg/kg dry wt	< 0.009	< 0.009
Flusilazole	mg/kg dry wt	< 0.009	< 0.009
Fluvalinate	mg/kg dry wt	< 0.007	< 0.007
Folpet	mg/kg dry wt	< 0.018	< 0.018
Furalaxyl	mg/kg dry wt	< 0.005	< 0.005
Haloxyfop-methyl	mg/kg dry wt	< 0.009	< 0.009
Heptachlor	mg/kg dry wt	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013
Hexaconazole	mg/kg dry wt	< 0.009	< 0.009
Hexazinone	mg/kg dry wt	< 0.005	< 0.005
Hexythiazox	mg/kg dry wt	< 0.05	< 0.05
Imazalil	mg/kg dry wt	< 0.05	< 0.05
Indoxacarb	mg/kg dry wt	< 0.009	< 0.009
Iodofenphos	mg/kg dry wt	< 0.009	< 0.009
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.05	< 0.05
Isazophos	mg/kg dry wt	< 0.009	< 0.009
Isofenphos	mg/kg dry wt	< 0.005	< 0.005
Kresoxim-methyl	mg/kg dry wt	< 0.005	< 0.005
Leptophos	mg/kg dry wt	< 0.009	< 0.009
Linuron	mg/kg dry wt	< 0.009	< 0.009
Malathion	mg/kg dry wt	< 0.009	< 0.009
Metalaxyl	mg/kg dry wt	< 0.009	< 0.009
Methacrifos	mg/kg dry wt	< 0.009	< 0.009
Methamidophos	mg/kg dry wt	< 0.05	< 0.05
Methidathion	mg/kg dry wt	< 0.009	< 0.009
Methiocarb	mg/kg dry wt	< 0.009	< 0.009
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013
Metolachlor	mg/kg dry wt	< 0.006	< 0.006
Metribuzin	mg/kg dry wt	< 0.009	< 0.009
Mevinphos	mg/kg dry wt	< 0.018	< 0.018
Molinate	mg/kg dry wt	< 0.018	< 0.018
Myclobutanil	mg/kg dry wt	< 0.009	< 0.009
Naled	mg/kg dry wt	< 0.05	< 0.05
Nitrofen	mg/kg dry wt	< 0.018	< 0.018
Nitrothal-isopropyl	mg/kg dry wt	< 0.009	< 0.009
Norflurazon	mg/kg dry wt	< 0.018	< 0.018
Omethoate	mg/kg dry wt	< 0.05	< 0.05

Sample Type: Soil			
	Sample Name:	Composite of MDL24043 & MDL24045	Composite of MDL24047 & MDL24049
	Lab Number:	3711038.52	3711038.53
Multiresidue Pesticides in Soil samples by GCMS			
Oxadiazon	mg/kg dry wt	< 0.009	< 0.009
Oxychlordane	mg/kg dry wt	< 0.005	< 0.005
Oxyfluorfen	mg/kg dry wt	< 0.005	< 0.005
Paclobutrazol	mg/kg dry wt	< 0.009	< 0.009
Parathion-ethyl	mg/kg dry wt	< 0.009	< 0.009
Parathion-methyl	mg/kg dry wt	< 0.009	< 0.009
Penconazole	mg/kg dry wt	< 0.009	< 0.009
Pendimethalin	mg/kg dry wt	< 0.009	< 0.009
Permethrin	mg/kg dry wt	< 0.003	< 0.003
Phosmet	mg/kg dry wt	< 0.009	< 0.009
Phosphamidon	mg/kg dry wt	< 0.009	< 0.009
Pirimicarb	mg/kg dry wt	< 0.009	< 0.009
Pirimiphos-methyl	mg/kg dry wt	< 0.009	< 0.009
Prochloraz	mg/kg dry wt	< 0.05	< 0.05
Procymidone	mg/kg dry wt	< 0.009	< 0.009
Prometryn	mg/kg dry wt	< 0.005	< 0.005
Propachlor	mg/kg dry wt	< 0.009	< 0.009
Propanil	mg/kg dry wt	< 0.03	< 0.03
Propazine	mg/kg dry wt	< 0.005	< 0.005
Propetamphos	mg/kg dry wt	< 0.009	< 0.009
Propham	mg/kg dry wt	< 0.009	< 0.009
Propiconazole	mg/kg dry wt	< 0.007	< 0.007
Prothiofos	mg/kg dry wt	< 0.009	< 0.009
Pyrazophos	mg/kg dry wt	< 0.009	< 0.009
Pyrifenox	mg/kg dry wt	< 0.013	< 0.013
Pyrimethanil	mg/kg dry wt	< 0.009	< 0.009
Pyriproxyfen	mg/kg dry wt	< 0.009	< 0.009
Quintozene	mg/kg dry wt	< 0.018	< 0.018
Quizalofop-ethyl	mg/kg dry wt	< 0.009	< 0.009
Simazine	mg/kg dry wt	< 0.009	< 0.009
Simetryn	mg/kg dry wt	< 0.009	< 0.009
Sulfentrazone	mg/kg dry wt	< 0.05	< 0.05
Sulfotep	mg/kg dry wt	< 0.009	< 0.009
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	< 0.018	< 0.018
Tebuconazole	mg/kg dry wt	< 0.009	< 0.009
Tebufenpyrad	mg/kg dry wt	< 0.005	< 0.005
Terbacil	mg/kg dry wt	< 0.009	< 0.009
Terbumeton	mg/kg dry wt	< 0.009	< 0.009
Terbuthylazine	mg/kg dry wt	< 0.005	< 0.005
Terbuthylazine-desethyl	mg/kg dry wt	< 0.009	< 0.009
Terbutryn	mg/kg dry wt	< 0.009	< 0.009
Tetrachlorvinphos	mg/kg dry wt	< 0.009	< 0.009
Thiabendazole	mg/kg dry wt	< 0.05	< 0.05
Thiobencarb	mg/kg dry wt	< 0.009	< 0.009
Tolylfluanid	mg/kg dry wt	< 0.005	< 0.005
Triadimefon	mg/kg dry wt	< 0.009	< 0.009
Triazophos	mg/kg dry wt	< 0.009	< 0.009
Trifluralin	mg/kg dry wt	< 0.009	< 0.009
Vinclozolin	mg/kg dry wt	< 0.009	< 0.009

Analyst's Comments

Amended Report: This certificate of analysis replaces report '3711038-SPv2' issued on 18-Nov-2024 at 2:08 pm.
Reason for amendment: Further testing added at clients request.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-23, 27, 29, 31, 39, 44-48
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	27, 29, 31
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-2, 4, 6, 44-48
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-23, 39, 44-48
Multiresidue Pesticides in Soil samples by GCMS	Sonication extraction, GC-ECD and GC-MS analysis. In-house based on US EPA 8081 and US EPA 8270.	0.003 - 0.06 mg/kg dry wt	5, 7-11, 49-53
Polycyclic Aromatic Hydrocarbons Screening in Soil*	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.010 - 0.05 mg/kg dry wt	1-2, 4, 6, 44-48
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-2, 4-11, 44-53
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	27, 29, 31
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	12-17, 19-21, 23
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	27, 31
Total Recoverable Cadmium	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.10 mg/kg dry wt	27
Total Recoverable Zinc	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	4 mg/kg dry wt	27, 29
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1-2, 4, 6, 44-48
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1-2, 4, 6, 44-48

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 07-Nov-2024 and 18-Dec-2024. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

Appendix F
Statement of Qualification

My full name is **Andrew James MacDonald**. I am an environmental consultant trading as **Groundwater and Environmental Services (GES)**.

I certify that I meet the requirements to operate as a suitably qualified and experienced practitioner (SQEP) under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) in contaminated land and groundwater assessment, management, and remediation.

I hold Bachelor of Science and Master of Science Honours degrees from Auckland University.

I have worked as a consultant in the field of contaminated land and groundwater assessment, management, and remediation since 1991. In that time, I have dealt with contamination issues at numerous industrial, commercial, horticultural, rural and residential sites throughout New Zealand on behalf of commercial, local government and central government clients.

CAPABILITIES

Environmental Site Investigation
Remediation of Contaminated Land
Environmental Effects Assessment
Contaminated Site Consents
Groundwater Investigation
Contaminant Transport Modelling
Groundwater Contamination Remediation

EDUCATION

Bachelor of Science (Geology)	University of Auckland, 1989
Master of Science, Hons (Geology)	University of Auckland, 1991
Environmental Law (COP)	University of Auckland, 1993
Resource Management (Planning) Law (COP)	University of Auckland, 1993

PROFESSIONAL HISTORY

1995 -	Groundwater and Environmental Services, Principal
1991 - 1995	Woodward-Clyde (NZ) Ltd, Environmental Scientist

REPRESENTATIVE EXPERIENCE

- Preliminary and detailed environmental site investigations of a wide range of potentially contaminated sites.
- Remedial action/site management plans for contaminated sites.
- Organisation and supervision of remediation at contaminated sites.
- Validation of remediation at contaminated sites.
- Long term contaminated site monitoring and management plans.

- Resource consents for site remediation and ongoing discharges of contaminants to ground at contaminated sites.
- Provision of expert evidence related to contamination issues.
- Peer review of contaminated site investigations.
- Drilling supervision, soil sampling and groundwater monitoring well installation at a range of sites for investigations of contaminated ground and groundwater.
- Computer modelling of groundwater contaminant transport and associated environmental effects.