WHYTES GULLY LANDFILL ANNUAL REPORT 2023/24

WOLLONGONG CITY COUNCIL Waste Services (EPL 5862)

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1 Introduction

1.1 Background

Wollongong City Council (Council) owns and operates the Wollongong Waste and Resource Recovery Park (the Site), which is located on Reddalls Road, Kembla Grange NSW. The Site is situated at the foothills of the Illawarra Escarpment southwest of the Wollongong central business district on approximately 50 hectares. The Site is formally identified as Lots 50, 52 and 53 of Deposited Plan (DP) 1022266 and Lot 2 of DP 240557. The Site location is shown on Figure 1 of Appendix A and a Site plan provided on Figure 2 of Appendix A.

Council holds an Environmental Protection Licence (EPL) issued by the NSW Environment Protection Authority (EPA) under the Protection of the Environment Operations Act 1997 (POEO Act). The Licence Number is 5862 and authorises the scheduled activity of waste disposal (application to land) at the Site with no limit on the scale of the activity.

A *Landfill Environmental Management Plan (LEMP)* was prepared in 2014 (Golder 2014) on behalf of Council to ensure that environmental compliance is maintained throughout Site operations. This plan has recently been updated and is currently being reviewed by Council. The management measures provided in the updated LEMP and associated appendices are developed in consideration of *the NSW Environmental Guidelines: Solid Waste Landfills (EPA, 1996)* and address the monitoring and reporting requirements of EPL 5862. The *NSW Environmental Guidelines: Solid Waste Landfills (EPA 1996)* were replaced with the *Environmental Guidelines: Solid Waste Landfills, Second Edition (EPA, 2016*).

1.2 Objectives

The objectives of this Annual Report are to provide the EPA with the following:

- A summary of compliance monitoring data gathered during the reporting period of the 29th of May 2023 to the 28th of May 2024.
- Interpretation of monitoring data to assess the environmental performance of the Site in consideration of the conditions of the EPL.

1.3 Scope

1.3.1 Fieldwork

To meet the objectives of the Annual Report the following scope of works was undertaken during the reporting period in accordance with the requirement of EPL 5862:

- Surface gas monitoring at areas where intermediate or final cover has been placed;
- Subsurface gas monitoring of twelve (12) landfill gas monitoring wells;
- Gas accumulation monitoring within all buildings within 250m of deposited waste;
- Water monitoring at three (3) stormwater monitoring points;
- Groundwater monitoring at thirteen (13) monitoring wells;
- Tracking of waste tyres received at the Site; and

- Monitoring of trade wastewater at one (1) sampling point located at the pre-treatment discharge.

1.3.2 Reporting

Section 6 (R1) of EPL 5862 states that Annual Return and an Annual Report must be prepared by the licence holder. In accordance with Section 6 (R1.8) of the EPL this Annual Report provides an assessment of environmental performance relevant to the licence conditions including:

- Tabulated results of all monitoring data required to be collected by this licence;
- A graphical presentation of data from at least the last three years in order to show variability and/or trends;
- An analysis and interpretation of all monitoring data;
- An analysis of and response to any complaints received;
- Identification of any deficiencies in environmental performance identified by the monitoring data, trends or incidents and of remedial action taken or proposed to be taken to address these deficiencies; and
- Recommendations on improving the environmental performance of the facility.

This report has been prepared in accordance with the reporting conditions provided in Section 6 of the EPL and in consideration of the *Environmental Guidelines: Solid Waste Landfills, Second edition* (EPA, 2016) and *Requirements for publishing pollution monitoring data* (EPA, 2013).

The Annual Return proforma for the 2023/2024 reporting period was provided to the NSW EPA via their online lodgement platform E-Connect. Unfortunately, some difficulties in site management and reporting were experienced during this reporting period due to the NSW East Coast Flooding event. This was followed by another flood event at Whytes Gully resulting in further site damage, incident reporting and subsequent continuing remediation.

AGRN 1119	NSW East Coast Flooding	1 April 2024 onwards
AGRN 1129	NSW Storms & Floods	4 June 2024 onwards

The Pollution Incident Response Management Plan (PIRMP) was activated in a timely manner and mitigation measures were put in place in accordance with the approved management plans. These non-compliances will be discussed in the following sections.

1.4 Site History and Configuration

1.4.1 Site History

Whytes Gully was developed in the early 1980's as the principal landfill site for Wollongong's domestic and commercial waste streams. Initially, the 'western gully' section was landfilled. The western gully is unlined by modern standards and was used for waste deposition from 1982 to 1993. Initially coal wash refuse was used to provide daily cover, and later steel furnace slag was introduced around 1988 due to its stability in wet weather, as well as Council's inability to source local clean fill in sufficient quantities. The leachate collection network from the western gully passes through a series of rock drains at the centre of each lift. The rock drains connect with a riser and the leachate flows from riser to riser, and eventually to the leachate collection well at the base of the western gully. The western gully section of the landfill has been capped with clay with a thickness between 1m and 4m.

Development of the 'eastern gully' section received consent in approximately 1992, following extensive public consultation. The eastern gully section is lined with a single layer of HDPE smooth liner, over a subsoil drainage layer of 5mm gravel and a corrugated groundwater drainage system. The eastern gully was excavated to rock and was developed in two stages, beginning with the first stage 80 to 100m above the slope from the current toe of the

landfill embankment. The leachate is drained from the first stage of the eastern gully via a 300mm corrugated drainage pipe at the base and a 300mm thick sand layer above the liner.

The second stage of the eastern gully is situated in front and above the first stage, with extended leachate drains and HDPE liner. From 2014 to 2016, the eastern gully underwent extensive surface reshaping works in order to reduce rainwater infiltration, increase surface water diversion, to ensure consistent cover depths and to prepare the surface for the new landfill cell base liner.

Construction of Stage 3 of the landfill commenced during August 2013, with the first cell, Cell 1A, completed in 2014 which is situated below the eastern gully. Placement of waste commenced in Cell 1A around March 2015. Council has since constructed Cell 1B in 2015 and completed filling in January 2019. Cell 2 commenced filling in January 2019 and continued through this reporting period.

Construction of Cell 2B-2 commenced on the 29th January 2024 with the expected completion date being the 11th June 2025.

The different areas of operations undertaken in this reporting period are outlined below:

- Weighbridge and gatehouse
- Community Recycling Centre
- Small Vehicle Transfer Station
- Continued Filling of cell 1B with waste
- Leachate and stormwater management and associated monitoring
- Monitoring Areas – landfill gas, groundwater, noise and air quality
- Green Waste Transfer Area
- Landfill gas flare
- Further Installation of landfill gas collection infrastructure
- Stockpiling areas
- Environmental controls
- Weed Control and Revegetation works
- Weather Monitoring (MHL)

During this reporting period, the filling of Cell 1B continued in parallel with preparation and construction of the new cell. Gas infrastructure was again expanded within the new fill areas and connected to the existing landfill gas flare system.

Leachate is collected from all landfilled areas at the site and treated in a 3 stage process. The leachate is initially collected in a primary holding pond that utilises biological process and aeration primarily to strip the leachate of ammonia. The leachate is then pumped to a smaller, shallower pond with a larger surface area to increase the speed of this process on a batch by batch basis. From the smaller pond the leachate is then pumped to a sequential batch reactor that in conjunction with a filtration system eliminates the residual contaminants in the leachate to a standard that is suitable for acceptance by sewer under the sites Trade Wastewater Agreement with Sydney Water.

The location of each cell and significant Site features such as leachate ponds and shown on Figure 2 of Appendix A.

2 Site Setting

2.1 Topography and Drainage

The Site is situated on a southwest facing slope, which is dominated by a roughly east-west directional ridgeline along the northern boundary. The landfill deposition areas are located within two historical gullies, the western gully landfill and the eastern gully landfill. The eastern gully landfill is the current location of waste deposition with the western gully was historically filled until approximately 1993.

The topography of the Site is subject to variability due to the nature of landfilling, however, in general the Site is characterised by moderate to steep slopes. An elevation profile created utilising Nearmap for an aerial image captured in May 2022 shows that the lowest elevations of the Site are located in the south western portion with an

approximate relative level (RL) of 15 m Australian Height Datum (AHD), and the highest elevations are located in the north eastern portion with an approximate RL of 100 m AHD. Approximate contours are shown on Figure 3 of Appendix A.

2.2 Soil and Geology

The *1:100,000 geological map 'Wollongong-Port Hacking'* (Department of Primary Industries, 1985) shows that the Site is on the boundary of two major geological formations. The southern portion of the site is underlain by fluvial sands, silts and clays associated with Dapto Creek, with sandstone of the Budgong formation underlying alluvial soils. The Budgong Sandstone formation typically comprises of red, brown and grey lithic sandstone. The northern portion of the site is underlain by interbedded lithic sandstone, coal, carbonaceous claystone, siltstone and claystone of the Pheasants Nest Formation. It is inferred that the Pheasants Nest formation would mainly be encountered on the ridgelines in the higher elevations of the Site.

A geotechnical investigation completed by Golder Associates (Golder 2012) summarised the Site geology into the following areas:

- **Pheasants Nest Formation**: the Pheasants Nest Formation was noted on the upper slopes across the northern portion the site. The material encountered was generally weathered sandstone that grades into fresh sandstone at depths typically less than 10 m below ground level (bgl). The residual soil is generally less than 2 m thick. Siltstone was encountered in zones throughout the sandstone at depths greater than about 15 m (based on the Maunsell 1992 investigation). Siltstone was not encountered in the Golder 2012 investigation.
- **Budgong Sandstone Formation**: the Budgong Sandstone Formation was located across the southern portion of the site. The sandstone generally had a weathering profile that extended to depths up to 15 m bgl. Zones of weathered siltstone had a maximum thickness of approximately 3m and were located intermittently throughout this formation.
- **Alluvial Soils**: alluvial soils consisted of colluvial / alluvial soil material (silty clay and silt with some sands and sub angular gravels and cobbles) and was located across the middle and south west portion of the site. Zones of alluvial soil had a maximum thickness of approximately 11m. This geological unit was inferred to be underlain by Budgong Sandstone.
- **Capping Layer and Landfill**: landfill and a capping layer are located across the completed areas of landfilling. The capping material consists of generally low to medium plasticity sandy clay and is typically has a thickness less than 1.5m. Landfill waste is located beneath the capping layer consisting predominantly of domestic waste including paper, plastic, wood, rubble and other materials. The depth to the base of the general waste fill was not well defined, however, a review of historical topographic data suggests that the thickness of the fill could be up to 52m within the eastern gully landfill. The landfilled areas were inferred to be underlain by the Pheasants Nest Formation.

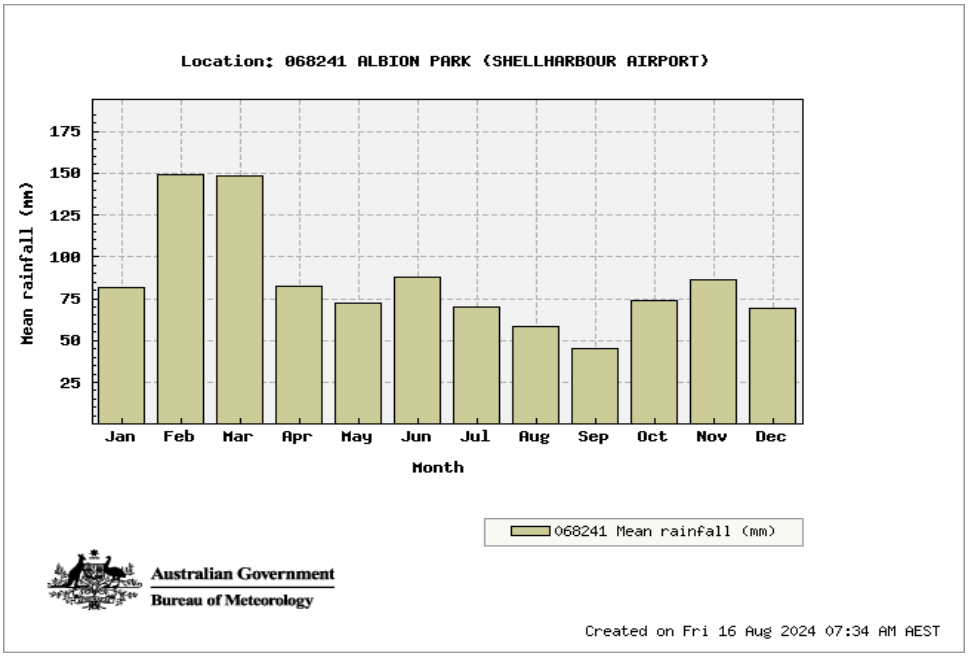
2.3 Climate

Climate data for the Site has been taken from the Albion Park (Wollongong Airport) Bureau of Meteorology (BOM) Weather Station (ID 068241). The weather station is located approximately 10 km south of the Site and is considered an accurate representation of the conditions experienced at the landfill during the reporting period. **Table 2-1** summaries the key climatic data from the Albion Park weather station.

Table2-1 Climatic Data – Albion Park Weather Station

	2023						2024					
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Rainfall (mm)	1.8	8.3	67.6	53.4	22.4	216.2	207.4	57.4	71.8	80.8	261.0	296.0
Mean max temperature (ºC)	17.6	20.3	20.2	23.4	24.0	23.7	26.6	27.0	27.2	26.1	23.2	19.8
Mean min temperature (ºC)	7.5	6.8	7.3	18.2	11.1	15.0	17.4	18.6	18.3	20.3	12.2	10.4
Mean 9am wind speed (km/h)	18	11	8	12	15	10	14	10	9	5	7	8
Mean 3pm wind speed (km/h)	19	19	17	20	22	18	20	17	15	16	15	11
Mean 9am relative humidity (%)	64	71	70	50	58	73	6	76	80	81	72	85
Mean 3pm relative humidity (%)	51	48	61	50	53	70	56	72	73	68	67	71

Long-term rainfall averages for the Albion Park weather station are shown below and have been included for comparative purposes.



The climate data showed rainfall occurred in every month, ranging from 1.8 mm in June 2032 to 296 mm in May 2024. Total rainfall was 1344.1 mm, 300 mm more than the long-term average.

3 Field Investigations

3.1 Fieldwork Methodology

The subsections below describe the frequency of monitoring, monitoring method, monitoring locations and analytes for surface gas, subsurface gas, gas accumulation, stormwater and groundwater. The fieldwork methodologies implemented during the reporting period were developed in consideration of the guidance provided in the NSW EPA *Environmental Guidelines: Solid waste landfills (second edition)* (EPA 2016).

3.1.1 Surface Gas

Surface gas monitoring was completed during the reporting period to assess for potential surface gas emissions of methane emitting from the current and existing landfill areas at the site. Surface gas migration monitoring should demonstrate that the cover material and extraction system is controlling the emission of landfill gas.

The fieldwork methodology for surface gas monitoring is summarised below in **Table 3.1.** The location of each surface gas monitoring location is shown on Figure 5 of Appendix A.

Table 3-1 Surface Gas Monitoring Methodology

Activity	Description
Frequency and Dates of Monitoring	Surface gas monitoring for methane was completed monthly during the reporting period in accordance with Section 5 (M2.2) of EPL 5862.
Monitoring Method	Methane was measured by a third party contractor, ALS Environmental, using an Inspectra Laser Gas Detector. The instrument used to measure methane concentrations was calibrated prior to each monitoring event. Surface gas monitoring was achieved by testing the atmosphere 5 centimetres above the ground surface in areas with intermediate or final cover where wastes have been placed. The monitoring was completed on calm days (winds below 10km/hr) and on transects with an approximate spacings of 25m.
Monitoring Locations	Surface gas monitoring for methane was undertaken at the following locations: ▪ The current active landfill cell: transects 2, 3, 5, 7 and 10 ▪ The former landfill cell to the north west of the current cell: transects A, C, D, E, F, G, H, and I ▪ Reddalls Road and Farmborough Road fence lines.

3.1.2 Subsurface Gas

Subsurface gas monitoring was completed during the reporting period to detect the potential presence of methane around the perimeter of the landfill cell to assess the potential for offsite migration of methane onto surrounding properties.

The fieldwork methodology for subsurface gas monitoring is summarised below in **Table 3.2.** The location of each subsurface gas monitoring location is shown on Figure 5 of Appendix A.

Table 3-2 Subsurface Gas Monitoring Methodology

Activity	Description
Frequency	Subsurface gas monitoring for methane was completed monthly during the reporting period in accordance with Section 5 (M2.2) of EPL 5862.
Monitoring Method	Subsurface gas monitoring was measured by a third party contractor, ALS Environmental, using an Inspectra Laser Gas Detector. The instrument used to measure methane concentrations was calibrated prior to each monitoring event.

Activity	Description
	Subsurface gas monitoring was achieved by testing the methane concentration in twelve landfill gas monitoring wells (listed below) that are situated around the northern, eastern and southern perimeters of the landfill. The contents of each well was sampled and analysed prior to potential dilution by air.
Monitoring Locations	Subsurface gas monitoring for methane was undertaken at twelve landfill gas monitoring wells, Point 21 (LFG MW1) to Point 32 (LFG MW12), in accordance with Section 5 (M2.3).

3.1.3 Gas Accumulation

Gas accumulation monitoring was completed periodically during the reporting period to demonstrate that gas is not accumulating at dangerous levels in enclosed spaces on or near the landfill.

The fieldwork methodology for gas accumulation monitoring is summarised below in **Table 3.3**. The location of each gas accumulation monitoring location is shown on Figure 5 of Appendix A.

Table 3-3 Gas Accumulation Monitoring Methodology

Activity	Description
Frequency and Dates of Monitoring	Gas accumulation monitoring for methane was completed monthly during the reporting period in accordance with Section 5 (M2.2) of EPL 5862.
Monitoring Method	Methane was measured by a third party contractor, ALS Environmental, using an Inspectra Laser Gas Detector. The instrument used to measure methane concentrations was calibrated prior to each monitoring event. Gas accumulation monitoring was undertaken in all accessible buildings and other enclosed structures within 250m of deposited waste or leachate storage. Some buildings and structures within 250m were not assessed as they were inaccessible and/or the owner did not permit authority to access the building.
Monitoring Locations	▪ Gas accumulation monitoring was undertaken at the following locations during the reporting period: ▪ Weighbridge ▪ Glengarry Cottage (administrative building)

3.1.4 Stormwater

Stormwater monitoring was undertaken regularly in the reporting period to detect excess sediment loads in stormwater leaving the site and/or potential cross-contamination of stormwater with landfill leachate.

The fieldwork methodology for stormwater monitoring is summarised below in **Table 3.4.** The location of each stormwater monitoring location is shown on Figure 3 of Appendix A.

Table 3-4 Stormwater Monitoring Methodology

Activity	Description
Frequency and Dates of Monitoring	Stormwater sampling was completed annually in accordance with Section 5 (M2.3) of EPL 5862. In total, stormwater was sampled 36 times when overflow occurred. The annual stormwater sampling event took place in February 2024.
Monitoring Method	Stormwater monitoring was completed by a third party contractor, ALS Environmental. Grab samples of water were collected using a scoop at the nominated sampling points (summarised below). The instrument used to measure water quality parameters was calibrated prior to each monitoring event.
Monitoring Locations	Stormwater samples were collected from the following monitoring points in accordance with Section 2 (P1.2) of EPL 5862:

Activity	Description
	▪ 1 (outlet to Reddalls Road) ▪ 33 (downstream monitoring point) ▪ 34 (upstream monitoring point).
Analytes	In accordance with Section 5 (M2.3) of EPL 5862 each stormwater sample was analysed for: ▪ Alkalinity ▪ Calcium ▪ conductivity ▪ filterable iron ▪ magnesium ▪ pH ▪ sodium ▪ temperature ▪ total phenolics ▪ Ammonia ▪ Chloride ▪ dissolved oxygen ▪ fluoride ▪ nitrate ▪ potassium ▪ sulfate ▪ total organic carbon ▪ total suspended solids

3.1.5 Groundwater

Groundwater monitoring was completed periodically during the reporting period to determine if groundwater was impacted by interactions with leachate.

The fieldwork methodology for groundwater monitoring is summarised below in **Table 3.5.** The location of each groundwater monitoring location is shown on Figure 3 of Appendix A.

Table 3-5 Groundwater Monitoring Methodology

Activity	Description
Frequency and Dates of Monitoring	Groundwater monitoring was completed on a quarterly basis during the reporting period with sampling undertaken on ▪ August 2023 ▪ November 2023 ▪ February 2024 ▪ May 2024
Monitoring Method	Groundwater was sampled by a third party contractor, ALS Environmental, using bailer technique. A pre-calibrated water quality meter used to measure groundwater quality parameters during monitor well purging. The collected groundwater samples were submitted to ALS Environmental for analysis of contaminants and parameters of interest (summarised below). Ground water levels were recorded before purging.
Monitoring Locations	Groundwater bores monitored during the reporting period included EPL monitoring points: 5 (GABH02), 9 (GMW102), 10 (GM103), 11 (GM104), 12 (GM105), 13 (GM106), 14 (GMW108S), 15 (GMW108D), 16 (GMW109S), 17 (GMW110), 18 (GMW111), 19 (GMW109D) and 20 (BH6)
Analytes	In accordance with Section 5 (M2.3) of EPL 5862 groundwater monitoring points 5, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20 were analysed for: ▪ Annually ▪ Metals (aluminium, arsenic, barium, cadmium, chromium (hexavalent and total), cobalt, copper, lead, manganese, mercury, zinc) ▪ Benzene, toluene, ethylbenzene, xylene (BTEX) ▪ Fluoride ▪ Nitrate and nitrite ▪ Organochlorine pesticides (OCP) ▪ Organophosphate pesticides (OPP) ▪ Quarterly ▪ Alkalinity ▪ Calcium, magnesium, potassium, sodium, chloride, sulfate ▪ pH and conductivity ▪ Standing water level ▪ Total dissolved solids (TDS) ▪ Total organic carbon (TOC) ▪ Nitrogen (ammonia)

Activity	Description
	▪ Polycyclic aromatic hydrocarbons (PAH) ▪ Total petroleum hydrocarbons (TPH) ▪ Total phenolics

3.1.6 Trade Wastewater

Monitoring of trade waste was completed periodically during the reporting period to assess wastewater discharge and confirm that water quality parameters were within the acceptable criteria. Discharge of trade waste to sewer is undertaken in accordance with the *Consent to Discharge Industrial Trade Wastewater* (Sydney Water 2023).

The fieldwork methodology for trade wastewater monitoring is summarised below in **Table 3.5**. The trade waste monitoring location is shown on Figure 2 of Appendix A.

Table 3-6 Trade Wastewater Monitoring Methodology

Activity	Description
Frequency	Trade wastewater sampling was undertaken on the 11th of August 2017 and every 22 days thereafter. If trade wastewater was not discharged on the scheduled day, then the sample was taken on the next day that trade wastewater was discharged. ▪
Monitoring Method	Trade wastewater was sampled by a third party contractor, ALS Environmental. Composite samples were collected over a 24 hour period using a Composite Auto-sampler, and pre and post monitoring samples were collected as grab samples. ▪ Composite samples were obtained over one full production day by combining equal volumes taken at 30 minute intervals. The volumes collected were at least 5,000 millilitres over the full day. The reading of the flowmeter was obtained at the commencement and conclusion of each sampling day. Discrete samples were collected and tested for pH and temperature at the start and finish of each sample day. The probe used to measure water quality parameters was calibrated prior to each monitoring event and the trade wastewater samples collected were submitted to ALS Environmental for analysis of parameters of interest (summarised below).
Monitoring Locations	In accordance with the *Consent* (Sydney Water, 2023) monitoring of trade wastewater was undertaken at a sampling point located at the pre-treatment discharge, excluding domestic sewage and prior to the point of connection to the Sewer. The specific monitoring location was on Site leachate treatment plant which is shown on Figure 4 of Appendix A.
Analytes	Composite samples were submitted to ALS Environmental for analysis of the following: ▪ Electrical conductivity; ▪ Ammonia (as Nitrogen); ▪ Biochemical oxygen demand; ▪ Suspended solids; and ▪ Total dissolved solids. ▪ Discrete samples were tested on site for pH, electrical conductivity and temperature using a calibrated water quality meter. Additionally, the volume of wastewater discharged was obtained from the reading of the total flow on the flow metering system.

3.1.7 Dust and Odour

Dust monitoring was completed on a continuous basis utilising a dust deposition gauge to measure total dust and monthly to measure respirable dust for sensitive receptors.

The fieldwork methodology for dust monitoring is summarised below in **Table 3-7**.

Table 3-7 Dust Monitoring Methodology

Activity	Description
Monitoring Frequency	Total Dust monitoring was undertaken on a continuous basis with dust deposition gauges (DDGs) collected and analysed monthly. Respirable dust monitoring was conducted on or around the 20th of each month.
Monitoring Method	DDGs were installed and sampled by a third party contractor, ALS Environmental in accordance with AS 3580.10.1:2003. DDGs were placed around the site boundaries with DDG bottles collected and swapped out for analysis each month and the contents analysed as per below. Once a month respirable dust sampling was undertaken in two locations utilising a PM_{10} sampler, sampling and analysis were undertaken by a third party contractor, ALS Environmental.
Monitoring Locations	Sampling locations DDG1 to DDG 5 were located on the site perimeter with DDG1 and DDG 2 located on the eastern side of the Site while DDG 3 to DDG 5 are located on the western side of the site. DDG 1 to DDG 2 were selected for respirable dust monitoring due to the proximity to sensitive receptors.
Analytes	DDG contents were analysed for: • Ash Content • Combustible matter • Total insoluble matter • Respirable dust filters were analysed for: • Total suspended particulates • PM_{10}

Odour is managed through regular monitoring of the surrounding areas and investigation of complaints. Regular covering of waste and use of deodorisers is also implemented.

3.1.8 Waste Tyres

Waste tyres are received at the Site from public drop off and from Council's On Call Household Cleanup service. All tyres received at the Site are temporarily stored hardstand tipping bayand subsequently removed for off-site recycling by a tyre recycling contractor (Tyrecycle Pty Ltd). Waste tyres are not disposed of or buried at the Site.

Council display a NSW EPA Fixed QR2id Plate on the inbound weighbridge to enable inbound vehicles disposing waste tyres to exchange information regarding their load to the EPA under Clause 76 of the Waste Regulation. Any vehicles that fail to scan the QR2id plate at the entry to the landfill are reported by Council to the Waste Operations division of the EPA on a monthly basis (no later than 7 days following the end of each month).

Council follow a procedure (Procedure – Reporting un scanned inbound waste tyres to EPA) developed to manage waste tyres in a manner that satisfies their obligations under the POEO (Waste) Regulation 2014. The procedure was prepared in consideration of the *Asbestos and Waste Tyre Guidelines* (EPA 2015).

4 Data Quality Objectives

The NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*, which is endorsed by the NSW EPA under s105 of the *Contaminated Land Management Act 1997*, requires that Data Quality Objectives (DQOs) are to be adopted for all assessment and remediation programs. The DQO process as adopted by the NSW EPA is described within US EPA (2000) *Guidance for the Data Quality Objectives Process and Data Quality Objectives Process for Hazardous Waste Site Investigations*.

4.1 Data Quality Objectives

The DQO process has been used to establish a systematic planning approach to setting the type, quantity and quality of data required for making decisions based on the environmental condition of the Site. The DQO process involves the following seven steps detailed in **Table 4.1.**

Table 4-1 Data Quality Objectives

Activity	Description
Step 1: State the Problem	An Annual Report is required as a condition of EPL 5862 to assess the environmental performance of the Site during the 2022/2023 reporting period. The Annual Report will determine the type, concentrations, and extent of potential contamination / parameters in the matrices sampled including landfill gas (surface and subsurface), leachate, surface water and groundwater.
Step 2: Identify the decision / goal of the study	The NSW EPA requires an Annual Report to confirm if the environmental performance of the Site meets the licence conditions and regulatory obligations of EPL 5862.
Step 3: Identify the information inputs	The primary inputs to the decisions described above are: ▪ Assessment of landfill gas, leachate, surface water and groundwater in accordance with direction of Section 5 (Monitoring and Recording Conditions) of EPL 5862. ▪ Assessment of management procedures for waste tyres. ▪ Laboratory analysis of samples for the contaminants and parameters of interest defined in Section 5 of EPL 5862. ▪ Assessment of analytical results against applicable performance criteria and Section 3 (Limit Conditions) of EPL 5862. ▪ Review of complaints recorded during the reporting period that relate to odour originating from the Site. ▪ Aesthetic observations material encountered during sampling. Assessment of the suitability of the analytical data obtained, against the Data Quality Indicators (DQIs) outlined below.
Step 4: Define the boundaries of the study	The study site is located at Reddalls Road, Kembla Grange NSW. The lateral extent of the study is the site boundaries, as shown on Figure 2 of Appendix A. The vertical extent of the study extends into the landfill gas and groundwater monitoring wells installed during previous investigations. The temporal boundaries of the study are from the 29th of May 2023 to the 28th of May 2024 (i.e. the reporting period).
Step 5: Develop the analytical approach	The decision rules for the Annual Report include: The sampling points, contaminants and parameters of interest, frequency of sampling and sampling method will meet the requirements EPL 5862. Samples requiring laboratory analysis will be analysed at National Association of Testing Authorities (NATA) accredited laboratory.

Activity	Description
	Laboratory QA/QC results will indicate reliability and representativeness of the data set. Laboratory Limits of Reporting (LORs) will be below the applicable guideline criteria for the analysed contaminants and parameters of interest, where possible. Applicable guideline criteria will be sourced from EPL 5862 and other NSW EPA endorsed guidelines (as necessary). If the concentration of a contaminant or parameter of interest is outside of the acceptable limit additional works may be required to assess the potential risk.
Step 6: Specify performance or acceptance criteria	To ensure the results obtained are accurate and reliable, sampling and analysis was undertaken in accordance with the guidance provided in EPL 5862. DQIs are used to assess the reliability of field procedures and analytical results. In particular, the DQIs within NSW EPA (2017) are used to document and quantify compliance. DQIs are described below: ▪ Completeness – A measure of the amount of useable data (expressed as %) from a data collection activity. ▪ Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event. ▪ Representativeness – The confidence (expressed qualitatively) that data are representative of each media present on the site. ▪ Precision – A quantitative measure of the variability (or reproducibility) of data. ▪ Accuracy (bias) – A quantitative measure of the closeness of reported data to the true value.
Step 7: Develop the Plan for Obtaining Data	Sampling and Analysis has been undertaken in compliance with EPL 5862 by qualified technical staff with analysis completed by a NATA accredited Laboratory. Results are discussed within this report.

4.2 Data Quality Indicators

The following DQIs referenced in Step 6 in **Table 4.2** have been adopted in accordance with the NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*. The DQIs outlined assist with decisions regarding the contamination status of the site, including the quality of the laboratory data obtained.

Table 4.2 Summary of Data Quality Indicators

Data Quality Indicator	Frequency	Data Acceptance Criteria
Completeness		
Field documentation correct	Each sampling event	All samples
Suitably qualified and experience sampler	Each sampling event	All samples
Appropriate lab methods and limits of reporting (LORs)	Each sampling event	All samples
Chain of custodies (COCs) completed appropriately	Each sampling event	All samples
Compliance with all sample holding times	All samples	All samples
Comparability		
Consistent standard operating procedures for collection of each sample. Samples should be collected, preserved and handled in a consistent manner	All samples	All samples
Experienced sampler	All samples	All samples

Climatic conditions (temperature, rain, wind etc) recorded and influence on samples quantified (if required)	All samples	All samples
Consistent analytical methods, laboratories and units	All samples	All samples
Representativeness		
Sampling technique appropriate for each media and analytes (appropriate collection, handling and storage)	All samples	All Samples
Samples homogenous	All samples	All Samples
Detection of laboratory artefacts, e.g. contamination blanks	-	Laboratory artefacts detected and assessed
Samples extracted and analysed within holding times	All samples	All samples
Precision		
Laboratory duplicates	1 per 20 samples	<20% RPD Result > 20 × LOR <50% RPD Result 10-20 × LOR No Limit RPD Result <10 × LOR
Accuracy (Bias)		
Surrogate spikes	All organic samples	50-150%
Matrix spikes	1 per 20 samples	70-130%
Laboratory control samples	1 per 20 samples	70-130%
Method blanks	1 per 20 samples	<LOR

5 Performance Criteria

Environmental monitoring data gathered during the reporting period was screened against the applicable criteria for each sample type / matrix as summarised below.

5.1 Surface Gas

The results of surface gas monitoring were screened against the criteria provided in the *Environmental Guidelines* (EPA 2016). Specifically, the threshold level for further investigation and potential action was detection of methane at any point of the landfill above 500 parts per million (ppm).

5.2 Subsurface Gas

The results of subsurface gas monitoring were screened against the criteria provided in the *Environmental Guidelines* (EPA 2016). Specifically, the threshold levels for further investigation and corrective action were detection of methane at concentrations above 1% (volume/volume) and carbon dioxide at concentrations of 1.5% (v/v) above established natural background levels.

5.3 Gas Accumulation

The results of gas accumulation monitoring within enclosed buildings and structures were screened against the criteria provided in the *Environmental Guidelines* (EPA 2016). Specifically, the threshold level for further investigation and corrective action was detection of methane at concentrations above 1% (v/v).

5.4 Water

5.4.1 Stormwater

- In accordance with Section 3 (L1.2) of EPL 5862 the performance criteria for stormwater was no discharge of contaminated stormwater to waters under dry weather conditions (less than 10mm of rainfall within a 24hr period) or a storm event/s of less than 1:10 year, 24 hour recurrence interval (less than 297.4 mm of rainfall within a 24 hour time period).
- On 24 February 2021, Council applied to the EPA with an email containing a new proposed stormwater monitoring location point. This was accepted on the 1st March 2021 as outlined below.

P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Stormwater monitoring and discharge point	Stormwater monitoring and discharge point	Outlet at Reddalls Road - Monitoring point labelled 1 on Figure 13 titled "Proposed Surface Water Monitoring Locations" dated 26 March 2012 (Whytes Gully New Landfill Cell EA - Volume IV). E297777 N6183972

Amended to:

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Stormwater monitoring and discharge point	Stormwater monitoring and discharge point	Outlet at Reddalls Road - Monitoring point identified at E297772 N6184025.

- The performance criteria for this stormwater monitoring and discharge point at Reddalls Road, known as Monitoring Point 1 are:
  - pH: a 100 percentile concentration limit of 6.5 to 8.5
  - Total Suspended Solids: a 100 percentile concentration limit of 50 mg/L

In this reporting period, the EPA requested that the leachate seep in February 2020 (which entered into the stormwater management system) be addressed via the following over the next 12 months:

1. complete a preliminary review of the existing stormwater management system;
2. prepare a comprehensive water balance assessment; and
3. conduct an independent assessment of the revised stormwater management system.

These were incorporated into Licence Variation Notice No. 1604123 and included a Pollution Reduction Program requiring Council to submit reports in relation to the management of stormwater at the premises. These conditions were met and subsequently approved by the EPA, with a request by the Regulator to reassess Condition 2 in light of the catastrophic weather events that occurred since 2021.

5.4.2 Leachate Discharge

In accordance with Section 3 (L1.3) of EPL 5862 the limit for leachate was no discharge of leachate to waters under dry weather conditions (less than 10mm of rainfall within a 24hr period) or a storm event/s of less than the 1:25 Average Return Interval (ARI), 24 hour recurrence interval (less than 371.5 mm of rainfall within a 24 hour time period). The performance criteria adopted for leachate discharges was based on records regarding the timing and nature of leachate discharges during the reporting period.

5.4.3 Groundwater

The selected performance criteria for groundwater samples were based on the recommendations of the *Environmental Guidelines* (EPA 2016) and in consideration of the land use, site setting and the plausible interactions between potential contaminants and human and environmental receptors. A conceptual site model is provided in **Section 8.9** that further discusses these interactions.

The Environmental Guidelines (EPA 2016) screening groundwater analytical results against the *National Environment Protection (Assessment of Site Contamination) Measure* (National Environment Protection Council, 2013), specifically:

- Schedule B1, Table 1C Groundwater Investigation Levels, which summarises trigger values from:
  - *ANZAST* 2018:
- The results were screened against the criteria for 80%, 90% and 95% species protection trigger levels, which refers to the percentage of species expected to be protected. A brief overview of each protection level is provided below:
  - The 80% protection level trigger values apply to ecosystems that are highly disturbed with limited conservation value;
  - The 90% protection level trigger values apply to ecosystems that are moderately disturbed with low conservation value; and
  - The 95% protection level trigger values apply to ecosystems that are slightly to moderately disturbed with a moderate conservation value.
- Each protection trigger level was applied to groundwater data gathered during the reporting period, however, given the high level of disturbance at the site and the predominantly industrial surrounding land use the 90% levels are considered most appropriate to adopt as a performance criteria.
  - *Australian Drinking Water Guidelines* (National Health and Medical Research Council and the Natural Resource Management Ministerial Council, 2011, updated 2014) (ADWG).
- Surface water and groundwater are not utilised for human consumption at the Site, however, it is plausible that groundwater is used for agricultural (irrigation and stock watering). As such the ADWG have been adopted.
- Schedule B1, Table 1A (4) Health Screening Levels groundwater for petroleum hydrocarbons.

5.5 Dust

The results of dust monitoring were assessed against criteria provided within the Environmental: Solid Waste Landfills (2016) which have been derived from Table 7.1 of Approved methods for the modelling and assessment of Air Pollutants in New South Wales (NSW DEC 2005).

5.6 Trade Wastewater

- Trade wastewater analytical results were screened against the criteria provided in the *Consent* (Sydney Water, 2023). The *Consent* provides criteria for a variety of parameters for the long term average daily mass (LTADM) and the maximum daily mass (MDM).
- In addition to analytical performance criteria the *Consent* provides limits for aesthetic properties of trade wastewater including temperature, colour, pH, fibrous materials, gross solids and flammability, and limits to the rate of discharge of wastewater to sewer.

5.7 Waste – Tyres

Section 3 (L3.2) of EPL 5862 states that the licensee must not dispose of any tyres on the premises which:

- Have a diameter of less than 1.2 metres;
- Are delivered at the premises in a load containing more than 5 whole tyres; and
- Became waste in the Sydney Metropolitan Area.
- Section 3 (L3.3) states that tyres stockpiled on the premises must:
- Not exceed fifty tonnes of tyre at one time;
- Be located in a clearly defined area away from the tipping face;
- Be managed to control vermin; and
- Be managed to prevent any tyres from catching fire.

5.8 Odour

In accordance with Section 3 (L4) of EPL 5862 offensive odour must not emit beyond the boundary of the premises. The performance criteria adopted for potential offensive odour emissions was occurrences (if any) of complaints from members of the public relating to odour. Regular odour monitoring is conducted weekly and results are recorded in the Environmental Matrix.

In 2020/21, the EPA had several meetings with Council to express their concerns regarding odour management at Whytes Gully. This resulted in the inclusion of special conditions E1.4 and E1.5 requiring Council to undertake an odour assessment and for submission to the EPA. These conditions were satisfactorily met and resulted in a modification that removed these conditions and replaced them with the following:

> E2.1 The licensee must provide monthly updates on the implementation of the recommendations made in the report titled "Whytes Gully Waste and Resource Recovery Centre - Odour Investigation Assessment – (The Odour Unit 2021).
>
> E2.2 The monthly updates must be provided by the last day of each month, or the next business day if the last day falls on a weekend or public holiday.

These conditions have been subsequently met and will be requested to be modified in a license review in the upcoming reporting period.

6 Results

Monitoring results gathered during the reporting period are provided in the data tables in Appendix B and are summarised in the relevant subsections below. Laboratory certificates of analysis and quality reports have not been appended to this report due to the large number of files, however, they can be provided upon request.

6.1 Gas

6.1.1 Surface Gas

Surface gas results were reported above 500 ppm on twelve occasions within the reporting period. On two sampling events, four transects recorded levels above 500 ppm (twelve readings) within the reporting period.

These were recorded as follows:

Sampling Date	Transect No.	Location - Methane result (ppm)
21/06/2023	1	1-1040, 3-750, 4-812, 5-1029, 6-2325, 7-3040, 9-2234
	7	2-8850
	8	2-3020
	9	4-2480, 5-2495
30/01/2024	8	3-7010

These elevated readings correlated to the previous heavy rainfall areas where the transects remain saturated. These levels continue to increase as the site became saturated with the heavy rainfall conditions over the past three reporting periods. The transects with increased levels are in the upper areas of the site. As the reporting period progressed from the previous year's rainfall events, levels began to normalise.

Due to construction of the new cell, some data transects are not able to be sampled.

6.1.2 Subsurface Gas

All concentrations of methane measured were under 0.1% (v/v), during the reporting period, below the threshold level for further investigation and corrective action of 1% (v/v).

Subsurface gas monitoring results from the reporting period are summarised in Appendix B.

6.1.3 Gas Accumulation

All reported concentration of methane was below the threshold level for further investigation and corrective action of 1 % (v/v). As shown in the graphs in Appendix C, the methane concentrations accumulating into buildings have remained low even though there has been a slight increase in levels over the last reporting period.

Gas accumulation monitoring results from the reporting period are summarised in Appendix B.

6.2 Stormwater

Surface water was monitored throughout overflow events and annually during this period.

In total, there were 29 overflow events with 6 constituting non-compliances based on the license constraints for pH and TSS.

Significant rainfall events occurred in November and December 2023, with over 425 mm falling in these two months. This constitutes almost half the yearly rainfall in a period of six weeks.

The full set of tabulated surface water results are provided in Appendix B.

During this period, pH levels at Point 1 fluctuated between 7.5 and 9.5. There were 5 non-compliant pH results ranging between 8.6 (6th November 2023), 8.9 (9th January 2024), 9.0 (10th January 2024), 9.5 (11th January 2024) and 9.3 (12th January 2024), most likely influenced by the diluted leachate overflows during the November rainfall event and capture of sediment from construction work preparation.

On 2 occasions at Point 1, TSS values were recorded at or over 50 mg/L. Values ranged between < 5 – 62 mg/L and remained stable throughout this period, particularly compared to the previous two periods.

Upstream and downstream results showed similar consistent readings during this time, remaining compliant. pH upstream and downstream also remained compliant during this reporting period demonstrating that there was no significant impact on the local environment.

6.3 Leachate

Based on the reported results pertaining to trade wastewater discharged, the facility was in conformance for the 2023-24 reporting period. A number of ammonia-N exceedances were reported in leachate samples; however, this does not impact the facility's successful operation, as this leachate is treated and discharged as trade wastewater, with the trade wastewater reporting all analyte concentrations, including ammonia-N below the performance criteria.

Appendix B shows the full results for leachate.

6.4 Groundwater

6.4.1 Groundwater Levels

Groundwater levels measured at the site during the reporting period are summarised in Appendix B and ranged from 1.73 m below ground level (bgl) in groundwater monitoring Point 15 (GMW108D0) to 11.21 m bgl in groundwater monitoring point 12 (GMW105). These have remained at relatively the same levels as the previous reporting period and may be attributed to continual heavy rainfall.

6.4.2 Laboratory Results

Groundwater pH was reported to range between acidic (5.4 at Point 12 on the 15/04/2024) and neutral (7.5 on the 05/02/2024) for the reporting period.

Electrical Conductivity varied greatly across the site with the lowest value recorded being 200 µS/L at Point 12 (GMW105) on the 15/11/2023 and the highest value recorded being 5330 µS/L at Point 5 (GABHO2) also on 05/02/2024.

Concentrations of calcium, magnesium, potassium, chloride, fluoride, sulfate and sodium varied across the groundwater network. It does appear that groundwater is dominated by calcium, sodium and chloride ions, with all groundwater wells exhibiting higher concentrations of these ions compared to others.

Groundwater within the site is generally described as very hard to extremely hard. Monitoring Point 5 recorded the highest CaCO3 concentrations during the reporting period, ranging between 828 mg/L (15/05/2024) to 958 mg/L (5/02/2024). Monitoring Point 12 had the lowest concentrations ranging between 16 mg/L (15/05/2024) and 43 mg/L (5/02/2024).

All bores being remained active across the site during this reporting period. Continued heavy rainfall resulted in all bores being active across the site.

Groundwater data tables are provided in Appendix B with the pertinent findings summarised below:

- Benzene, toluene, ethylbenzene and xylenes (BTEX) and TPH were not detected above the laboratory limits of reporting (LORs) in any groundwater sample collected during the reporting period (refer to Appendix B).
- PAH was not detected above the laboratory LORs in any sample, however, it is noted that the adopted criteria for anthracene and benzo(a)pyrene were below the laboratory limit of reporting (refer to Appendix B). Therefore, the results of anthracene and benzo(a)pyrene cannot be screened against the criteria.
- A summary of heavy metals results is provided below and tabulated in Appendix B:
  - Aluminium (total) concentrations ranged from 0.38 mg/L in monitoring point 19 to 11.2 mg/L in point 11, with all samples containing aluminium above the ANZECC 90% protection trigger level of 0.055 mg/L.
  - Arsenic, barium, zinc and mercury were reported at concentrations below the adopted performance criteria for all samples.
  - Cobalt (total) concentrations ranged from below the laboratory limit of reporting (Point 17) to 0.051 mg/L in monitoring point 16. The concentration recorded for point 16 is above the ANZECC 90% protection trigger level of 0.0014 mg/L.
  - Chromium (hexavalent) was not detected above the laboratory limit of reporting in all groundwater samples collected during the reporting period, however, it is noted that the adopted criteria is below the laboratory limit of reporting. Therefore, the results cannot be screened against the performance criteria. Total chromium peaked at 0.016 mg/L in point 5.
  - Copper (total) concentrations ranged from 0.001 mg/L (Point 19) to 0.037 mg/L (point 16) with most results above the ANZECC 90% protection trigger level of 0.0018 mg/L but well below the ADWG criteria of 2 mg/L.
  - Lead (total) concentrations ranged from below the laboratory limit of reporting (multiple samples) to 0.019 mg/L (point 16) with most results above the ANZECC 90% protection trigger level of 0.0018 mg/L but below the ADWG criteria of 2 mg/L.
  - Manganese (total) concentrations ranged from 0.035 (point 17) to 7.66 mg/L (point 16). This is above the ANZECC 90% protection trigger level of 2.5 mg/L.
  - Specific trigger values were not provided in the adopted performance criteria for calcium, cobalt, magnesium and potassium.
- A summary of inorganics is provided below and tabulated in Appendix B:
  - Ammonia concentrations ranged from below the laboratory limit of reporting (multiple samples) to 0.51 mg/L in point 16, with all samples below the adopted performance criteria of 0.9 mg/L.
  - Fluoride concentrations ranged from 0.1 mg/L (point 9) to 0.7 mg/L in point 20, with all samples below the adopted performance criteria.
  - Nitrate concentrations ranged from under 0.01 mg/L (multiple samples) to 1.3 mg/L in point 12, with all samples below the adopted performance criteria.
  - Specific trigger values were not provided in the adopted performance criteria for alkalinity, chloride, nitrite, sodium, TDS, TOC and sulfate.
- A summary organochlorine pesticides is provided below and tabulated in Appendix B:

- OCP contaminants aldrin and dieldrin, chlordane, dichlorodiphenyltrichloroethane (DDT), endrin, lindane and heptachlor were not detected above the laboratory limit of reporting in any sample, however, it is noted that the adopted criteria were below the laboratory limit of reporting.

> A summary organophosphorus pesticides is provided below and tabulated in Appendix B:

- OPP contaminants azinophos methyl, chlorpyrifos, diazinon, dimethoate, malathion, methyl parathion and parathion were not detected above the laboratory limit of reporting in any sample, however, it is noted that the adopted criteria were below the laboratory limit of reporting.
- Bromophos-ethyl, carbophenothion, chlorfenvinphos, dichlorvos, ethion, fenthion, fethyl parathion, monocrotophos, fenamiphos and pirimphos-ethyl were not detected above the laboratory limit of reporting
- and were therefore below the adopted performance criteria.

6.5 Trade Wastewater

Trade wastewater monitoring data is provided in Appendix B. Trade wastewater was undertaken 19 times during the reporting period. The results of monitoring showed that on each occasion volume discharge, total dissolved solids, suspended solids, ammonia as N, biochemical oxygen demand and temperature were within the acceptable criteria provided in the *Consent* (Sydney Water, 2023).pH was measured at the commencement and completion of each monitoring event and no non- conformances with the Sydney Water criteria were recorded.

6.6 Waste Tyres

Section 3 (L3.2) of the EPL provides limitations on the size and number of waste tyres that can be disposed at the premises. Council do not dispose of waste tyres on Site but instead receives and temporarily stores them until they are collected by an external contractor, Tyrecycle Pty Ltd, for recycling. As such the license condition L3.2 does not apply to the site operations during the reporting period.

Section 3 (L3.3) of the EPL states a number of requirements relating to tyre stockpiles at the Site. Stockpiles of types on Site during the reporting period were compliant with L3.3, specifically:

> Tyre stockpiles did not exceed fifty tonnes at one time. The tyre storage bin at the site has a capacity of 150 tyres, which when full equates to significantly less than fifty tonnes. Council's Operations team regularly scheduled outbound loads of waste tyres to ensure that the capacity of the bin is not exceeded;

> The tyre stockpile was clearly defined and situated approximately 450m from the tipping face during the reporting period; and

> The tyre stockpile was scheduled for frequent removal mitigating the potential for vermin impact and fire risk.

6.7 Odour and Dust

Council received a total of 23 complaints (via the EPA) from the public during the reporting period pertaining to offensive odours noted outside the facility's boundary. This number is similar to the previous reporting period, where complaint numbers reduced after the COVID outbreak.

During the previous reporting periods, there were a number of changes in land use in the surrounding catchment. With the implementation of FOGO, increase in commercial organics composting has occurred in the industrial precinct adjacent to the facility. There has also been an increase in bitumen production in the same period, resulting in an increase in potential odour sources close to the landfill.

EPA continues to work with Council to quantify and manage odours within the catchment. All complaints are followed up with the complainant, logged and an incident report sent through to the EPA (or included in the monthly update).

7 Quality Assurance / Quality Control

A summary of the results of the QA/QC performance are included in this section.

7.1 Laboratory QA/QC

The selected analytical laboratory, ALS Environmental, undertake internal QA/QC procedures which include the analysis of method blanks, internal duplicate samples, laboratory control samples, matrix spikes and surrogate recovery. Additionally, laboratory QA/QC measures include receipt, logging, storage, preservation, holding time and analysis of samples within the method specified.

A review of the laboratory QA/QC procedures indicates that laboratory QA/QC procedures were within specified ranges for all samples with the exception of three duplicates, four laboratory control samples and four matrix spikes. In addition, five matrix spike recoveries were unable to be determined as the background level was greater than or equal to the four times the spike level.

Samples were received and stored appropriately and all samples were analysed within the specified holding time.

7.2 Data Useability

The data validation process of laboratory QA/QC data indicates that the reported analytical results are representative of the conditions at the sample locations and that the analytical data can be relied upon for the purpose of the Annual Report for EPL 5862.

8 Discussion

The data and information gathered during the reporting period is discussed below in consideration of the performance criteria. In addition, and in accordance with Section 6 (R1.8) of EPL 5862, historical laboratory results have been tabulated and presented in graphical format that compares data from at least three years (where available).

Trend graphs are provided in Appendix C and summarised below. Where there is insufficient data to establish trends (i.e. results predominately below LOR), then no trend graph has been prepared.

8.1 Surface Gas

Surface gas monitoring completed during the reporting identified twelve exceedances. These occurred after heavy rainfall events. At the time of measurement, the ground was fully saturated, and it is noted that these higher levels of methane were associated with the older areas of the landfill covered by Transect 8 and 9.

In this reporting period, additional gas infrastructure has been installed adjacent active tipping areas to collect methane gas (see site plan below). This may have resulted in generally lower levels of surface gas emissions.

Some areas of the site were unable to be sampled during this reporting period due to unsafe access. In particular, Transects 2 to 6 were affected by heavy rainfall causing instability and overgrown vegetation. Construction of the next cell also resulted in Transects C to N being taken offline after the January 2024 sampling event.

8.2 Subsurface Gas

Subsurface gas monitoring completed during the reporting period did not identify subsurface methane at concentrations that exceeded the threshold level. As such non-conformances of the EPL did not occur during the reporting period with respect to subsurface gas.

8.3 Gas Accumulation

Gas accumulation monitoring completed during the reporting period did not identify methane at concentrations that exceeded the threshold level. As such non-conformances of the EPL did not occur during the reporting period with respect to gas accumulation.

8.4 Stormwater

8.4.1 Trend Analysis

A series of graphs showing trends in stormwater contaminant and parameter levels are provided in Appendix C and are discussed below.

The two months (November and December 2024) significantly influenced pH, ammonia and TSS in the stormwater system. The other parameters were also influenced but remained within threshold limits. In general, the water column remains unbalanced with fluctuating levels of dissolved oxygen, nutrients and almost all other parameters.

8.5 Groundwater

8.5.1 Groundwater Levels

Interpretation of groundwater levels across the Site from the reporting period indicate that the inferred groundwater flow direction is from the north east to the south west, which is consistent with the local topography and is shown on Figure 4 of Appendix A. Groundwater is situated at the greatest depths in the higher elevations of the Site toward the north eastern corner and is shallowest in the south eastern boundary in close proximity to the nearest surface water body, Dapto Creek.

It is noted that the water table remained high throughout the reporting period with samples collected at all sampling events.

8.5.1.1 Trend Analysis

A series of graphs showing groundwater level trends are provided in Appendix C and discussed below. It can be seen that there has been increase in some levels of groundwater parameters including nitrate, ammonia, pH and conductivity as water enters the groundwater system and soluble analytes are mobilised. It is hard to discern any trends until heavy rainfall stops and groundwater levels and flow stabilise under normal climatic conditions.

8.5.2 Laboratory Results

Groundwater analysis completed during the reporting period showed that the majority of contaminants and parameters of interest specified in EPL 5862 were below the laboratory LORs or the performance criteria, including BTEX, TPH, PAH, ammonia, fluoride and nitrate.

Performance criteria are not provided for alkalinity, chloride, nitrite, sodium, TDS, TOC and sulfate however the results were generally comparable with historical data and are not considered unusual or concerning in the context of the Site and surrounding land use. EPA monitoring points 5, 17, 18 and 20 are located in the lower elevations of the Site toward the western and southern western boundary and generally had the highest concentrations. EPA monitoring points 9, 10, 12 and 13 generally contained the lowest levels of the parameters, with the wells located in the higher elevations toward the northern and eastern boundary. This indicates that wells situated down gradient of buried waste have the relatively higher concentrations.

Numerous heavy metal concentrations were reported as elevated during the reporting period including aluminium, cadmium, copper, lead, manganese and zinc. The concentrations reported were for total metals in accordance with the EPL requirement, however, it is important to note that the adopted screening criteria recommended by the *Environmental Guidelines* (EPA 2016) are intended for application to concentrations of dissolved metals. As such

the exceedances are not necessarily indicative of environmental concern with the contaminant concentrations most likely attributed to the presence of sediment in unfiltered samples

8.5.2.1 Trend Analysis

A trend graph and discussion has not been provided for OCP, OPP, PAH, BTEXN or Phenolics as these contaminants have never been reported above the laboratory limit of reporting.

A series of graphs showing trends in groundwater contaminant and parameter levels for annual monitoring are provided in Appendix C and are discussed below.

The trend graphs from the annual groundwater monitoring event shows that contaminant and parameter concentrations have remained steady and relatively consistent with the three years prior, with a general decline in contaminant concentrations. It is noted that one monitoring well was unable to be sampled during the annual monitoring event and therefore trend analysis was unable to be completed for the entire well network. This well has since been repaired and is back online.

8.6 Trade Wastewater

Trade wastewater was discharged into the sewer network in accordance with the Consent (Sydney Water 2023). Based on the monitoring data over the reporting period, no breaches were recorded.

8.7 Waste Tyres

Waste tyres received at the site are managed in accordance with a procedure that satisfies Councils obligations under the POEO (Waste) Regulation 2014. Tyres are temporarily stored at the site before being collected by a third party contractor for recycling.

Non-conformances of the EPL did not occur during the reporting period with respect to waste tyres.

8.8 Odour

Section 3 (L4) of EPL 5862 states that offensive odour must not emit beyond the boundary of the premises. A total of 23 complaints relating to odour were received from members of the public during the reporting period. This is a significant reduction from the previous two reporting periods.

In response to odour concerns in the catchment, Council worked with EPA to assess the Site's odour management and address the Special Conditions. The "Wollongong Waste and Resource Recovery Park (WWRRP) – Odour Investigation Assessment was undertaken by specialist consultants, The Odour Unit Pty Ltd. This assessment met the requirements of EPA Licence No. 5862- Licence Variation No. 1604123 (Special Conditions E1.4 and E1.5) outlined in the table below.

Special Condition E1.4	*The licensee must engage a suitably qualified and experienced odour specialist to assess odour emissions from the premises and on the performance and effectiveness of the odour mitigation measures. Provide the EPA with a copy of this assessment by 30th April 2021.*

Special Condition E1.5	*1) Undertake a detailed risk assessment of the premises to identify all significant odour generating sources at the premises.* *2) The risk assessment must be informed by site specific odour monitoring. All monitoring must be undertaken in accordance with the NSW EPA's Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.* *3) Where measured, site specific odour emission rates are significantly different to those previously adopted in the odour modelling report by Pae Holmes (June 2012), the modelling be revised to include site specific data.* *4) Undertake a detailed feasibility study to consider and evaluate options to reduce odour emissions from the highest ranked odour generating sources.* *5) The study should evaluate the expected change in offsite odour impact via a revised odour impact assessment.*

Based on the Assessment findings, the following recommendations were made based on proactive mitigation measures to manage the risk of adverse conditions:

1. Adopt the use of biocover material for the management of problematic areas where fugitive gas leakage pathways are identified. A biocover layer is designed to reduce landfill gas emissions of targeted areas, with its efficacy at reducing odour emissions well-documented by TOU at other landfill operations. It can be applied as either a temporary or permanent layer on the targeted area. A site-specific biocover management strategy will need to be developed to determine how the biocover material can be integrated into the existing operations and ensure its effective application.

2. Review the capacity and capability of the current leachate management system. This includes considering the existing aeration capability of the leachate management system to provide enhanced leachate treatment flow capacity for future growth. This will assist in the optimisation of landfill gas capture.

3. Undertake an evaluation of the existing efficacy of the landfill gas management system as a means of identifying opportunities for improvement and optimisation. The intent of this exercise is to increase the landfill gas capture rate as a means of actively minimising fugitive landfill gas emissions. This is also part of a continuous improvement program and commensurate with the future waste volumes landfill cells may be assigned. This improvement program should encompass all existing landfill cells, where technical capability and economically achievable.

4. Continue to implement the current Vegetation Management and Landscape Plan to create and maintain a vegetate buffer screen to conceal the waste management operations and as a means of future odour management.

5. Update the current air quality and odour management plan to ensure that it is in-line with industry best practice and reflects the current and future management protocols. A key component of this update will be, amongst others, the enhancement of the current landfill gas monitoring strategy by increasing the resolution of the monitoring plan to best practice.

6. If community complaints persist, develop, and implement a monitoring program consisting of field ambient odour assessment (FAOA) surveys conducted at both on-site and off-locations using calibrated assessors. If triggered, the assessment area will include the localities of community odour complaints, during different weather conditions, including potential worst-case scenarios (i.e. early mornings, late-evenings). The monitoring program can also include additional on-site odour emissions assessments to evaluate the odour generating sources under different scenarios (e.g. seasonal conditions or during high odour complaint periods).

To address these recommendations, Council developed a 4-year Infrastructure Delivery and Operational Program to assist odour management, during times of increased risk. The following

- $350 000 allocated toward leachate treatment system upgrade - completed
- $400 000 allocated to leachate pond upgrades - continuing
- $100 000 allocated to stormwater pond upgrades - ponds 1 & 2 desilted and water reuse and deodouriser

completed

- $50 000 allocated to landfill cover upgrades (trialling of Biocover to improve localised gas management) – continuing
- Phase 3 of the Landfill Gas extraction project is continuing with a further wells installed – continuing.
- Vegetation Management Plan implementation – enhancing vegetation buffer plantings and increasing maintenance along the property boundary - continuing.

8.9 Conceptual Site Model

Generally, a conceptual site model (CSM) provides an assessment of the fate and transport of contaminants of potential concern (CoPC) relative to site specific subsurface conditions with regard to their potential risk to human health and the environment. The CSM takes into account site-specific factors including:

> Source(s) of contamination;

> Identification of CoPC associated with past (and present) source(s);

> Vertical, lateral and temporal distribution of CoPC;

> Site specific lithologic information including soil type(s), depth to groundwater, effective porosity, and groundwater flow velocity; and

> Actual or potential receptors considering both current and future land use both for the site and adjacent properties, and any sensitive ecological receptors.

Based on the results discussed in this report a CSM has been developed. Additional details are included in the sections that follow as necessary.

Table 8-1 Conceptual Site Model

CSM Element	Description
Contaminant Sources	Known contaminant sources at the site include: ▪ Historical site use as a landfill since the early 1980's for deposition of domestic and commercial waste streams. ▪ Leachate resulting from degradation of buried waste and interaction with groundwater.
Site Current and Future Use	The site is an operational landfill that receives waste from the Wollongong City Council local government area. It is anticipated that the landfill will remain operational and continue to receive waste for the foreseeable future with a projected lifespan of at least 40 years based on current landfilling rates.
Site Geology	A geotechnical investigation (Golder 2012) indicates that the site is situated on two geological units. The Pheasants Nest Formation was noted on the upper slopes across the northern portion the site. The material encountered was generally weathered sandstone that grades into fresh sandstone at depths typically less than 10 m below ground level. The Budgong Sandstone Formation was located across the southern portion of the site. The sandstone generally had a weathering profile that extended to depths up to 15 m bgl. In addition to the natural geology the historical and current landfill cells have been covered with a capping layer typically comprising low to medium plasticity sandy clay with a thickness less than 1.5m. Underlying the landfill cap is predominantly domestic waste including paper, plastic, wood, rubble and other materials.
CoPCs	The CoPC listed in EPL 5862 include heavy metals (aluminium, arsenic, barium, cadmium, chromium (hexavalent and total), cobalt, copper, lead, manganese, mercury, zinc), polycyclic aromatic hydrocarbon, total petroleum hydrocarbons, benzene, toluene, ethylbenzene, xylenes, naphthalene, organochlorine pesticides, organophosphate pesticides and phenolics. In addition to CoPC the EPL identifies potentially hazardous landfill gasses including methane and carbon dioxide.

Extent of Impacts	The extent of potential contamination would primarily be located immediately below and down gradient of the tip face. Monitoring undertaken during the reporting period indicates that contaminants above the adopted criteria are limited to heavy metals aluminium, cadmium, copper, lead, manganese and zinc. Other CoPC were reported below the laboratory limit of reporting or the adopted criteria, however, it is noted that several contaminants including PAHs, OCPs and OPPs were unable to be screened against the adopted criteria as the laboratory LORs was reported higher than the criteria. Methane was detected during the reporting period atop the current and previous tip face (surface gas), subsurface and within enclosed structures, however, the concentrations were below the threshold level for further investigation and corrective action.
Potential Human Receptors	Potential human receptors include: ▪ Employees working at the tip face in earthworks plant and machinery; ▪ Employees working within enclosed structures including the weighbridge and office; ▪ Trespassers who illegally access the site; ▪ Contractors constructing the new landfill cell; ▪ Contractors undertaking scheduled environmental monitoring (surface water, groundwater and landfill gas); and ▪ Individuals working or living near the site.
Potential Ecological Receptors	Potential ecological receptors include: ▪ Dapto Creek which is the nearest offsite down gradient surface water body and the downstream surface water bodies including Mullet Creek and Lake Illawarra; ▪ Groundwater under the site being impacted as a result of the vertical migration of contaminants from leachate and buried waste; and ▪ Flora and fauna on the site interacting with contaminants in the soils including birds scavenging from the tip face.
Potential Contaminant Pathways	Potential contaminant pathways include: ▪ Dermal contact with contaminated materials including soil, waste and hazardous building materials; ▪ Dermal contact with contaminated media including surface water, groundwater and leachate; ▪ Inhalation of hazardous landfill gases emanating from buried waste and leachate; ▪ Inhalation of volatile contaminants and/or asbestos fibres; ▪ Ingestion of contaminant impacted materials including soil, waste and hazardous building materials; ▪ Potential contaminant uptake by vegetation; and ▪ Potential ingestion of contaminant impacted fresh produce (fruit and vegetables) grown down gradient of the site.

8.9.1 Data Gaps and Uncertainties

The assessment of potential contamination at the site was based on a site inspection and review of available historical reports and information. As such, the lateral and vertical extent of potential contamination in soil is unknown.

9 Conclusions and Recommendations

9.1 Conclusions

The following can be concluded based on the monitoring undertaken during the reporting period:

- The continued Natural Disasters within in this reporting period made it extremely challenging to undertake environmental monitoring and compliance activities. Although some exceedances and non-compliances were identified during this time, Council responded as best as possible in the circumstances and as result, material harm to the community and the environment was kept to a minimum.
- Construction of the new cell began in March 2024 and is expected to run throughout the next reporting period. This will influence some license conditions as monitoring locations may not be accessible or may need to be relocated during the works. A license review will be conducted to assess which conditions in EPL 5862 will be affected.
- Council implemented an environmental monitoring program during the 2023/24 reporting period that satisfied the conditions and requirements of EPL 5862 and the *Consent to Discharge Industrial Trade Wastewater* (Sydney Water, 2023).
- Surface gas readings were generally lower (with the exception of Transects 1, 8 and 9) during this reporting period compared to the previous reporting period. This may be influenced by the installation of addition gas infrastructure.
- Management and handling of waste tyres at the Site was undertaken in a manner that was compliant with the EPL conditions.
- Reduced levels of complaints from the public relating to offensive odours originating from the Site were received during the reporting period. Each complaint was investigated by Council to confirm the nature of the complaint and to identify suitable corrective actions. An assessment of odour management at Whytes Gully was completed and approved during this reporting period in accordance with EPA requirements.

9.2 Recommendations

Based on the conclusions of this report, the key recommendation is to review EPL 5862 (with an emphasis on the existing Pollution Reduction Programs) to ensure it is still relevant to current site management practices. Delivery of Program milestones, changes in climate (i.e. increased intensity of rainfall events) and construction of the new cell have resulted in some Conditions being outdated. A review of the current license should be undertaken, and a Variation submitted to update the existing license conditions.

10 Limitations

This assessment has been undertaken in accordance with Environmental Protection Licence 5862.

The assessment may not identify contamination occurring in all areas of the site, or occurring after sampling was conducted. Subsurface conditions may vary considerably away from the sample locations where information has been obtained.

Sampling, monitoring and reporting during this period was sometimes interrupted due ongoing COVID 19 conditions and adverse weather conditions.

11 References

ANZAST (2018), Australian Water Quality Guidelines, 2018

Australian Standards (1999), AS 4482.2-1999 Guide to the Sampling and Investigation of Potentially Contaminated Soil - Volatile Substances, 1999

Golder Associates (2012), Geotechnical Investigation, Whytes Gully Landfill, 2012

Golder Associates (2014), Landfill Environmental Management Plan, Whytes Gully Landfill, 2014 NEPC (2013), National Environment Protection (Assessment of Site Contamination) Measure, 2013 NHMRC (2014), Australian Drinking Water Guidelines, 2014)

NSW EPA (1996), NSW Environmental Guidelines: Solid Waste Landfills, 1996 NSW EPA (2013), Requirements for publishing pollution monitoring data, 2013 NSW EPA (2015), Asbestos and Waste Tyre Guidelines, 2015

NSW EPA (2016), Environmental Guidelines: Solid Waste Landfills (Second Edition), 2016 NSW EPA (2017), Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017

NSW DPI (1985), 1:100,000 geological map Wollongong-Port Hacking, 1985 Sydney Water (2017), Consent to Discharge Industrial Trade Wastewater, 2017

US EPA (2000), Guidance for the Data Quality Objectives Process and Data Quality Objectives Process for Hazardous Waste Site Investigations, 2000.

APPENDICIES

Appendix A

Figure 1 : Locality Plan

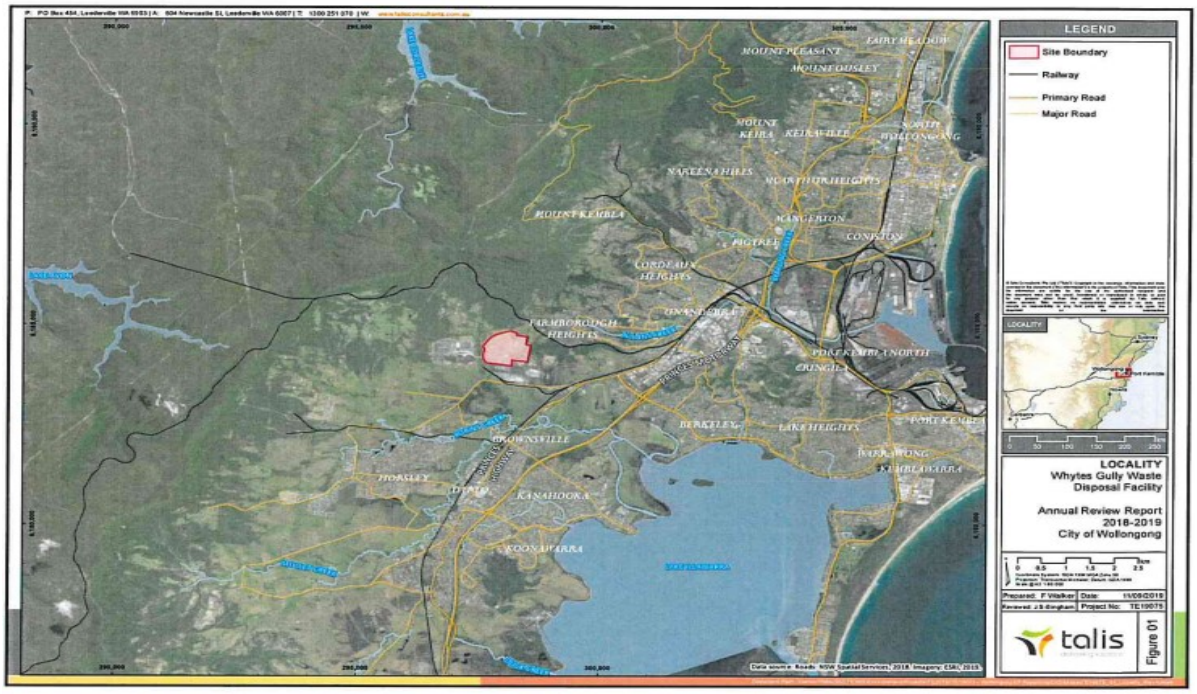


Figure 2 : Site Aerial Plan

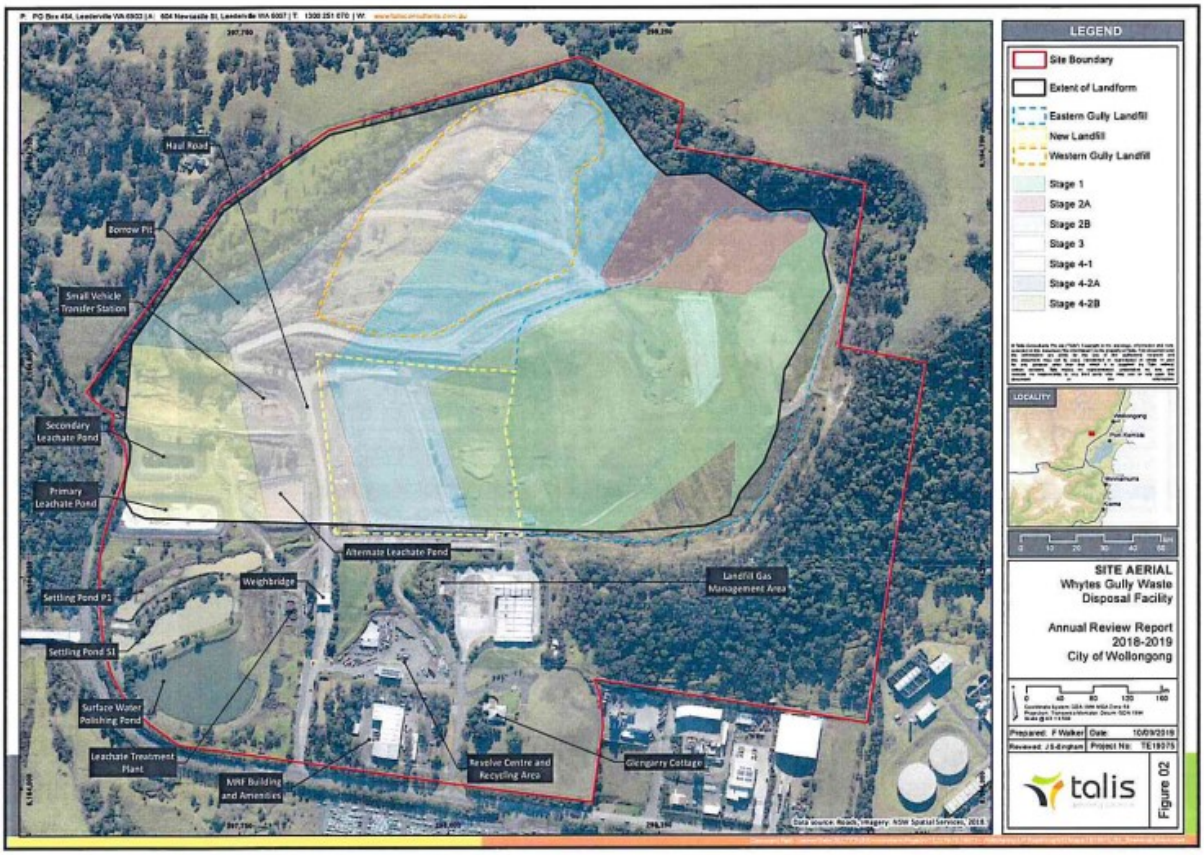


Figure 3: Groundwater Sampling Locations

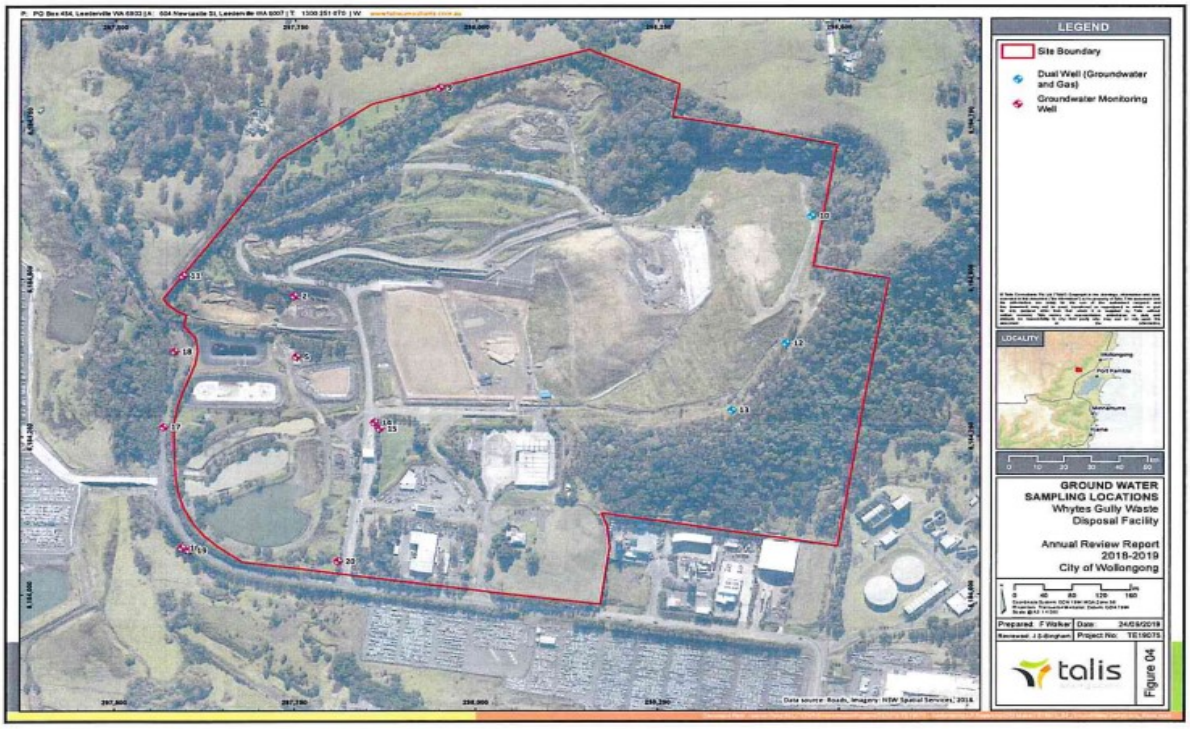


Figure 4: Wastewater and Leachate Sampling Locations

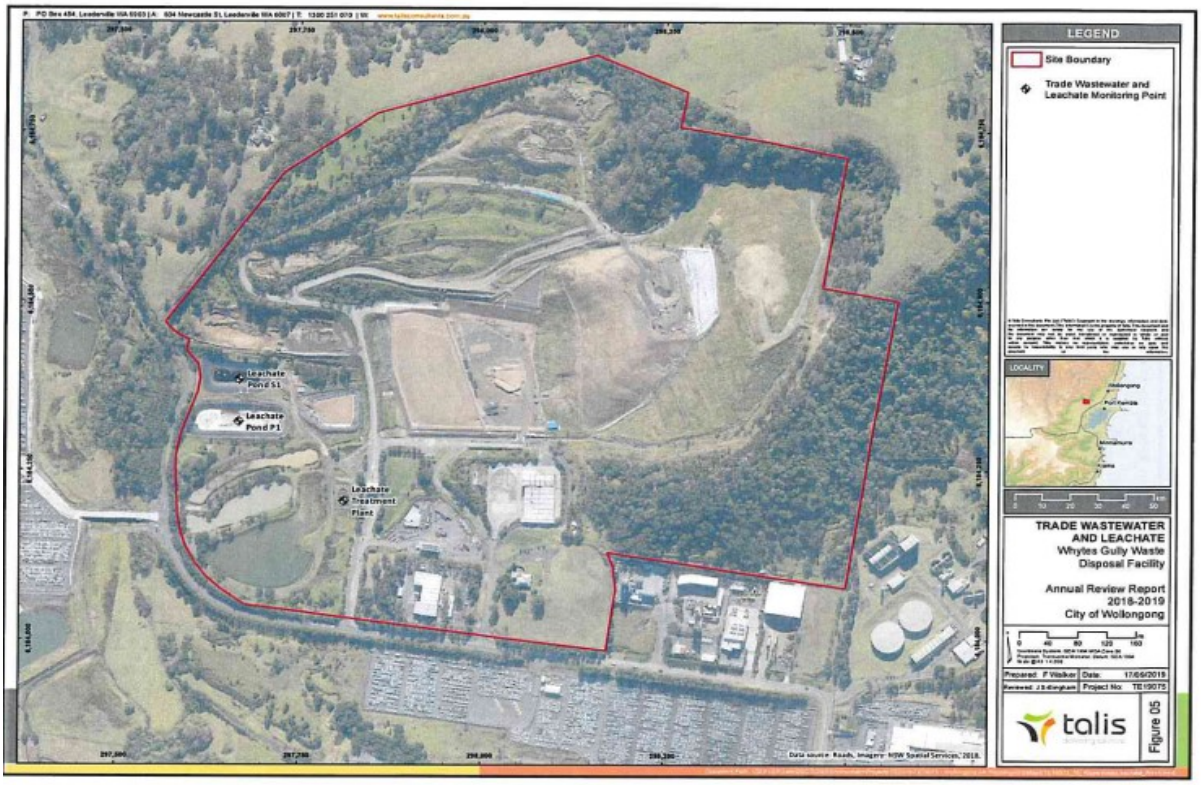


Figure 5: Landfill Gas Monitoring Locations

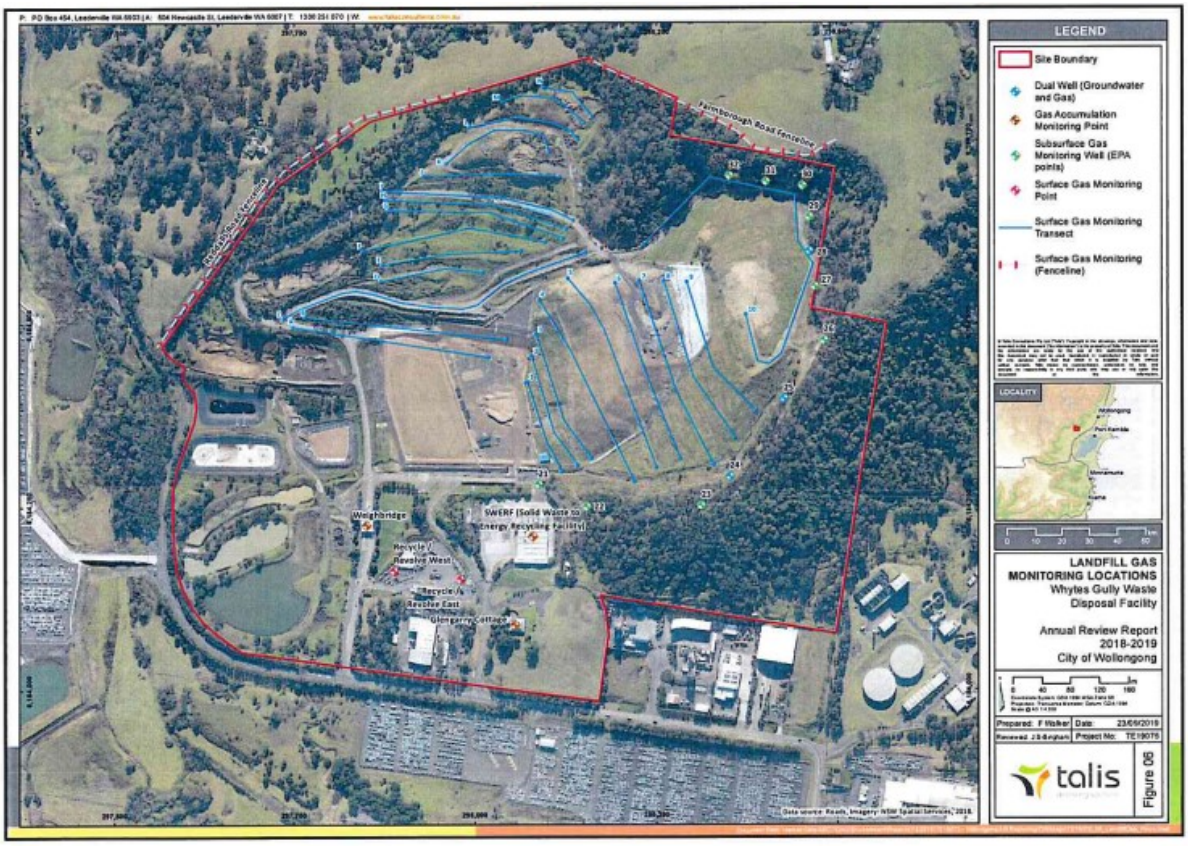


Figure 6: Dust Monitoring Locations

Appendix B

Table 1: Groundwater Results 2023/24 Reporting Period

		Alkalinity (as calcium carbonate)	Aluminium	Ammonia	Arsenic	Barium	Benzene	Cadmium	Calcium	Chloride	Chromium (hexavalent)	Chromium (Total)	Cobalt	Conductivity	Copper	Depth	Ethyl benzene	Fluoride
Units		mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	Meters	µg/L	mg/L
Site Name	Sample Date																	
(Point 5) - GABH02	15/11/2023	846		<0.01					285	1070				4550		5.03		
	05/02/2024	958	8.80	0.03	0.001	0.067	<1	<0.0001	293	1250	<0.01	0.016	0.009	5330	0.012	4.56	<2	0.6
	15/05/2024	828		0.33					118	1040				4100		4.34		
(Point 9) - GMW102	15/11/2023	104		<0.01					19	18				296		4.25		
	05/02/2024	100	4.96	0.42	<0.001	0.038	<1	<0.0001	21	19	<0.01	0.002	0.007	267	0.012	6.90	<2	0.1
(Point 10) - GMW103	15/08/2023	438		<0.01					122	222				1340		7.98		
	15/11/2023	398		<0.01					131	268				1650		7.47		
	05/02/2024	593	4.97	0.13	0.002	0.024	<1	<0.0001	128	68	<0.01	0.005	0.017	1440	0.018	7.60	<2	0.4
	15/05/2024	576		<0.01					96	61				1210		6.03		
(Point 11) - GMW104	15/11/2023	340	5.88	0.03		0.022		<0.0001	54	139		0.004	0.005	1100	0.013	7.72		
	05/02/2024	147	11.2	0.03	<0.001	0.036	<1	<0.0001	28	64	<0.01	0.004	0.006	544	0.017	6.70	<2	0.5
(Point 12) - GMW105	15/11/2023	39		<0.01					4	28				200		11.21		
	05/02/2024	43	8.31	<0.01	<0.001	0.030	<1	0.0001	10	30	<0.01	0.004	0.007	203	0.012	10.53	<2	0.2
	15/05/2024	16		<0.01					5	40				175		6.57		
(Point 14) - GMW108S	15/08/2023	423		0.12					118	516				2170		2.65		
	15/11/2023	205		0.04					40	201				920		2.54		
	05/02/2024	252	3.64	0.11	<0.001	0.076	<1	<0.0001	44	93	<0.01	0.002	0.004	758	0.005	2.31	<2	0.3
	15/05/2024	127		0.03					26	22				282		2.15		
(Point 15) - GMW108D	15/08/2023	491		0.17					144	623				2640		2.17		
	15/11/2023	307		0.28					87	423				1750		2.11		
	05/02/2024	409	9.18	0.24	0.001	0.174	<1	<0.0001	149	572	<0.01	0.006	0.010	2320	0.018	1.85	<2	0.3
	15/05/2024	156		0.10					40	58				447		1.67		
(Point 16) - GMW109S	15/08/2023	218	0.58	0.51		0.143		<0.0001	115	362		<0.001	0.043	1440	0.008	3.42		
	15/11/2023	224	0.84	0.41		0.164		<0.0001	163	664		<0.001	0.047	1850	0.002	3.14		
	05/02/2024	288	9.46	0.17	0.004	0.277	<1	0.0004	127	377	<0.01	0.012	0.051	1700	0.037	3.40	<2	0.2
	15/05/2024	685		0.32					144	253				2320		2.60		
(Point 17) - GMW110	15/08/2023	631		<0.01					209	825				3560		4.12		
	15/11/2023	563		<0.01					198	813				3590		4.03		
	05/02/2024	647	0.76	0.03	<0.001	0.004	<1	<0.0001	208	924	<0.01	<0.001	<0.001	3660	0.001	3.75	<2	0.4
	15/05/2024	581		<0.01					116	933				3550		3.60		
(Point 18) - GMW111	15/08/2023	727		0.29					166	834				3680		6.60		
	15/11/2023	610		0.02					142	789				3560		6.55		
	05/02/2024	691	7.77	0.13	0.001	0.075	<1	<0.0001	137	811	<0.01	0.005	0.009	3420	0.013	5.19	<2	0.4
	15/05/2024	586		0.11					49	633				2670		6.15		
(Point 19) - GMW109D	15/08/2023	231		0.10					113	504				1780		3.05		
	15/11/2023	208		0.11					103	517				1800		2.88		
	05/02/2024	240	0.38	0.14	<0.001	0.174	<1	<0.0001	111	524	<0.01	<0.001	0.003	1810	<0.001	2.82	<2	0.4
	15/05/2024	212		0.11					106	573				1770		2.43		
(Point 20) - BH6	15/08/2023	606		0.35					94	626				2680		2.65		
	15/11/2023	470		0.43					52	340				1830		2.46		
	05/02/2024	676	1.05	0.26	0.005	0.114	<1	<0.0001	87	669	<0.01	0.002	0.016	2760	0.006	2.22	<2	0.7
	15/05/2024	430		0.26					49	453				1870		2.24		

Table 1: Groundwater Results 2023/24 Reporting Period

		Lead	Magnesium	Manganese	Mercury	Nitrate as N	Nitrite as N	Organochlorine Pesticides	Organophosphate Pesticides	pH	Polycyclic aromatic hydrocarbons	Potassium	Sodium	Sulfate	Toluene	Total Dissolved Solids	Total organic carbon	Total Petroleum Hydrocarbons	Total Phenolics	Xylene	Zinc
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH	µg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L
Site Name	Sample Date																				
(Point 5) - GABH02	15/11/2023		188							6.6		2	563	183		3370	3				
	05/02/2024	0.004	204	0.529	<0.0001	<0.01	0.01	<0.5	<0.5	6.7	<0.5	3	599	152	<2	3480	<1	<100	<0.05	<2	0.039
	15/05/2024		168							6.5		2	516	166		2940	2				
(Point 9) - GMW102	15/11/2023		8							6.8		<1	30	14		333	3				
	05/02/2024	0.002	8	0.666	<0.0001	<0.01	<0.01	<0.5	<0.5	6.7	<0.5	2	24	10	<2	196	5	<100	<0.05	<2	0.037
(Point 10) - GMW103	15/08/2023		42							7.0		1	151	85		902	2				
	15/11/2023		49							7.1		<1	157	80		1060	<1				
	05/02/2024	0.014	47	0.469	<0.0001	<0.01	0.03	<0.5	<0.5	7.3	<0.5	2	153	52	<2	876	<1	<100	<0.05	<2	0.029
	15/05/2024		48							7.0		1	150	60		800	<1				
(Point 11) - GMW104	15/11/2023	0.004	35	0.607						7.3		<1	143	66		692	2				0.023
	05/02/2024	0.005	18	0.562	<0.0001	0.02	<0.01	<0.5	<0.5	6.8	<0.5	2	68	36	<2	394	4	<20	<0.05	<2	0.026
(Point 12) - GMW105	15/11/2023		2							6.1		<1	32	11		214	2				
	05/02/2024	0.006	4	0.276	<0.0001	1.30	<0.01	<2.0	<0.5	6.2	<0.5	2	32	10	<2	185	1	<100	<0.05	<2	0.030
	15/05/2024		3							5.4		<1	31	10		175	11				
(Point 14) - GMW108S	15/08/2023		82							6.7		3	328	140		1430	3				
	15/11/2023		28							6.9		2	147	144		730	11				
	05/02/2024	0.002	24	0.344	<0.0001	<0.01	<0.01	<0.5	<0.5	7.5	<0.5	3	106	28	<2	573	6	<20	<0.05	<2	<0.005
	15/05/2024		9							6.8		4	30	6		222	5				
(Point 15) - GMW108D	15/08/2023		88							6.6		3	392	168		1760	3				
	15/11/2023		53							6.7		5	258	113		1200	6				
	05/02/2024	0.009	79	1.36	<0.0001	<0.01	<0.01	<0.5	<0.5	7.0	<0.5	8	293	120	<2	1690	3	<100	<0.05	<2	0.036
	15/05/2024		16							6.8		6	47	20		333	7				
(Point 16) - GMW109S	15/08/2023	0.007	72	5.60						6.1		3	105	81		1040	5				0.045
	15/11/2023	0.001	104	7.66						6.3		3	176	103		2140	3				0.019
	05/02/2024	0.019	81	5.98	<0.0001	0.01	<0.01	<0.5	<2.0	6.3	<0.5	4	144	100	<2	1340	4	<100	<0.05	<2	0.103
	15/05/2024		113							6.5		4	194	458		1830	32				
(Point 17) - GMW110	15/08/2023		160							6.5		2	495	334		2490	2				
	15/11/2023		157							6.7		1	472	346		2750	<1				
	05/02/2024	<0.001	163	0.035	<0.0001	6.08	0.02	<2.0	<2.0	6.8	<0.5	2	490	297	<2	2720	1	<100	<0.05	<2	<0.005
	15/05/2024		156							6.5		2	479	351		2550	<1				
(Point 18) - GMW111	15/08/2023		142							6.7		3	614	320		2500	2				
	15/11/2023		128							6.9		2	558	300		2500	<1				
	05/02/2024	0.005	121	1.71	<0.0001	0.02	<0.01	<0.5	<0.5	7.3	<0.5	3	555	228	<2	2300	<1	<100	<0.05	<2	0.037
	15/05/2024		89							6.8		1	449	203		1790	24				
(Point 19) - GMW109D	15/08/2023		58							6.7		1	205	20		1310	<1				
	15/11/2023		57							6.8		1	207	25		1460	<1				
	05/02/2024	<0.001	61	0.898	<0.0001	<0.01	<0.01	<0.5	<0.5	6.9	<0.5	1	209	23	<2	1330	<1	<100	<0.05	<2	<0.005
	15/05/2024		58							6.7		2	199	23		1380	<1				
(Point 20) - BH6	15/08/2023		74							6.7		2	442	72		1730	16				
	15/11/2023		44							6.8		1	322	38		1210	14				
	05/02/2024	0.005	74	2.59	<0.0001	0.02	<0.01	<0.5	<0.5	6.9	<0.5	2	479	55	<2	1760	14	<20	<0.05	<2	0.013
	15/05/2024		51							6.7		2	313	68		1220	9				

Table 2 – Stormwater Results 2023/24 Reporting Period

		Alkalinity (as calcium carbonate)	Ammonia	Calcium	Chloride	Conductivity	Dissolved Oxygen	Filterable iron	Fluoride	Magnesium	Nitrate as N	pH	Potassium	Sodium	Sulfate	Temperature	Total organic carbon	Total Phenolics	Total suspended solids
Units		mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	pH	mg/L	mg/L	mg/L	°C	mg/L	mg/L	mg/L
Site Name	Sample Date																		
(Point 1)	06/11/2023	179	0.07	26	180	969	8.58	<0.05	0.4	24	1.06	8.6	20	128	51	19.3	18	<0.05	62
	07/11/2023	189	0.07	45	115	702	5.20	<0.05	0.3	24	0.67	7.6	11	85	55	19.1	11	<0.05	50
	08/11/2023	173	0.40	25	141	844	8.02	<0.05	0.3	22	1.16	8.2	18	114	47	24.1	15	<0.05	21
	09/11/2023	173	0.35	26	142	847	7.94	<0.05	0.4	24	1.17	8.3	18	123	49	26.6	14	<0.05	31
	10/11/2023	160	0.21	29	112	684	7.17	<0.05	0.3	19	0.98	7.8	14	91	44	21.7	14	<0.05	25
	11/11/2023	167	0.41	24	130	792	7.91	0.07	0.4	22	1.17	8.2	16	106	42	27.1	15	<0.05	8
	12/11/2023	168	0.41	25	133	760	8.26	<0.05	0.4	22	1.21	8.0	17	106	49	25.1	14	<0.05	9
	13/11/2023	170	0.44	27	131	813	8.01	<0.05	0.4	24	1.05	7.8	18	108	41	25.1	14	<0.05	6
	14/11/2023	173	0.20	28	141	772	5.95	<0.05	0.4	25	1.23	7.5	18	110	40	21.9	14	<0.05	6
	15/11/2023	156	0.51	27	124	816	7.85	<0.05	0.4	21	0.95	8.0	18	105	39	24.8	14	<0.05	<5
	16/11/2023	181	0.54	27	139	821	7.48	0.08	0.4	24	0.83	8.0	17	126	42	24.5	15	<0.05	<5
	17/11/2023	178	0.17	28	146	790	5.60	<0.05	0.3	21	1.12	7.6	17	107	41	22.4	14	<0.05	10
	29/11/2023	169	0.56	29	101	700	8.06	<0.05	0.4	19	0.63	7.5	14	83	41	24.7	13	<0.05	18
	30/11/2023	160	0.52	28	69	609	8.16	<0.05	0.3	18	0.83	7.8	12	71	42	21.8	13	<0.05	48
	01/12/2023	149	0.50	30	67	588	8.08	<0.05	0.3	18	0.88	7.9	13	68	34	22.6	12	<0.05	13
	02/12/2023	156	0.40	29	58	573	7.73	<0.05	0.4	16	0.31	7.9	12	65	44	23.3	11	<0.05	<5
	03/12/2023	149	0.50	28	55	560	7.32	<0.05	0.3	16	0.28	7.9	11	61	41	25.4	13	<0.05	<5
	04/12/2023	151	0.41	34	57	558	7.85	<0.05	0.3	16	0.68	8.0	12	63	41	26.4	12	<0.05	8
	05/12/2023	151	0.33	31	53	558	7.60	<0.05	0.3	16	1.06	7.9	12	62	41	27.4	13	<0.05	<5
	06/12/2023	152	0.35	31	57	560	7.80	<0.05	0.3	16	1.08	8.0	12	63	41	25.0	13	<0.05	<5
	20/12/2023	163	0.24	26	56	590	8.00	<0.05	0.3	18	0.54	8.2	12	64	39	24.7	12	<0.05	<5
	21/12/2023	151	0.36	32	56	593	7.87	<0.05	0.3	17	1.58	8.0	11	63	40	23.0	14	<0.05	<5
	22/12/2023	160	0.54	33	62	586	7.56	<0.05	0.7	17	0.45	7.9	11	62	36	23.3	14	<0.05	<5
	09/01/2024	165	0.03	32	56	578	10.3	<0.05	0.3	17	0.15	8.9	10	61	36	26.0	14	<0.05	6
	10/01/2024	178	0.06	34	60	605	9.26	<0.05	0.4	18	0.13	9.0	11	64	37	26.6	7	<0.05	<5
	11/01/2024	178	0.03	34	60	615	10.4	<0.05	0.4	18	<0.10	9.5	11	63	37	28.0	14	<0.05	19
	12/01/2024	162	<0.01	24	54	602	10.0	<0.05	0.3	18	<0.01	9.3	11	64	39	29.0	14	<0.05	23
	05/02/2024	191	0.06	30	70	680	7.08	<0.05	0.3	19	0.02	8.2	11	71	30	28.8	11	<0.05	6
	07/02/2024	189	0.17	30	67	352	9.01	<0.05	0.3	19	0.09	7.7	12	67	26	19.4	12	<0.05	6
	13/02/2024	180	0.20	30	70	635	7.82	<0.05	0.4	20	0.07	8.1	14	70	30	26.0		<0.05	14
	20/03/2024	199	0.21	32	78	677	7.24	<0.05	0.4	22	0.04	8.1	13	85	27	23.9	16	<1.00	14
	21/03/2024	200	0.36	33	79	713	8.44	<0.05	0.4	21	0.07	8.1	12	85	26	25.5	16	<1.00	6
	22/03/2024	201	0.19	33	81	702	8.58	<0.05	0.4	21	0.04	8.2	13	88	27	23.6	14	<1.00	18

Table 2 continued – Stormwater Results 2023/24 Reporting Period

05/04/2024	190	0.20	29	78	666	9.23	<0.05	0.4	19	0.09	8.2	10	72	30	20.6	14	<0.05	14
06/04/2024	95	2.54	28	35	373	7.59	0.09	0.3	19	0.54	7.8	12	45	14	21.8	12	<0.05	986
07/04/2024	98	2.83	27	39	371	7.12	0.08	0.3	15	0.23	7.6	13	44	14	20.9	12	<0.05	504
08/04/2024	124	3.69	30	42	455	6.52	<0.05	0.3	15	0.10	7.5	17	49	15	22.4	13	<0.05	242
09/04/2024	129	3.91	25	47	509	7.59	<0.05	0.3	13	0.44	7.7	14	49	15	19.0	14	<0.05	131
10/04/2024	124	3.42	25	46	488	8.12	<0.05	0.3	14	<0.01	7.9	14	49	15	18.9	11	<0.05	142
11/04/2024	127	2.59	25	48	488	8.58	<0.05	0.3	13	<0.01	7.6	16	52	55	16.9	21	<0.05	148
12/04/2024	131	3.44	27	50	502	8.04	<0.05	0.3	16	<0.01	7.7	17	51	15	18.1	14	<0.05	106
06/05/2024	178	1.91	29	84	675	9.94	<0.05	0.3	17	6.10	8.0	18	78	25	16.6	18	<0.05	57
07/05/2024	164	1.54	28	61	597	9.71	<0.05	0.4	13	5.16	8.1	14	75	25	16.3	15	<0.05	79
08/05/2024	165	2.57	30	71	666	9.16	<0.05	0.4	16	3.68	8.0	18	86	25	17.8	18	<0.05	42
09/05/2024	170	4.73	30	84	657	8.21	0.06	0.4	17	2.10	7.7	22	94	28	17.1	22	<0.05	50
10/05/2024	186	5.26	35	80	818	7.29	<0.05	0.4	18	1.00	7.7	22	98	27	17.0	24	<0.05	75
11/05/2024	112	1.93	22	36	350	8.50	0.14	0.2	10	0.58	7.4	12	46	<10	16.9	19	<0.05	20
12/05/2024	233	7.26	35	66	618	6.94	0.08	0.3	18	<0.01	8.4	22	93	21	17.0	37	<0.05	201
13/05/2024	273	11.4	35	102	824	5.67	0.09	0.3	18	<0.01	8.9	27	99	20	17.8	7	<0.05	124
14/05/2024	249	12.2	35	104	875	5.52	0.08	0.3	18	<0.05	8.6	28	98	19	17.3	26	<0.05	90
15/05/2024	263	12.5	36	123	887	6.95	0.09	<0.1	17	<0.01	8.8	28	117	19	17.8	36	<0.05	57
16/05/2024	284	12.4	38	119	762	7.41	0.09	0.3	19	<0.05	8.8	30	105	18	18.0	38	<0.05	38
17/05/2024	271	12.3	37	105	912	6.75	0.15	0.3	18	<0.01	8.7	30	118	18	17.0	34	<0.05	55
18/05/2024	280	13.3	38	173	946	6.48	0.09	0.3	18	<0.05	8.6	31	121	25	16.4	35	<0.05	33
19/05/2024	293	13.7	39	110	981	6.80	0.07	0.3	19	<0.05	8.6	32	126	18	16.0	36	<0.05	25
20/05/2024	298	13.8	41	124	795	8.73	0.08	0.3	18	<0.10	8.6	32	115	20	14.7	36	<0.05	15
21/05/2024	306	12.8	37	132	809	8.19	0.10	0.3	20	<0.01	8.6	31	117	19	15.5	33	<0.05	10
22/05/2024	325	16.4	41	137	826	8.55	0.09	0.3	20	<0.01	8.8	32	114	19	15.8	34	<0.05	16
23/05/2024	331	12.8	38	149	815	9.19	0.11	0.3	20	<0.05	8.7	32	120	26	14.8	34	<0.05	24

Table 2 continued – Stormwater Results 2023/24 Reporting Period

		Alkalinity (as calcium carbonate)	Ammonia	Calcium	Chloride	Conductivity	Dissolved Oxygen	Filterable iron	Fluoride	Magnesium	Nitrate as N	pH	Potassium	Sodium	Sulfate	Temperature	Total organic carbon	Total Phenolics	Total suspended solids
Units		mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	pH	mg/L	mg/L	mg/L	°C	mg/L	mg/L	mg/L
Site Name	Sample Date																		
(Point 33)	06/11/2023	71	0.02	16	51	330	8.60	<0.05	0.1	7	0.50	7.4	4	30	25	19.4	7	<0.05	8
	07/11/2023	61	0.01	17	26	219	7.76	<0.05	<0.1	6	0.20	7.4	3	23	19	19.8	4	<0.05	<5
	08/11/2023	56	0.03	15	23	210	7.02	<0.05	<0.1	5	0.08	7.3	2	19	17	21.5	4	<0.05	6
	09/11/2023	75	0.03	18	35	289	6.96	<0.05	0.1	8	0.14	7.4	5	32	19	24.0	5	<0.05	9
	10/11/2023	85	0.01	22	36	297	7.74	<0.05	0.1	9	0.18	7.4	3	28	26	20.5	5	<0.05	<5
	11/11/2023	80	0.04	19	35	298	6.37	0.08	0.1	8	0.16	7.2	4	31	20	23.3	5	<0.05	24
	12/11/2023	90	0.05	21	41	342	5.78	0.10	0.2	9	0.13	7.3	4	36	21	23.7	6	<0.05	8
	13/11/2023	122	0.05	28	75	465	5.05	0.08	0.2	14	0.19	7.5	7	52	27	22.8	7	<0.05	7
	14/11/2023	136	0.07	32	77	473	6.63	<0.05	0.2	16	0.21	7.3	7	60	27	19.4	8	<0.05	<5
	15/11/2023	130	0.07	32	86	569	4.83	<0.05	0.3	15	0.24	7.2	8	64	30	22.3	8	<0.05	<5
	16/11/2023	158	0.05	31	95	562	6.12	0.09	0.3	16	0.20	7.5	8	72	32	21.0	10	<0.05	11
	17/11/2023	160	0.09	36	114	584	6.86	0.05	0.3	18	0.26	7.4	10	76	32	20.0	10	<0.05	<5
	29/11/2023	60	0.02	15	35	258	6.96	0.15	0.1	7	0.60	7.0	4	24	17	22.0	10	<0.05	27
	30/11/2023	72	0.04	17	32	279	7.58	0.09	0.1	8	0.42	7.6	4	27	20	19.6	8	<0.05	14
	01/12/2023	76	0.08	19	30	280	7.61	0.07	0.1	8	0.28	7.6	3	25	17	20.8	5	<0.05	<5
	02/12/2023	76	0.05	18	26	245	7.55	<0.05	0.1	8	0.08	7.3	2	22	16	21.9	5	<0.05	<5
	03/12/2023	81	0.06	18	30	286	7.52	0.09	0.1	8	0.26	7.3	4	27	20	21.1	9	<0.05	<5
	04/12/2023	79	0.07	22	26	259	7.55	0.07	0.1	8	0.10	7.6	3	25	14	22.9	5	<0.05	<5
	05/12/2023	81	0.06	18	27	251	7.37	0.11	<0.1	7	0.10	7.3	3	22	14	24.6	4	<0.05	<5
	06/12/2023	86	0.06	19	27	352	6.33	0.16	0.1	7	0.07	7.3	2	23	13	24.4	4	<0.05	<5
	20/12/2023	86	<0.01	18	28	358	8.61	0.09	0.1	7	0.14	7.8	3	24	17	19.4	8	<0.05	10
	21/12/2023	76	0.02	19	29	268	6.74	0.11	0.1	8	0.14	7.5	3	25	14	20.3	7	<0.05	<5
	22/12/2023	85	0.06	20	28	277	6.78	0.09	0.2	8	0.12	7.4	3	26	14	20.3	5	<0.05	<5
	09/01/2024	122	0.03	31	42	402	6.21	<0.05	0.2	14	0.07	7.5	3	34	13	22.6	5	<0.05	<5
	10/01/2024	154	0.43	33	50	467	6.46	0.09	0.4	15	0.05	7.6	5	45	21	23.8	2	<0.05	<5
	11/01/2024	156	0.05	34	52	503	5.84	0.13	0.3	16	0.54	7.6	6	47	22	25.1	7	<0.05	<5
	12/01/2024	157	0.02	29	51	494	6.15	0.07	0.3	15	0.02	7.5	5	46	19	25.9	8	<0.05	<5
	05/02/2024	145	0.02	31	44	422	4.10	0.15	0.2	14	0.02	7.5	3	33	8	25.6	4	<0.05	<5
	07/02/2024	85	0.03	19	33	258	7.70	0.07	0.1	8	0.15	7.4	4	27	11	20.9	7	<0.05	5
	13/02/2024	147	0.04	30	52	477	4.82	<0.05	0.3	15	0.08	7.3	6	49	19	23.4		<0.05	<5
	20/03/2024	87	1.04	32	29	271	7.04	0.09	0.1	23	0.05	7.7	14	85	11	22.7	5	<1.00	<5
	21/03/2024	108	0.05	23	37	432	8.43	0.10	0.2	9	0.09	7.1	4	37	14	17.5	8	<1.00	<5
	22/03/2024	101	0.03	22	35	287	8.90	0.17	0.3	9	0.06	7.2	4	35	13	18.8	6	<1.00	<5

Table 2 continued – Stormwater Results 2023/24 Reporting Period

05/04/2024	72	<0.01	18	28	272	10.0	0.21	0.1	8	0.70	7.7	3	21	17	18.5	8	<0.05	48
06/04/2024	34	0.03	10	20	155	9.29	0.20	0.1	4	0.58	7.1	3	14	10	21.2	6	<0.05	169
07/04/2024	62	0.02	16	29	199	9.49	0.07	0.1	7	0.40	7.4	3	20	15	19.9	5	<0.05	25
08/04/2024	79	0.02	24	32	249	9.30	<0.05	0.2	11	0.42	7.3	4	24	18	19.2	4	<0.05	6
09/04/2024	86	<0.01	22	34	320	9.91	<0.05	0.2	10	0.21	7.7	3	22	18	17.1	3	<0.05	<5
10/04/2024	91	0.01	23	35	337	10.4	<0.05	0.2	11	0.22	7.6	3	25	19	15.8	3	<0.05	<5
11/04/2024	103	<0.01	27	38	362	11.0	<0.05	0.1	13	0.18	7.4	3	28	19	14.3	3	<0.05	<5
12/04/2024	111	<0.01	28	40	367	10.3	<0.05	0.1	14	0.15	7.4	3	32	21	15.2	3	<0.05	<5
06/05/2024	46	<0.01	11	18	165	10.8	0.31	0.1	6	0.35	7.6	4	15	9	15.5	8	<0.05	154
07/05/2024	62	0.01	14	26	226	10.5	0.21	0.1	6	0.33	7.2	2	21	12	15.3	5	<0.05	16
08/05/2024	68	0.06	16	31	261	10.5	0.09	0.1	8	0.21	7.5	2	24	16	16.6	5	<0.05	42
09/05/2024	61	0.02	14	26	185	10.5	0.22	0.1	6	0.30	7.2	3	20	14	16.3	<1	<0.05	22
10/05/2024	71	0.01	19	28	266	10.5	0.10	0.1	9	0.21	7.5	3	24	19	15.7	4	<0.05	12
11/05/2024	44	0.01	10	16	123	10.8	0.38	<0.1	5	0.21	7.3	4	15	7	16.0	8	<0.05	229
12/05/2024	51	0.01	12	19	144	9.66	0.21	0.1	6	0.28	7.3	3	18	13	16.1	7	<0.05	39
13/05/2024	54	<0.01	13	22	190	9.37	0.20	0.1	7	0.22	8.2	2	18	14	16.8	5	<0.05	30
14/05/2024	58	0.02	16	27	232	9.70	0.08	0.1	8	0.21	7.4	2	20	16	16.5	4	<0.05	18
15/05/2024	69	0.02	19	30	262	9.73	<0.05	<0.1	9	0.19	7.8	3	24	18	17.8	4	<0.05	17
16/05/2024	76	<0.01	22	32	238	10.6	<0.05	0.1	11	0.17	7.5	2	23	18	16.4	3	<0.05	<5
17/05/2024	80	<0.01	23	35	307	9.59	0.05	0.1	10	0.16	7.5	3	26	19	14.8	3	<0.05	11
18/05/2024	87	0.04	25	35	325	9.95	<0.05	0.1	11	0.14	7.6	2	28	20	14.1	3	<0.05	8
19/05/2024	89	0.03	26	40	337	11.2	<0.05	0.1	12	0.13	7.5	2	29	22	13.2	3	<0.05	<5
20/05/2024	92	0.04	28	37	268	11.5	<0.05	0.1	12	0.13	7.6	3	27	23	13.2	2	<0.05	5
21/05/2024	101	<0.01	27	37	280	10.9	<0.05	0.1	14	0.12	7.4	2	28	24	14.6	3	<0.05	<5
22/05/2024	112	<0.01	33	44	301	10.5	<0.05	0.1	14	0.08	8.0	2	30	25	15.0	2	<0.05	<5
23/05/2024	106	<0.01	29	39	285	11.8	<0.05	0.1	14	0.09	7.8	2	29	26	13.1	2	<0.05	<5

Table 3: Trade Waste Results 2023/24 Reporting Period

		Ammonia	Biochemical Oxygen Demand	Electrical Conductivity @ 25°C	Temperature	Total Dissolved Solids (Calc.)	Total suspended solids	Volume Discharged	Meter Reading (start)	Meter Reading (finish)	pH (start)	pH (finish)
Units		mg/L	mg/L	µS/cm	°C	mg/L	mg/L	kL	kL	kL	pH	pH
Site Name	Sample Date											
11205 Comp - Composite	06/06/2023	<0.1	6	6570		4270	57	143	220655.78	220799.00		
	29/06/2023	65.8	73	7410		4820	43	13.7	223954.56	223968.28		
	13/07/2023	25.2	85	7290		4740	29	13.1	224202.70	224215.83		
	19/07/2023	2.5	12	7640		4970	18	173	224356.49	224529.69		
	09/08/2023	<0.1	21	8550		5560	26	168	227777.28	227945.66		
	30/08/2023	<0.1	6	8660		5630	28	168	231236.94	231405.34		
	19/09/2023	0.6	13	10300		6700	56	92.5	233145.45	233237.96		
	27/09/2023	0.3	5	11200		7280	36	105	233939.05	234044.01		
	25/10/2023	0.6	16	10900		7080	27	48.3	236353.62	236401.96		
	14/11/2023	7.8	<2	7270		4720	22	163	237938.79	238101.47		
	13/12/2023	0.6	<2	5240		3410	5	168	242660.68	242828.70		
	22/12/2023	<0.1	5	5270		3420	27	153	244119.08	244272.11		
	17/01/2024	<0.1	3	5400		3510	17	212	248684.70	248896.23		
	06/02/2024	7.3	58	5720		3720	81	255	252961.66	253217.12		
	29/02/2024	11.8	30	5380		3500	44	136	258375.71	258512.21		
	26/03/2024	4.2	38	6190		4020	38	267	264499.78	264766.78		
	18/04/2024	12.3	26	4290		2790	33	204	269877.10	270081.24		
	07/05/2024	17.9	27	5150		3350	36	232	274186.58	274418.80		
	27/05/2024	32.5	46	3780		2460	26	213	278803.30	279016.48		
11205 Dis - Discrete Start	05/06/2023										7.7	
	28/06/2023										7.7	
	12/07/2023										7.7	
	18/07/2023										8.0	
	08/08/2023										7.5	
	29/08/2023										7.6	
	18/09/2023										7.6	
	26/09/2023										7.6	
	24/10/2023										7.6	
	13/11/2023										7.5	
	12/12/2023										7.5	
	21/12/2023										7.4	
	16/01/2024										7.3	
	05/02/2024										7.3	
	28/02/2024										7.8	
	25/03/2024										7.5	
	17/04/2024										8.2	
	06/05/2024										7.4	
	28/05/2024										8.1	
11205 Dis fin - Discrete Finish	06/06/2023				19							7.6
	29/06/2023				9							7.7
	13/07/2023				10							7.8
	19/07/2023				17							8.5
	09/08/2023				16							7.5
	30/08/2023				18							7.6
	19/09/2023				32							7.5
	27/09/2023				26							7.6
	25/10/2023				29							7.9
	14/11/2023				23							7.6
	13/12/2023				29							7.7
	22/12/2023				24							7.5
	17/01/2024				25							7.5
	06/02/2024				27							7.4
	29/02/2024				28							8.0
	26/03/2024				30							7.4
	18/04/2024				20							7.7
	07/05/2024				19							7.6
	28/05/2024				16							8.2

Table 4: Subsurface Gas Results 2023/24 Reporting Period

			Bal	Baro	CH4	CH4 Peak	CO	CO2	CO2 Peak	Flow	H2S	Relative Pressure	SWL	Well Depth
Units			%	hPa	%v/v	%v/v	ppm	%v/v	%v/v	l/h			Meters	Meters
Monitoring Point ID	Sample ID	Sample Date												
21	LFG MW1	20/06/2023	78.3	1011	0	0	0	0.1	0.1	2.7	0	0	3.22	10.2
		21/07/2023	82.5	1007	0	0	0	0	0.3	0.1	0	0.02	3.5	10.2
		15/08/2023	78.8	1010	0.1	0.1	0	0.3	1.8	0.2	0	0.10	3.72	10.20
		19/09/2023	78.5	1010	<0.1	<0.1	0	2.6	3.9	<0.1	0	0.05	4.05	10.20
		16/10/2023	80.4	1005	<0.1	<0.1	1	0.1	0.2	<0.0	0	0.02	4.01	10.20
		14/11/2023	79.9	1005	<0.1	<0.1	1	0.2	0.6	0.1	0	0.05	3.90	10.20
		12/12/2023	79.1	1010	<0.1	<0.1	0	0.2	0.4	<0.1	0	0.10	3.63	10.20
		24/01/2024	79.2	1005	<0.1	<0.1	0	0.5	0.5	<0.1	0	-0.02	3.15	10.20
		27/02/2024	79.6	1009	<0.1	<0.1	1	0.1	0.1	5.7	0	-0.02	3.05	10.20
		25/03/2024	79.2	1018	<0.1	<0.1	0	0.2	0.3	<0.1	0	0.05	3.29	10.20
		17/04/2024	79.5	1016	<0.1	<0.1	0	0.1	0.1	<0.1	0	0.00	3.10	10.20
		29/05/2024	79.2	0.00	<0.1	<0.1	0	0.1	0.1	<0.1	0	1023	2.61	10.20
22	LFG MW2	20/06/2023	78.6	1011	0	0.1	0	0.1	1.7	0.2	0	0.03	DRY	10.36
		21/07/2023	98	1007	0	0	0	0.1	1.6	0.1	0	0	DRY	10.36
		15/08/2023	78.6	1010	0.9	1.0	5	0.3	0.3	-0.3	0	0.03	DRY	10.36
		19/09/2023	81.9	1004	<0.1	<0.1	0	1.0	2.7	<0.1	0	0.03	DRY	10.36
		16/10/2023	80.1	1005	0.1	0.1	1	0.2	0.2	0.3	0	-0.05	DRY	10.36
		14/11/2023	80.1	1005	<0.1	<0.1	1	<0.1	1.0	0.2	0	0.03	DRY	10.36
		12/12/2023	79.6	1010	<0.1	<0.1	0	<0.1	3.5	0.4	0	0.07	9.28	10.36
		24/01/2024	79.4	1005	<0.1	<0.1	0	0.1	0.1	<0.1	0	-0.07	9.22	10.36
		27/02/2024	79.6	1009	<0.1	<0.1	1	<0.1	2.6	0.2	0	-0.03	10.21	10.36
		25/03/2024	79.5	1018	<0.1	<0.1	0	0.1	0.2	<0.1	0	0.02	10.45	10.36
		17/04/2024	79.6	1016	<0.1	<0.1	0	0.1	0.1	<0.1	0	0.03	9.12	10.36
		29/05/2024	79.0	0.02	<0.1	<0.1	0	0.1	0.1	<0.1	0	1023	8.87	10.36
23	LFG MW3	20/06/2023	77.7	1011	0	0	0	1.9	1.9	0.2	0	0	7.72	10.52
		21/07/2023	79.4	1007	0	0	0	1.5	4.4	0.1	0	0	5.8	10.52
		15/08/2023	80.9	1010	<0.1	0.1	0	1.8	1.8	0.2	0	0.12	5.11	10.52
		19/09/2023	79.3	1004	<0.1	<0.1	0	2.2	2.2	0.1	0	0.04	5.65	10.52
		16/10/2023	78.8	1005	<0.1	<0.1	1	1.4	1.6	0.3	0	0.14	5.69	10.52
		14/11/2023	80.2	1005	<0.1	<0.1	1	1.1	1.1	0.3	0	0.07	5.49	10.52
		12/12/2023	80.1	1010	<0.1	<0.1	0	3.3	4.4	0.4	0	0.07	5.72	10.52
		24/01/2024	79.6	1005	<0.1	<0.1	0	2.9	2.9	<0.1	0	-0.02	5.60	10.52
		27/02/2024	79.9	1009	<0.1	<0.1	0	2.6	2.8	0.3	0	0.03	5.33	10.52
		25/03/2024	80.0	1012	<0.1	<0.1	0	4.9	5.3	<0.1	0	0.02	5.55	10.52
		17/04/2024	79.8	1016	<0.1	<0.1	0	1.8	1.8	<0.1	0	0.03	5.26	10.52
		29/05/2024	79.2	-0.03	<0.1	<0.1	0	2.4	2.4	<0.1	0	1019	5.19	10.52
24	LFG MW4	20/06/2023	79.1	1011	0	0	0	1.4	1.4	0.1	0	0.05	8.16	9.27
		21/07/2023	77.5	1007	0	0	0	5	8.1	0.4	0	0.04	8.25	9.27
		15/08/2023	79.1	1010	<0.1	<0.1	0	1.0	2.0	0.2	0	0.00	8.34	9.27
		19/09/2023	82.4	1004	<0.1	<0.1	0	8.8	8.8	<0.1	0	-0.12	8.88	9.27
		16/10/2023	79.5	1005	<0.1	<0.1	1	1.2	7.6	0.3	0	-0.04	8.97	9.27
		14/11/2023	80.3	1005	<0.1	<0.1	2	0.2	0.3	0.2	0	0.09	9.11	9.27
		12/12/2023	80.9	1010	<0.1	<0.1	0	4.9	5.2	0.4	0	0.12	DRY	9.39
		24/01/2024	81.3	1005	<0.1	<0.1	0	4.0	4.0	<0.1	0	0.05	8.68	9.27
		27/02/2024	81.3	1009	<0.1	<0.1	0	2.8	2.8	0.3	0	0.03	9.40	9.4
		25/03/2024	82.0	1011	<0.1	<0.1	0	5.3	5.3	<0.1	0	-0.05	DRY	9.27
		17/04/2024	80.1	1016	<0.1	<0.1	0	0.6	0.6	<0.1	0	0.02	DRY	9.27
		29/05/2024	79.4	0.05	<0.1	<0.1	0	0.4	0.4	<0.1	0	1019	8.23	9.27
25	LFG MW5	20/06/2023	78.8	1011	0	0	0	0.2	0.2	0.1	0	0.02	11.13	12.03
		21/07/2023	78.6	1007	0	0	0	8.1	0.1	0.2	0	-0.02	11.27	12.03
		15/08/2023	78.7	1010	<0.1	<0.1	0	1.9	1.9	0.3	0	0.12	11.42	12.03
		19/09/2023	81.8	1004	<0.1	<0.1	0	4.8	4.8	<0.1	0	0.00	11.51	12.03
		16/10/2023	78.6	1005	<0.1	<0.1	2	8.9	8.9	0.2	0	-0.02	11.59	12.03
		14/11/2023	80.1	1005	<0.1	<0.1	1	<0.1	2.1	0.2	0	0.02	11.20	12.03
		12/12/2023	80.1	1010	<0.1	0.1	0	4.7	5.4	0.3	0	0.10	10.13	12.03
		24/01/2024	79.5	1005	<0.1	<0.1	0	0.1	0.1	<0.1	0	0.02	10.27	12.03
		27/02/2024	80.3	1009	<0.1	<0.1	0	1.7	1.7	0.4	0	0.02	10.79	12.03
		25/03/2024	80.4	1010	<0.1	<0.1	0	2.4	2.4	<0.1	0	0.02	10.98	12.03
		17/04/2024	84.9	1016	<0.1	<0.1	0	9.4	9.4	<0.1	0	0.03	9.78	12.03
		29/05/2024	84.5	0.03	<0.1	<0.1	0	8.2	8.2	<0.1	0	1018	8.93	12.03

26	LFG MW6	20/06/2023	78.4	1011	0	0	0	0.1	0.3	0.1	0	0.05	DRY	10.85
		21/07/2023	78	1007	0	0	0	0	0.5	0.2	0	0.11	DRY	10.85
		15/08/2023	79.3	1010	<0.1	<0.1	0	0.1	0.6	0.2	0	0.03	DRY	10.85
		19/09/2023	82.1	1004	<0.1	<0.1	0	4.8	4.8	<0.1	0	0.14	DRY	10.85
		16/10/2023	79.3	1005	<0.1	<0.1	0	0.1	0.5	0.2	0	0.04	DRY	10.85
		14/11/2023	80.9	1005	<0.1	<0.1	1	2.0	2.0	0.1	0	0.09	DRY	10.85
		12/12/2023	79.1	1013	<0.1	<0.1	0	0.1	0.3	0.2	0	0.07	DRY	10.85
		24/01/2024	79.5	1005	<0.1	<0.1	0	0.8	0.8	<0.1	0	0.02	DRY	10.85
		27/02/2024	81.2	1011	<0.1	<0.1	0	3.0	3.0	0.5	0	0.02	10.84	10.85
		25/03/2024	79.7	1010	<0.1	<0.1	0	0.2	0.2	<0.1	0	0.05	DRY	10.85
		17/04/2024	80.2	1016	<0.1	<0.1	0	1.5	1.5	<0.1	0	0.00	DRY	10.85
		29/05/2024	79.3	0.05	<0.1	<0.1	0	0.6	0.6	<0.1	0	1020	DRY	10.85
27	LFG MW7	20/06/2023	78.3	1011	0	0.1	0	0.3	0.4	0.1	0	0.12	7.83	12.33
		21/07/2023	95.5	1008	0	0.1	0	0.2	1.4	0	0	0.04	7.9	12.33
		15/08/2023	79.5	1010	<0.1	<0.1	0	0.7	0.9	0.2	0	0.07	8.02	12.33
		19/09/2023	80.4	1004	<0.1	<0.1	0	0.3	0.3	<0.1	0	0.03	8.17	12.33
		16/10/2023	79.5	1005	<0.1	<0.1	1	0.5	0.5	0.1	0	-0.04	8.20	12.33
		14/11/2023	80.7	1005	<0.1	<0.1	0	0.9	0.9	0.2	0	0.15	8.09	12.33
		12/12/2023	79.2	1013	<0.1	<0.1	0	0.3	1.0	0.3	0	0.03	7.74	12.33
		24/01/2024	79.6	1005	<0.1	<0.1	0	0.1	0.1	<0.1	0	-0.02	7.18	12.33
		27/02/2024	80.1	1011	<0.1	<0.1	0	0.4	0.5	0.2	0	0.00	7.49	12.33
		25/03/2024	79.8	1010	<0.1	<0.1	0	0.6	0.6	<0.1	0	-0.02	7.67	12.33
		17/04/2024	80.1	1016	<0.1	<0.1	0	0.8	0.8	<0.1	0	0.02	7.38	12.33
		29/05/2024	79.1	0.00	<0.1	<0.1	0	0.6	0.6	<0.1	0	1020	6.73	12.33

Table 4 Continued: Subsurface Gas Results 2023/24 Reporting Period

			Bal	Baro	CH4	CH4 Peak	CO	CO2	CO2 Peak	Flow	H2S	Relative Pressure	SWL	Well Depth
Units			%	hPa	%v/v	%v/v	ppm	%v/v	%v/v	l/h			Meters	Meters
Monitoring Point ID	Sample ID	Sample Date												
28	LFG MW8	20/06/2023	77.5	1011	0.1	0.1	0	0.1	0.7	0	0	0.03	7.73	10.37
		21/07/2023	79.1	1008	0	0.3	0	0.1	2.7	0.2	0	-0.04	7.76	10.37
		15/08/2023	79.5	1009	<0.1	<0.1	0	0.1	0.2	0.3	0	0.05	7.75	10.37
		19/09/2023	80.7	1004	<0.1	<0.1	0	0.1	0.1	0.1	0	-0.03	7.98	10.37
		16/10/2023	79.3	1005	<0.1	<0.1	0	0.2	1.2	0.1	0	0.02	7.76	10.37
		14/11/2023	80.3	1005	<0.1	<0.1	1	<0.1	1.2	0.2	0	0.05	7.42	10.37
		12/12/2023	79.1	1013	<0.1	<0.1	0	0.1	2.9	0.2	0	0.03	6.94	10.37
		24/01/2024	79.5	1005	<0.1	<0.1	0	0.1	0.1	<0.1	0	-0.02	7.02	10.37
		27/02/2024	80.0	1011	<0.1	<0.1	0	<0.1	1.4	0.3	0	0.00	7.61	10.37
		25/03/2024	79.4	1011	<0.1	<0.1	0	0.1	0.2	<0.1	0	0.09	7.67	10.37
		17/04/2024	79.5	1016	<0.1	<0.1	0	0.2	0.2	<0.1	0	0.00	7.00	10.37
		29/05/2024	79.1	0.07	<0.1	<0.1	0	0.1	0.2	<0.1	0	1020	6.66	10.37
29	LFG MW9	20/06/2023	78	1011	0.1	0.1	0	0.3	3.5	0.2	0	0.07	6.52	10.7
		21/07/2023	78.7	1008	0	0.1	0	1.3	5.1	0.1	0	-0.04	6.66	10.7
		15/08/2023	78.4	1008	<0.1	<0.1	0	1.0	1.0	0.3	0	0.03	6.75	10.70
		19/09/2023	79.4	1004	<0.1	<0.1	0	1.8	1.8	0.1	0	0.09	6.76	10.70
		16/10/2023	79.0	1005	<0.1	<0.1	1	0.7	2.9	0.2	0	0.05	6.71	10.70
		14/11/2023	81.4	1005	<0.1	<0.1	0	1.1	2.5	0.1	0	-0.02	5.45	10.70
		12/12/2023	81.0	1013	<0.1	<0.1	0	2.9	3.5	0.2	0	0.12	3.87	10.70
		24/01/2024	80.0	1005	<0.1	<0.1	0	1.8	1.8	<0.1	0	0.09	4.88	10.70
		27/02/2024	80.5	1011	<0.1	<0.1	0	1.1	4.5	0.4	0	0.02	5.92	10.70
		25/03/2024	80.1	1011	<0.1	<0.1	0	1.9	1.9	<0.1	0	0.00	5.82	10.70
		17/04/2024	80.5	1016	<0.1	<0.1	0	1.4	1.4	<0.1	0	-0.03	4.65	10.70
		29/05/2024	80.4	0.03	<0.1	<0.1	0	1.8	1.8	<0.1	0	1020	3.96	10.70
30	LFG MW10	20/06/2023	78.1	1011	0.1	0.1	0	3.5	3.5	0	0	0.03	10.15	12.38
		21/07/2023	78.2	1008	0.1	0.1	0	2.9	6.3	0.1	0	0	10.29	12.38
		15/08/2023	78.4	1008	<0.1	<0.1	0	1.0	1.5	0.6	0	0.12	10.37	12.38
		19/09/2023	79.9	1004	<0.1	<0.1	0	2.1	2.1	<0.1	0	0.03	10.58	12.38
		16/10/2023	79.9	1005	<0.1	<0.1	1	3.2	4.7	0.3	0	0.00	10.26	12.38
		14/11/2023	81.9	1005	<0.1	<0.1	0	2.7	3.2	0.2	0	0.07	9.89	12.38
		12/12/2023	83.7	1013	<0.1	<0.1	0	3.7	3.7	0.2	0	0.07	9.56	12.38
		24/01/2024	85.0	1007	<0.1	<0.1	0	5.2	5.2	<0.1	0	-0.03	10.00	12.38
		27/02/2024	82.6	1011	<0.1	<0.1	0	4.4	5.7	0.3	0	0.03	9.91	12.38
		25/03/2024	80.5	1011	<0.1	<0.1	0	3.2	4.7	<0.1	0	-0.05	10.28	12.38
		17/04/2024	81.3	1017	<0.1	<0.1	0	2.2	2.2	<0.1	0	-0.05	9.80	12.38
		29/05/2024	81.6	0.07	<0.1	<0.1	0	1.5	1.5	<0.1	0	1020	9.89	12.38
31	LFG MW11	20/06/2023	79.9	1011	0.1	0.1	0	2.7	2.7	0	0	0.03	5.59	9.36
		21/07/2023	79.7	1008	0.1	0.1	0	6.3	5.5	0.4	0	0	6.62	9.36
		15/08/2023	78.8	1008	<0.1	<0.1	0	1.4	5.1	0.1	0	0.07	5.34	9.36
		19/09/2023	81.1	1004	<0.1	<0.1	0	5.9	5.9	<0.1	0	0.03	5.60	9.36
		16/10/2023	80.3	1005	<0.1	<0.1	0	5.7	5.7	0.2	0	0.05	5.53	9.36
		14/11/2023	80.3	1005	<0.1	<0.1	2	3.4	3.4	0.1	0	0.00	4.39	9.36
		12/12/2023	80.0	1013	<0.1	<0.1	0	3.4	3.4	0.3	0	0.00	4.85	9.36
		24/01/2024	81.1	1007	<0.1	<0.1	0	6.0	6.0	<0.1	0	0.03	4.87	9.36
		27/02/2024	81.8	1011	<0.1	<0.1	0	6.5	6.5	0.2	0	0.14	5.39	9.36
		25/03/2024	80.4	1011	<0.1	<0.1	0	4.5	7.6	<0.1	0	0.02	5.22	9.36
		17/04/2024	80.7	1017	<0.1	<0.1	0	2.8	2.8	<0.1	0	0.00	4.78	9.36
		29/05/2024	79.3	-0.02	<0.1	<0.1	0	1.8	1.8	<0.1	0	1021	5.30	9.36
32	LFG MW12	20/06/2023	78.3	1011	0.1	0.1	0	2.4	2.4	0.1	0	0.02	5.05	10.46
		21/07/2023	81.3	1008	0.1	0.1	0	5.5	2.4	0.4	0	0.04	5.1	10.46
		15/08/2023	81.3	1008	<0.1	<0.1	0	5.2	5.2	0.3	0	0.02	5.05	10.46
		19/09/2023	82.1	1004	<0.1	<0.1	0	5.2	5.2	<0.1	0	0.03	4.93	10.46
		16/10/2023	80.6	1005	<0.1	<0.1	1	1.0	1.0	0.1	0	0.09	4.87	10.46
		14/11/2023	82.3	1005	<0.1	<0.1	1	2.6	2.6	0.2	0	0.12	4.16	10.46
		12/12/2023	82.0	1013	<0.1	<0.1	0	2.9	2.9	0.3	0	0.00	4.51	10.46
		24/01/2024	86.8	1007	<0.1	<0.1	0	8.2	8.2	<0.1	0	0.03	4.59	10.46
		27/02/2024	84.3	1011	<0.1	<0.1	0	6.1	6.1	0.3	0	0.00	4.99	10.46
		25/03/2024	87.2	1011	<0.1	<0.1	0	8.0	8.0	<0.1	0	-0.07	4.82	10.46
		17/04/2024	80.1	1018	<0.1	<0.1	0	6.5	6.6	<0.1	0	0.02	4.48	10.46
		29/05/2024	87.6	0.02	<0.1	<0.1	0	4.9	4.9	<0.1	0	1021	4.84	10.46

Table 5: Surface Gas Results 2023/24 Reporting Period

		21/06/2023	18/07/2023	16/08/2023	20/09/2023	17/10/2023	14/11/2023	12/12/2023	30/01/2024	28/02/2024	21/03/2024	23/04/2024	29/05/2024
Units		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Location	Sample Number												
Transect 1	1	1040											6.9
	10	460											
	11	9.2	6.5										
	12	41	22.8										
	2	160											3.4
	3	750											3.5
	4	812											
	5	1029											
	6	2325											
	7	3040											
	8	320											
	9	2234											
Transect 2	1												6.3
	2												6.0
	3												8.4
	4												12.1
Transect 3	1												12.9
	2												6.6
	3												5.2
	4												4.4
	5												4.9
Transect 4	1												8.2
	2												9.6
	3												8.5
	4												9.6
	5												8.2
	6												16.2
Transect 5	1												12.9
	2												13.2
	3												6.7
	4												7.2
	5												5.1
	6												4.8
Transect 6	1												6.3
	2												6.4
	3												7.5
	4												6.5
	5												9.4
	6												10.3
	7												10.2
Transect 7	1	34	26.2					55.2					31.6
	2	850	125					7.5					17.3
	3	2.6	1750					6.6					8.5
	4		2980					7.7					9.6
	5		2695					5.9					11.8
	6		425										5.6
Transect 8	1	300	17.3	14.3	5.6	6.0	7.5	4.8	2.8				18.8
	2	3020	10.7	5.9	12.7	6.1	5.3	403	3.0				11.4
	3		35.6	6.6	10.0	1.6	4.6	5.9	7010				16.5
	4		150	103	7.0	0.7	62.7	4.3	3.3				37.0
	5		698		7.8	0.7	14.6	4.8	2.9				182
	6		104			0.8							23.7
	7												255
Transect 9	1	48.3	10.4	9.0	5.1	0.4	0.1						31.6
	2	31	12.3	6.7	1.1	0.5	0.8						18.8
	3	38	22.4	4.1	9.7	11.5	18.5						12.2
	4	2480	44.5	15.8	6.8	10.4	1.8						8.0
	5	2495	26.5	10.5	6.4	8.2	1.0						11.2
	6	107	13	3.7		7.8	6.8						438
	7					1.8							

Table 5 Continued: Surface Gas Results 2023/24 Reporting Period

		21/06/2023	18/07/2023	16/08/2023	20/09/2023	17/10/2023	14/11/2023	12/12/2023	30/01/2024	28/02/2024	21/03/2024	23/04/2024	29/05/2024
Units		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Location	Sample Number												
Transect 10	1	19	10.1	2.7	0.0	8.1	0.0	2.3	6.0	2.3	4.4	0.9	2.6
	10	24.6	4.3	2.7	0.1	15.8	1.5	2.9	4.9	9.0	8.3	1.1	122
	11	2.5	10.4	3.0	0.0	0.8	0.1	19.1	7.3	4.0	5.1	18.2	9.3
	12	1.8	2.1	2.9	0.0	0.7	0.3	3.4	2.6	4.0	4.5	0.5	12.0
	13	31.7	7.3			0.7	0.6	3.3	2.9	6.6	5.5	0.0	9.2
	14	0.6	2.8			0.6	0.0		3.2			0.1	108
	15	1.2				0.6	0.1		2.6			0.6	10.3
	16	44.1				1.0	0.0		4.4				12.5
	2	37.2	5	2.8	0.1	5.6	0.0	2.2	3.8	2.4	4.0	0.1	2.7
	3	51	2.4	2.7	0.0	5.4	0.3	2.0	3.7	2.4	5.4	0.0	2.7
	4	51.2	2.2	2.6	0.1	2.2	0.0	2.0	2.7	2.4	4.8	0.0	2.8
	5	0	2.7	2.6	0.1	0.9	0.2	1.9	2.6	2.4	5.1	8.2	2.8
	6	0.1	10.3	4.4	0.1	2.0	0.1	6.1	2.7	2.6	7.1	1.3	2.9
	7	1.7	3.6	20.7	0.0	1.5	0.1	2.6	4.9	3.9	9.3	10.9	3.4
	8	8.7	24.2	4.4	0.8	1.3	1.6	5.2	3.0	4.6	4.4	6.8	14.7
	9	28	31.8	3.0	0.0	6.3	0.0	2.6	3.9	4.8	4.4	0.9	135
Transect 11	1	9.2	6.5	3.0	0.0	0.7	0.1	3.4	3.0	5.3	4.2	0.5	20.4
	2	41	22.8	4.8	0.3	0.9	0.7	10.6	2.8	5.1	6.6	0.3	21.3
	3	59	9.5	11	7.8	0.8	5.1	7.6	9.2	4.9	6.8	25.8	27.0
	4	19.1	5.5	3.9	0.7	5.1	0.5	29.3	51.2	4.2	27.5	0.3	29.9
	5	16.3	8.8	3.1	0.3	2.8	1.6	6.1	3.5	4.3	6.3	0.0	5.7
	6	21.4	9.9	40.3	0.3	2.2	54.1	11.4	4.2	3.4	7.4	9.5	7.9
	7	31.9					0.0					26.9	4.1
	8	30.5											43.5
Transect 12	1	65.2	106	51.9	31.5	31.1	12.4	24.4	31.2	11.5	15.2	63.2	78.7
	2	34	34	9.5	13.4	14.0	7.9	3.9	7.5	20.3	21.6	53.0	66.6
	3	17.7	23	12.4	11.4	8.2	8.2	26.8	7.8	18.0	12.2	20.4	11.2
	4	0	5.9	11.3	0.1	5.9	10.3	4.4	28.0	11.2	5.6	14.4	13.5
	5	0.1	25.5	7.6	0.5	0.8	1.9	27.3	8.3	3.4	5.7	12.0	12.2
	6	0	11.7	10.4	0.5	0.6	2.5	28.7	4.0	13.6	4.5	1.0	6.6
	7	1.3	10.8	50.7	6.1	1.2	12.1	7.2	3.3	7.3	5.9	5.6	7.8
	8	14.1	18			5.8		39.8	9.3				
Transect A	1	0	23.5	9.2	6.5	0.1	0.0	3.4	2.2	2.4		6.7	2.0
	2	0	3.9	8.1	5.9	0.0	0.0	3.4	2.1	2.5		8.1	1.9
	3	0	2.8	11.7	1.3	0.0	0.0	3.4	2.1	2.4		10.4	1.9
	4	0	3.5		0.3	0.0	0.0	3.4	2.1	2.4		7.2	1.9
	5	0	2.7		0.1	0.0				2.4		1.9	1.8
	6												1.8
Transect C	1	0	3.7	11.1	0.3	0.0	0.0	3.3	2.1				
	2	0	2.6	9.9	1.9	0.0	0.5	3.2	2.1				
	3	0	2.7	8.8	2.1	0.0	0.1	3.1	2.1				
	4	0	2.6	8.8	6.2	0.0	1.6	3.0	2.2				
	5	0	2.9	20.1	5.4		0.1	4.3	14.0				
	6	0	6.5	14.5	6.7	5.2	8.2	3.0	22.1				
	7	0	8	25.7	9.0	0.9	0.0	2.9	30.1				
	8	0	6.9	20.3	1.7	14.3	0.0	2.8	23.1				
	9	0											
Transect D	1	0	11.5	7.1	0.4	1.2	7.1	2.0	2.2				
	2	0	7.1	9.2	5.6	0.0	8.2	2.0	2.2				
	3	0	8.5	9.2	2.1	0.0	7.6	2.1	2.2				
	4	0	9.3	17.7	2.2	0.0	1.1	2.0	2.4				
	5	0	7.2	13.0	5.2	0.0	0.2	2.3	5.9				
	6	0.1	5.8			0.0	0.0						

Table 5 Continued: Surface Gas Results 2023/24 Reporting Period

		21/06/2023	18/07/2023	16/08/2023	20/09/2023	17/10/2023	14/11/2023	12/12/2023	30/01/2024	28/02/2024	21/03/2024	23/04/2024	29/05/2024
Units		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Location	Sample Number												
Transect E	1	0.1	7.9	30.6	7.4	0.1	0.0	1.8	9.1				
	2	0	8.8	17.7	6.7	0.7	0.0	1.9	4.5				
	3	0	2.6	28.1	5.9	9.1	0.0	3.5	2.5				
	4	0.1	6.1	22.3	6.0	6.4	0.1	11.6	4.3				
	5	0.1	14.4	15.3	8.1	6.5	0.0	7.7	8.3				
	6	0	28.1					6.7	7.2				
	7							7.4	10.1				
Transect F	1	0	2.9	34.3	0.0	8.9	0.8	2.0	15.8				
	2	0	2.8	52.4	5.3	0.2	2.1	1.9	6.6				
	3	0	3.8	22.2	6.4	0.2	1.3	1.9	8.3				
	4	0	4		1.8	0.1	1.4	1.9	8.9				
	5	0	2.8	22.5	0.3	0.0	1.0	1.9	14.9				
	6	0	3.2	16.3	2.0	0.1	1.0	1.8	7.1				
	7	0	13.4	15.9	5.5	0.0	0.0	1.8	10.1				
	8		16.6			0.0	0.0	1.8	2.2				
Transect G	1	0	3.8	12.4	0.5	0.0	0.1	2.3	2.2				
	2	0	3.7	11.5	1.2	0.0	0.4	2.4	2.2				
	3	0	2.6	9.1	0.3	0.0	0.0	2.1	2.2				
	4	0	2.7		0.9	0.1	5.1	2.0	2.8				
	5	0	2.6	16.3	0.4	0.2	1.9	2.0	2.7				
	6	0	2.8	19.9	1.4	1.0	9.3	2.0	6.0				
	7	0	2.7				13.1	2.0	11.3				
Transect H	1	0.1	2.9	2.8	1.0	10.3	0.0	2.7	14.9	2.4			
	2	0	2.9	2.8	0.6	0.0	0.1	2.6	8.0	2.4			
	3	0.1	2.6	2.9	0.9	0.1	0.0	2.6	2.7	2.4			
	4	0	2.8	3.2	1.6	0.0	0.0	2.6	5.8	2.4			
	5	0	4.1	11.8	1.5	0.1	1.0	2.6	2.6	2.4			
	6	0	4.2		0.1	0.0	1.2	3.3	2.5	2.5			
	7	0				0.0			2.2	2.5			
Transect I	1	0.1	2.7	9.6	1.4	11.2	0.0	2.5	5.0				
	2	0	2.5	6.5	1.3	0.0	0.0	2.5	9.8				
	3	0	2.4	2.7	0.9	0.0	0.0	2.3	7.2				
	4	0	2.4	21.8	0.0	0.0	0.0	2.3	6.3				
	5	0	2.4	11.9	6.6	0.0	0.0	2.4	2.6				
	6	0	2.5	7.6	0.6	0.0	0.0	2.4	6.2				
Transect J	1	0.1	4.1	4.6	0.1	0.1	0.1	7.0	5.8				
	2	0	2.8	4.1	0.0	1.9	0.0	6.1	6.9				
	3	0.1	2.5	10.8	1.2	0.0	0.0	6.1	6.3				
	4	0	2.4	8.5	0.2	0.4	0.0	5.1	3.0				
	5	0	2.5	8.9	0.9	1.6	0.0	6.7	3.9				
	6	0	2.5	7.1	0.0	0.9	0.0	6.7					
	7	13.1											
Transect K	1	0.1	2.6	7.0	0.1	0.0	0.7	12.5	3.5				
	2	0.1	2.5		0.0	0.0	0.0	4.3	5.1				
	3	0	2.4		0.0	0.1	0.0	7.1	6.5				
	4	2.1	2.4	13.6	0.0	5.3	0.0	8.5	7.3				
	5	0	2.3	7.6	0.0	5.9	0.0	15.9	7.2				
	6	0	2.5	5.6	0.0	7.7	0.0	7.8	7.9				
Transect L	1	0	2.6	4.8	0.8	9.1	0.1	5.7	3.9				
	2	0.1	6.2	20.8	0.0	6.6	0.1	4.5	4.3				
	3	0.1	2.5	4.4	0.1	6.6	0.0	4.3	3.4				
	4	0.1	2.8	4.6	0.3	5.9	0.3	4.5	2.7				
	5	20.6	2.2			8.0	1.2	3.6					
	6	9				7.6	1.5	3.5					
Transect M	1	0	2.8	10.1	0.0	0.7	0.0	3.7	5.3				
	2	0	6.9	9.1	1.0	1.3	0.6	19.1	9.2				
	3	0	17.3	9.2	0.0	1.4	0.0	5.6	2.9				
	4	12.8	1.9	11.8	0.0	1.8	0.0	4.6	3.2				
	5	0	2		0.8	0.9	1.2	4.1					
	6					1.5	0.2	11.3					
Transect N	1	2.5	1.9	5.1	0.3	6.3	0.0	6.4	5.3				
	2	0.6	1.9	3.3	0.0	6.8	0.0	6.3	5.3				
	3	36.2	9.9	4.0	0.1	1.5	0.1	5.9	6.3				
	4	0	2	3.3	0.0	2.1	0.0	13.3	5.5				
	5	0.1	2.1	3.3	0.6	1.8	0.0	5.9	7.7				
	6	0	2.2	4.6	0.1	1.4	0.0	6.1	6.0				

Table 5 Continued: Surface Gas Results 2023/24 Reporting Period

181 Reddalls Rd, fenceline adjoining landfill	1	0	2.4										
	3	0	2.3										
	5	0	2.6										
	7	0.1	2.3										
	8	0	2.3										
181 Reddalls Rd, Immediate gardens max value	1		2.3										
	2	0	2.3										
	4	0	2.3										
	6	0	2.3										
Methane Blank (Post testing)	1	0.3	2.6										
Methane Blank (Pre testing)	1	8.5	2.4										

Table 6: Respirable Dust Results 2023/24 Reporting Period

Site Name			Glengarry Cottage PM10	Glengarry Cottage TSP	Landfill PM10	Landfill TSP
Sample Date	Chemical Name	Units				
20/06/2023	PM10	µg/m³	8.5			
	PM10 (mass per filter)	mg/filter	13.3			
	Total Suspended Particulates	µg/m³		23.1		
	Total Suspended Particulates (mass per filter)	mg/filter		36.3		
21/06/2023	Total Suspended Particulates	µg/m³				20.2
	Total Suspended Particulates (mass per filter)	mg/filter				31.3
22/06/2023	PM10	µg/m³			9.3	
	PM10 (mass per filter)	mg/filter			14.2	
17/07/2023	PM10	µg/m³	18.8			
	PM10 (mass per filter)	mg/filter	29.3			
	Total Suspended Particulates	µg/m³		58.8		
	Total Suspended Particulates (mass per filter)	mg/filter		92.2		
18/07/2023	PM10	µg/m³			5.8	
	PM10 (mass per filter)	mg/filter			8.9	
	Total Suspended Particulates	µg/m³				12.8
	Total Suspended Particulates (mass per filter)	mg/filter				19.8
14/08/2023	PM10	µg/m³	1.7			
	PM10 (mass per filter)	mg/filter	2.7			
	Total Suspended Particulates	µg/m³		3.0		
	Total Suspended Particulates (mass per filter)	mg/filter		4.7		
15/08/2023	PM10	µg/m³			4.5	
	PM10 (mass per filter)	mg/filter			7.0	
	Total Suspended Particulates	µg/m³				9.2
	Total Suspended Particulates (mass per filter)	mg/filter				14.4
18/09/2023	PM10	µg/m³	56.2			
	PM10 (mass per filter)	mg/filter	83.7			
	Total Suspended Particulates	µg/m³		122		
	Total Suspended Particulates (mass per filter)	mg/filter		182		
20/09/2023	PM10	µg/m³			19.2	
	PM10 (mass per filter)	mg/filter			28.5	
	Total Suspended Particulates	µg/m³				34.3
	Total Suspended Particulates (mass per filter)	mg/filter				50.8
17/10/2023	PM10	µg/m³	3.2			
	PM10 (mass per filter)	mg/filter	5.1			
	Total Suspended Particulates	µg/m³		9.2		
	Total Suspended Particulates (mass per filter)	mg/filter		14.4		
18/10/2023	PM10	µg/m³			8.6	
	PM10 (mass per filter)	mg/filter			13.2	
	Total Suspended Particulates	µg/m³				18.5
	Total Suspended Particulates (mass per filter)	mg/filter				28.5
13/11/2023	PM10	µg/m³	18.9			
	PM10 (mass per filter)	mg/filter	28.8			
	Total Suspended Particulates	µg/m³		44.1		
	Total Suspended Particulates (mass per filter)	mg/filter		67.2		
14/11/2023	PM10	µg/m³			17.2	
	PM10 (mass per filter)	mg/filter			20.8	
	Total Suspended Particulates	µg/m³				32.6
	Total Suspended Particulates (mass per filter)	mg/filter				39.3
12/12/2023	PM10	µg/m³	19.1			
	PM10 (mass per filter)	mg/filter	28.8			
	Total Suspended Particulates	µg/m³		43.2		
	Total Suspended Particulates (mass per filter)	mg/filter		65.0		
13/12/2023	PM10	µg/m³			14.9	
	PM10 (mass per filter)	mg/filter			21.9	
	Total Suspended Particulates	µg/m³				26.9
	Total Suspended Particulates (mass per filter)	mg/filter				39.5
15/01/2024	PM10	µg/m³	13.5			
	PM10 (mass per filter)	mg/filter	20.6			
	Total Suspended Particulates	µg/m³		23.1		
	Total Suspended Particulates (mass per filter)	mg/filter		35.3		

Table 6 Continued: Respirable Dust Results 2023/24 Reporting Period

16/01/2024	PM10	µg/m³			15.1	
	PM10 (mass per filter)	mg/filter			22.5	
	Total Suspended Particulates	µg/m³				23.8
	Total Suspended Particulates (mass per filter)	mg/filter				35.5
20/02/2024	PM10	µg/m³	13.3			
	PM10 (mass per filter)	mg/filter	20.1			
	Total Suspended Particulates	µg/m³		28.7		
	Total Suspended Particulates (mass per filter)	mg/filter		43.5		
21/02/2024	PM10	µg/m³			9.1	
	PM10 (mass per filter)	mg/filter			13.6	
	Total Suspended Particulates	µg/m³				17.9
	Total Suspended Particulates (mass per filter)	mg/filter				26.6
20/03/2024	PM10 (mass per filter)	mg/filter	20.6			
	Total Suspended Particulates (mass per filter)	mg/filter		52.2		
21/03/2024	PM10 (mass per filter)	mg/filter			13.8	
	Total Suspended Particulates (mass per filter)	mg/filter				33.2
16/04/2024	PM10	µg/m³	13.3			
	PM10 (mass per filter)	mg/filter	20.5			
	Total Suspended Particulates	µg/m³		29.0		
	Total Suspended Particulates (mass per filter)	mg/filter		44.6		
17/04/2024	PM10	µg/m³			9.3	
	PM10 (mass per filter)	mg/filter			14.1	
	Total Suspended Particulates	µg/m³				18.4
	Total Suspended Particulates (mass per filter)	mg/filter				27.9
14/05/2024	PM10	µg/m³	12.5			
	PM10 (mass per filter)	mg/filter	19.3			
	Total Suspended Particulates	µg/m³		28.1		
	Total Suspended Particulates (mass per filter)	mg/filter		43.4		
15/05/2024	PM10	µg/m³			11.2	
	PM10 (mass per filter)	mg/filter			17.2	
	Total Suspended Particulates	µg/m³				17.9
	Total Suspended Particulates (mass per filter)	mg/filter				27.5

Table 7: Dust Deposition Results 2023/24 Reporting Period

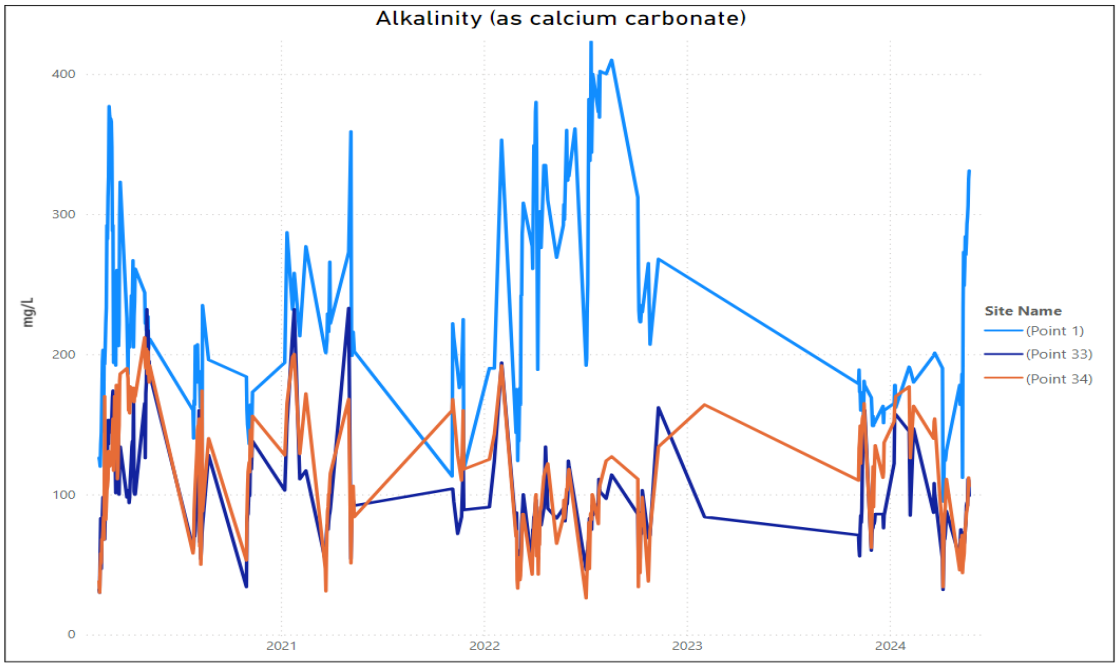
Site Name			DDG 1	DDG 2	DDG 3	DDG 4	DDG 5
Sample Date	Chemical Name	Units					
05/06/2023	Ash Content	g/m².month	0.3	0.5	0.5	0.1	0.1
	Ash Content (mg)	mg	6	10	10	2	<2
	Combustible Matter	g/m².month	0.1	0.1	<0.1	<0.1	<0.1
	Combustible Matter (mg)	mg	<2	2	<2	<2	<2
	Total Insoluble Matter	g/m².month	0.4	0.6	0.5	0.1	0.1
	Total Insoluble Matter (mg)	mg	7	12	10	2	<2
06/07/2023	Ash Content	g/m².month	0.3	1.2	0.9	0.1	<0.1
	Ash Content (mg)	mg	5	23	18	<2	<2
	Combustible Matter	g/m².month	0.3	1.0	0.3	0.1	0.1
	Combustible Matter (mg)	mg	6	17	6	2	2
	Total Insoluble Matter	g/m².month	0.6	2.2	1.2	0.2	0.1
	Total Insoluble Matter (mg)	mg	11	40	24	3	2
07/08/2023	Ash Content	g/m².month	0.3	4.4	0.3	0.1	0.1
	Ash Content (mg)	mg	6	83	5	2	2
	Combustible Matter	g/m².month	0.1	3.2	0.3	0.1	0.1
	Combustible Matter (mg)	mg	2	60	6	<2	<2
	Total Insoluble Matter	g/m².month	0.4	7.6	0.6	0.2	0.2
	Total Insoluble Matter (mg)	mg	8	143	11	3	3
07/09/2023	Ash Content	g/m².month	0.4	0.8	0.3	0.2	0.2
	Ash Content (mg)	mg	8	15	6	3	3
	Combustible Matter	g/m².month	0.2	0.7	0.1	0.2	0.2
	Combustible Matter (mg)	mg	4	13	3	4	4
	Total Insoluble Matter	g/m².month	0.6	1.5	0.4	0.4	0.4
	Total Insoluble Matter (mg)	mg	12	28	9	7	7
06/10/2023	Ash Content	g/m².month	0.5	0.6	0.2	0.5	0.5
	Ash Content (mg)	mg	8	12	3	9	8
	Combustible Matter	g/m².month	1.0	0.8	0.6	0.7	1.2
	Combustible Matter (mg)	mg	19	14	12	13	21
	Total Insoluble Matter	g/m².month	1.5	1.4	0.8	1.2	1.7
	Total Insoluble Matter (mg)	mg	27	26	15	22	29
06/11/2023	Ash Content	g/m².month	0.5	0.8	0.9	0.5	0.3
	Ash Content (mg)	mg	10	16	18	10	5
	Combustible Matter	g/m².month	0.1	<0.1	0.2	<0.1	<0.1
	Combustible Matter (mg)	mg	2	<2	4	<2	<2
	Total Insoluble Matter	g/m².month	0.6	0.8	1.1	0.5	0.3
	Total Insoluble Matter (mg)	mg	12	16	22	10	5
07/12/2023	Ash Content	g/m².month	0.6	0.7	2.3	0.5	0.3
	Ash Content (mg)	mg	12	14	47	9	5
	Combustible Matter	g/m².month	0.2	0.9	0.5	0.2	<0.1
	Combustible Matter (mg)	mg	3	18	9	5	<2
	Total Insoluble Matter	g/m².month	0.8	1.6	2.8	0.7	0.3
	Total Insoluble Matter (mg)	mg	15	32	56	14	6
08/01/2024	Ash Content	g/m².month	0.3	2.0	0.3	0.3	0.2
	Ash Content (mg)	mg	6	37	5	6	3
	Combustible Matter	g/m².month	0.2	1.0	0.2	0.3	0.1
	Combustible Matter (mg)	mg	4	19	5	5	2
	Total Insoluble Matter	g/m².month	0.5	3.0	0.5	0.6	0.3
	Total Insoluble Matter (mg)	mg	10	56	10	11	5

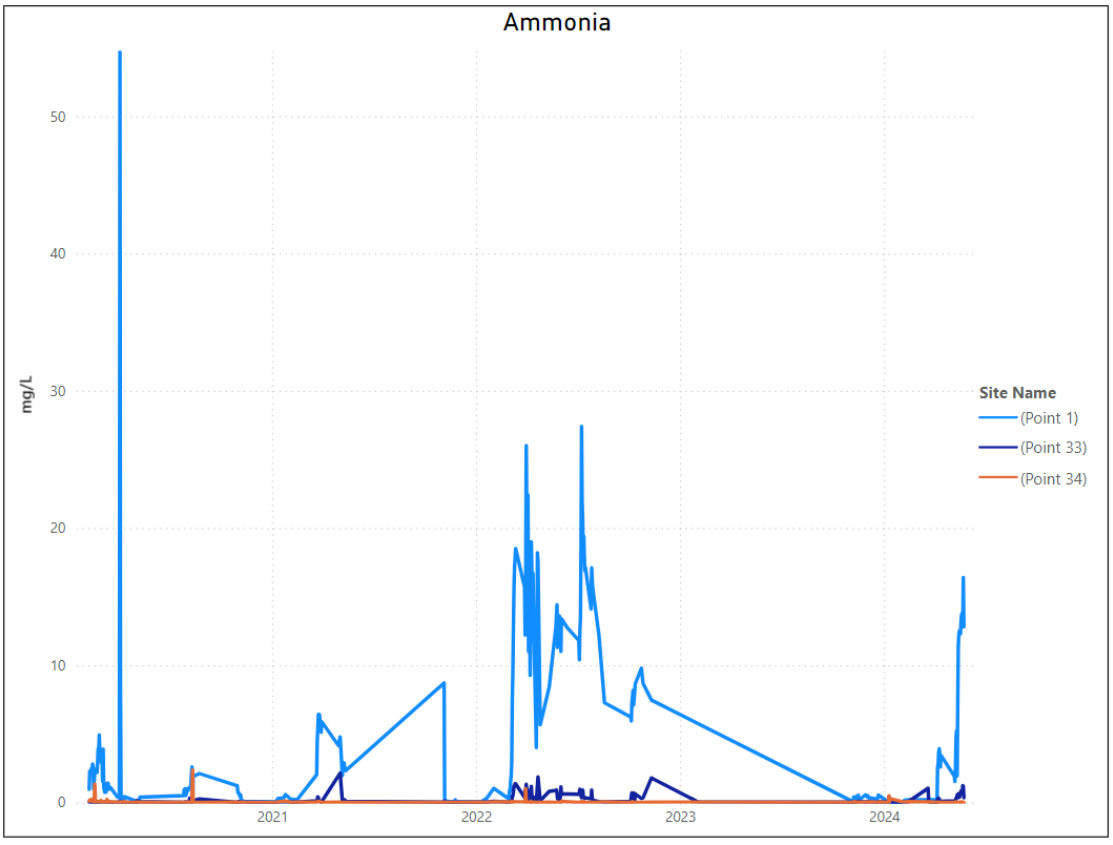
Table 7 Continued: Dust Deposition Results 2023/24 Reporting Period

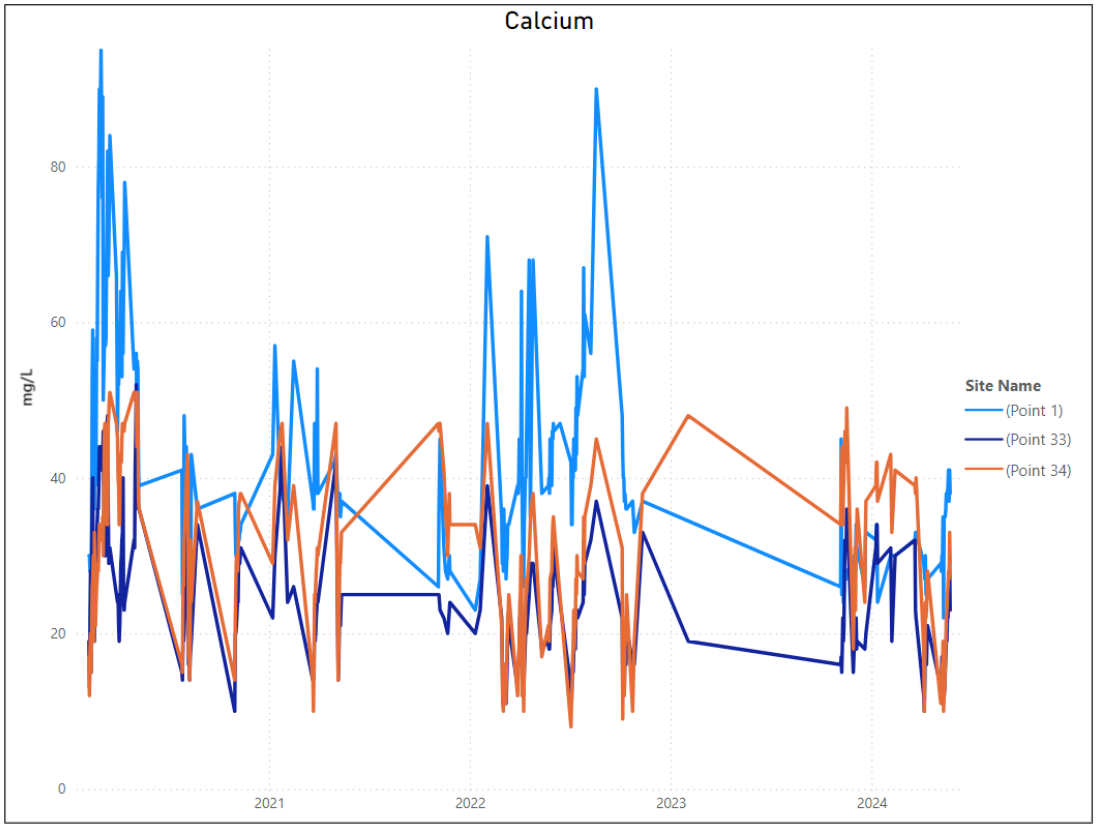
06/02/2024	Ash Content	g/m².month	0.5	2.7	0.2	0.5	0.3
	Ash Content (mg)	mg	8	51	3	8	5
	Combustible Matter	g/m².month	0.7	0.5	0.5	0.4	0.3
	Combustible Matter (mg)	mg	14	9	11	8	5
	Total Insoluble Matter	g/m².month	1.2	3.2	0.7	0.9	0.6
	Total Insoluble Matter (mg)	mg	22	60	14	16	10
05/03/2024	Ash Content	g/m².month	0.3	0.2	0.3	0.3	0.4
	Ash Content (mg)	mg	5	4	6	5	6
	Combustible Matter	g/m².month	0.4	0.1	0.3	0.3	0.3
	Combustible Matter (mg)	mg	7	2	5	5	6
	Total Insoluble Matter	g/m².month	0.7	0.3	0.6	0.6	0.7
	Total Insoluble Matter (mg)	mg	12	6	11	10	12
04/04/2024	Ash Content	g/m².month	0.2	0.5	0.3	0.3	0.6
	Ash Content (mg)	mg	3	9	6	6	10
	Combustible Matter	g/m².month	0.2	0.2	0.1	0.4	<0.1
	Combustible Matter (mg)	mg	5	5	2	6	<2
	Total Insoluble Matter	g/m².month	0.4	0.7	0.4	0.7	0.6
	Total Insoluble Matter (mg)	mg	8	14	8	12	10
03/05/2024	Ash Content	g/m².month	0.1	0.1	0.1		
	Ash Content (mg)	mg	<2	2	<2		
	Combustible Matter	g/m².month	<0.1	0.1	0.3		
	Combustible Matter (mg)	mg	<2	<2	6		
	Total Insoluble Matter	g/m².month	0.1	0.2	0.4		
	Total Insoluble Matter (mg)	mg	2	3	7		
10/05/2024	Ash Content	g/m².month				0.6	0.1
	Ash Content (mg)	mg				13	2
	Combustible Matter	g/m².month				1.7	0.1
	Combustible Matter (mg)	mg				38	3
	Total Insoluble Matter	g/m².month				2.3	0.2
	Total Insoluble Matter (mg)	mg				51	5

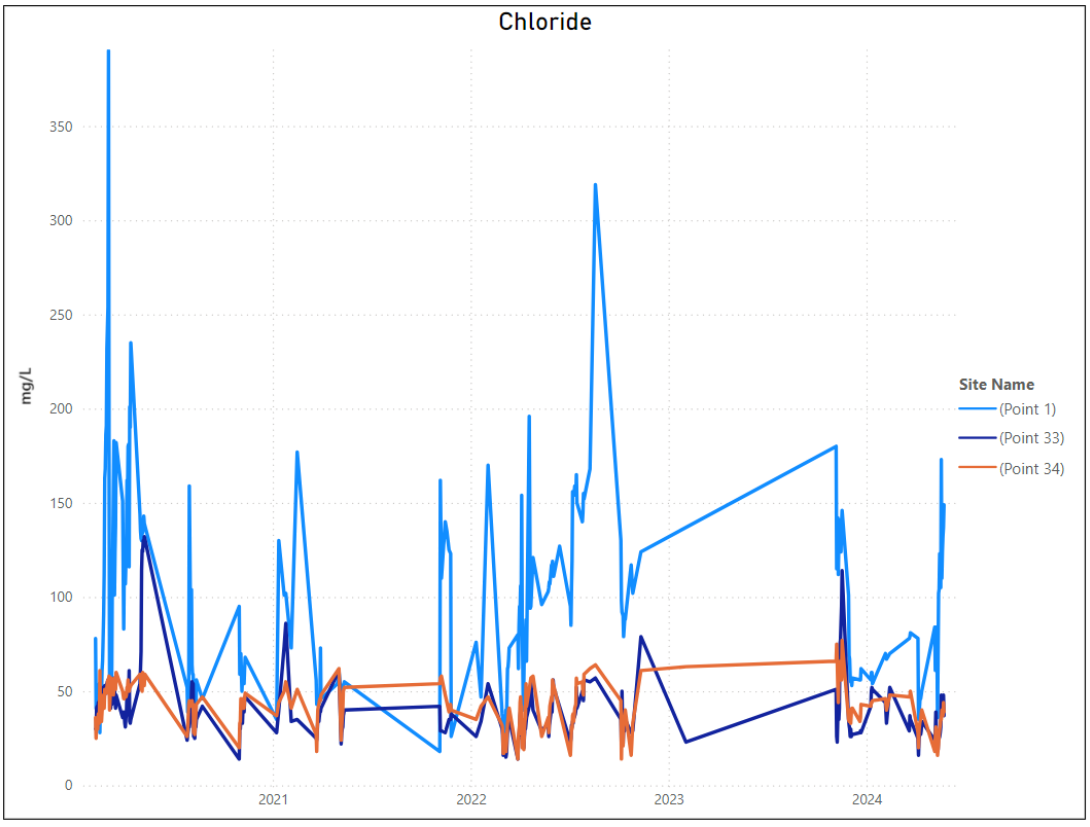
Appendix C

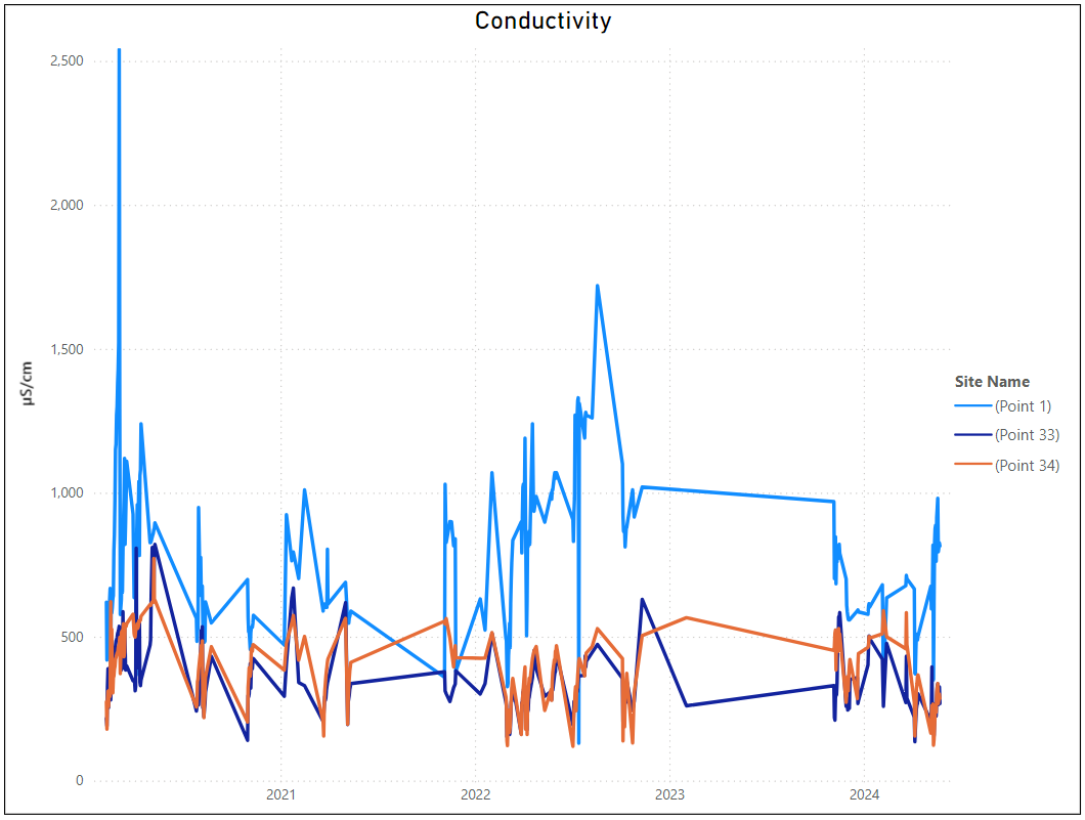
Surface Water Results 2023/24 Reporting Period

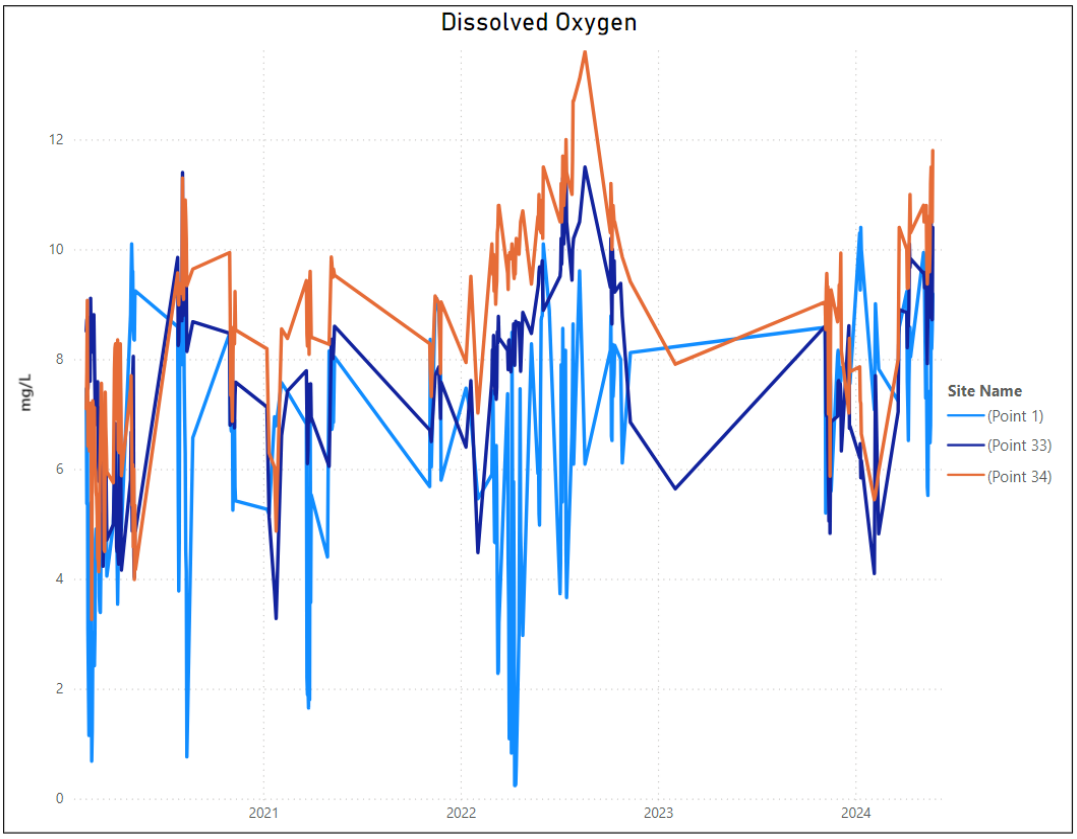


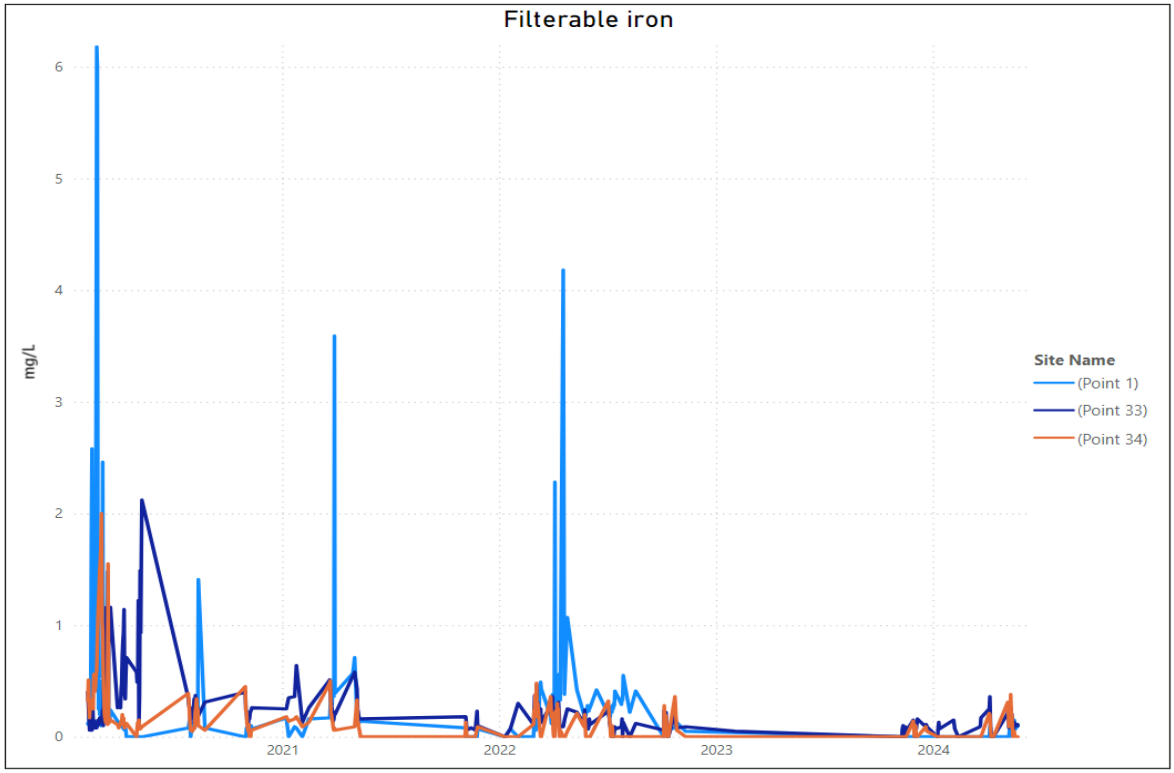


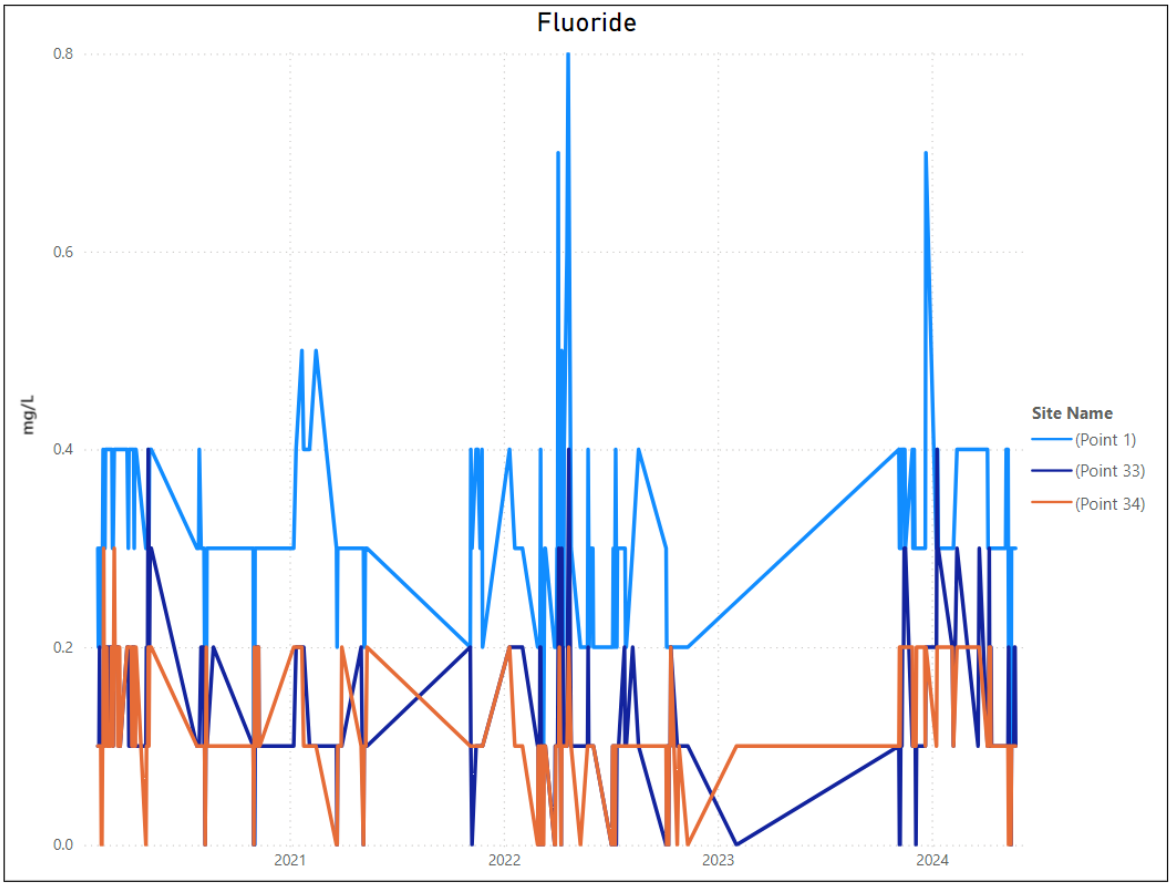

Calcium
mg/L
80
60
40
20
0
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

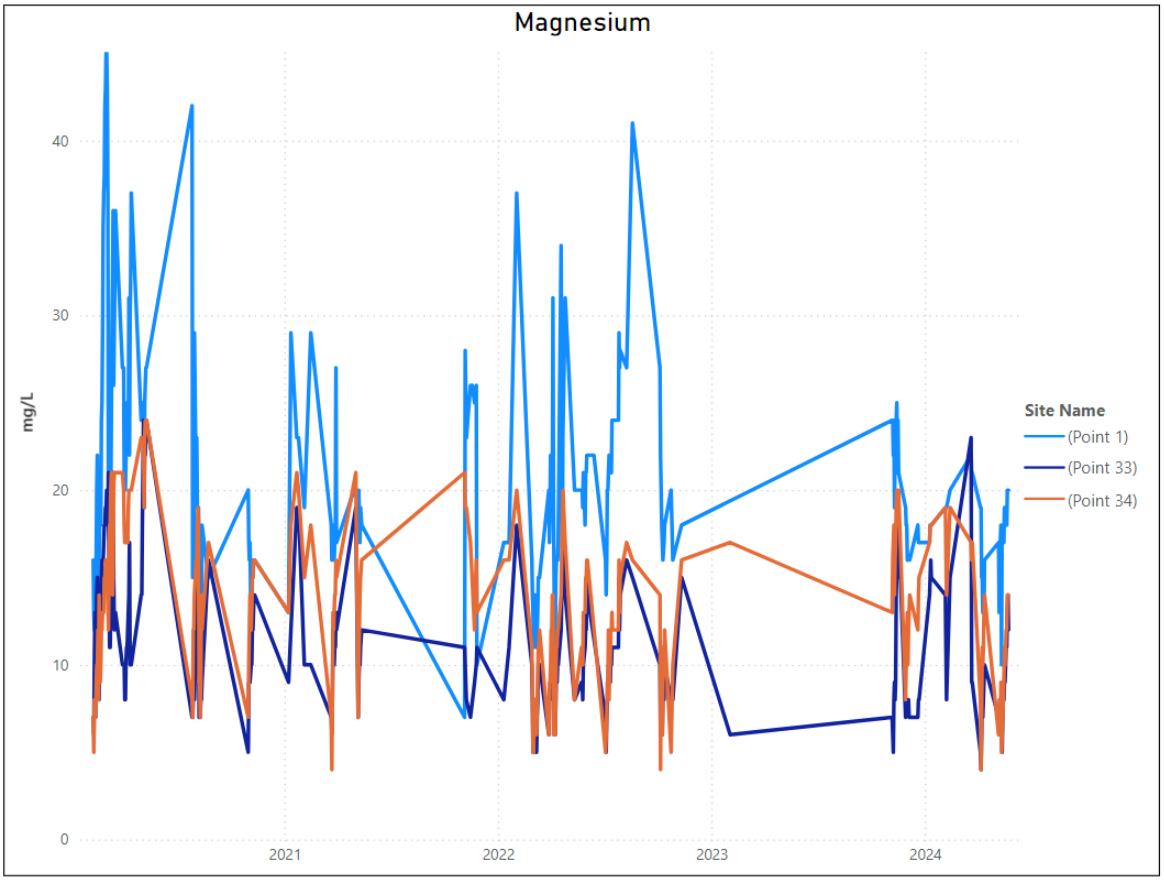

Chloride
mg/L
350
300
250
200
150
100
50
0
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

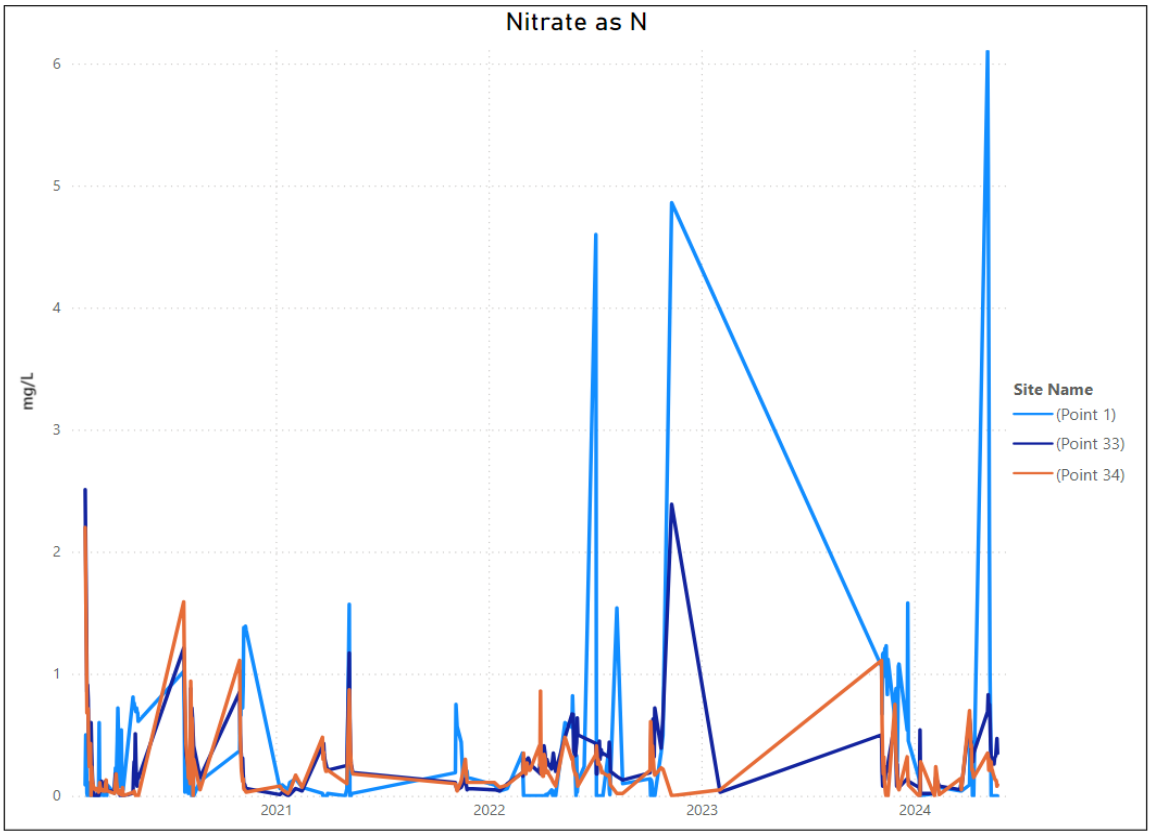

Conductivity
2,500
2,000
1,500
1,000
500
0
µS/cm
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

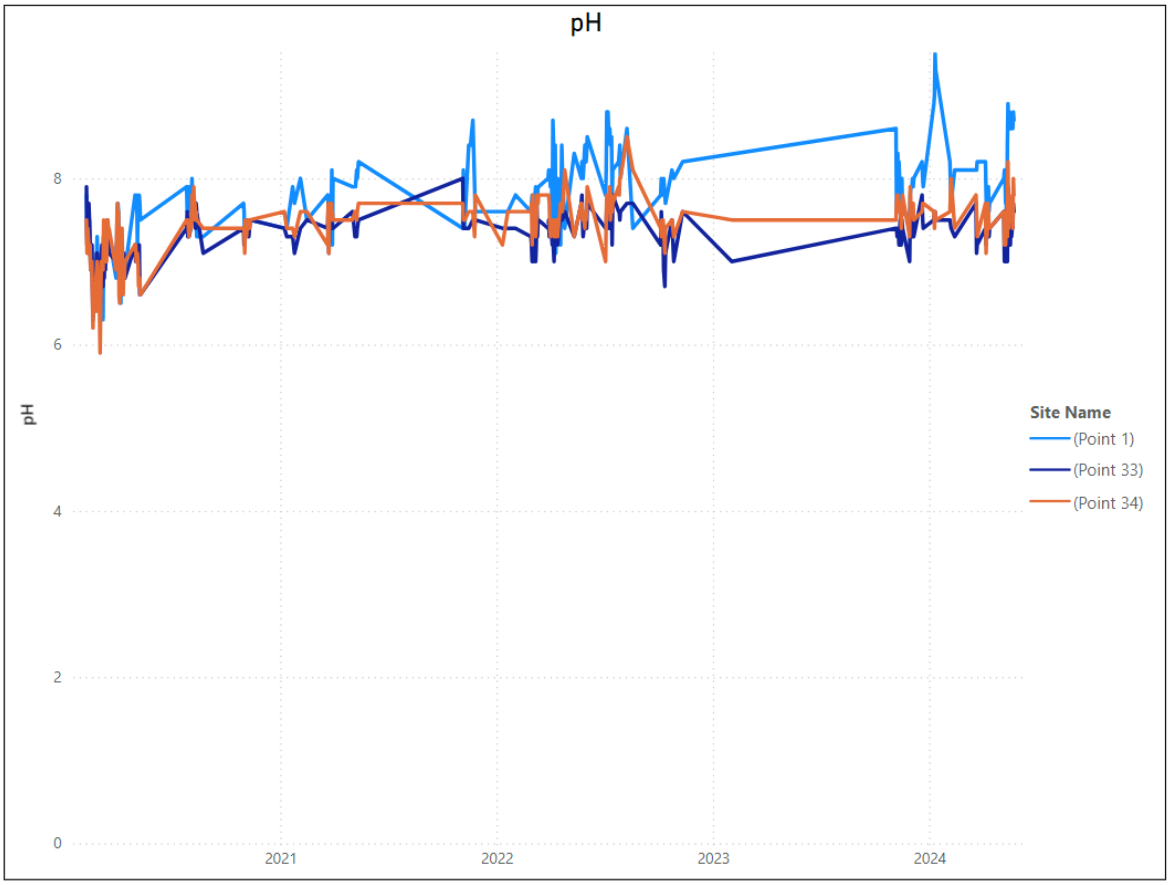

Dissolved Oxygen
12
10
8
6
4
2
0
mg/L
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

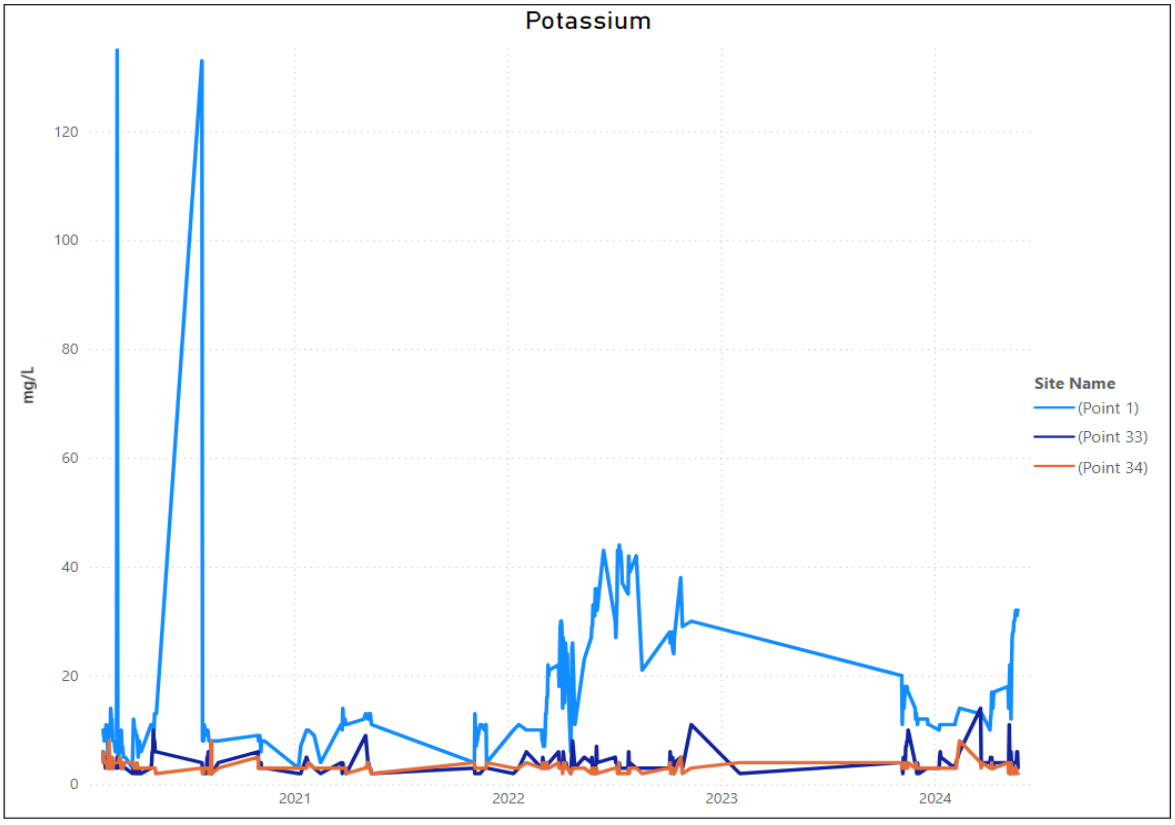

Filterable iron
mg/L
6
5
4
3
2
1
0
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

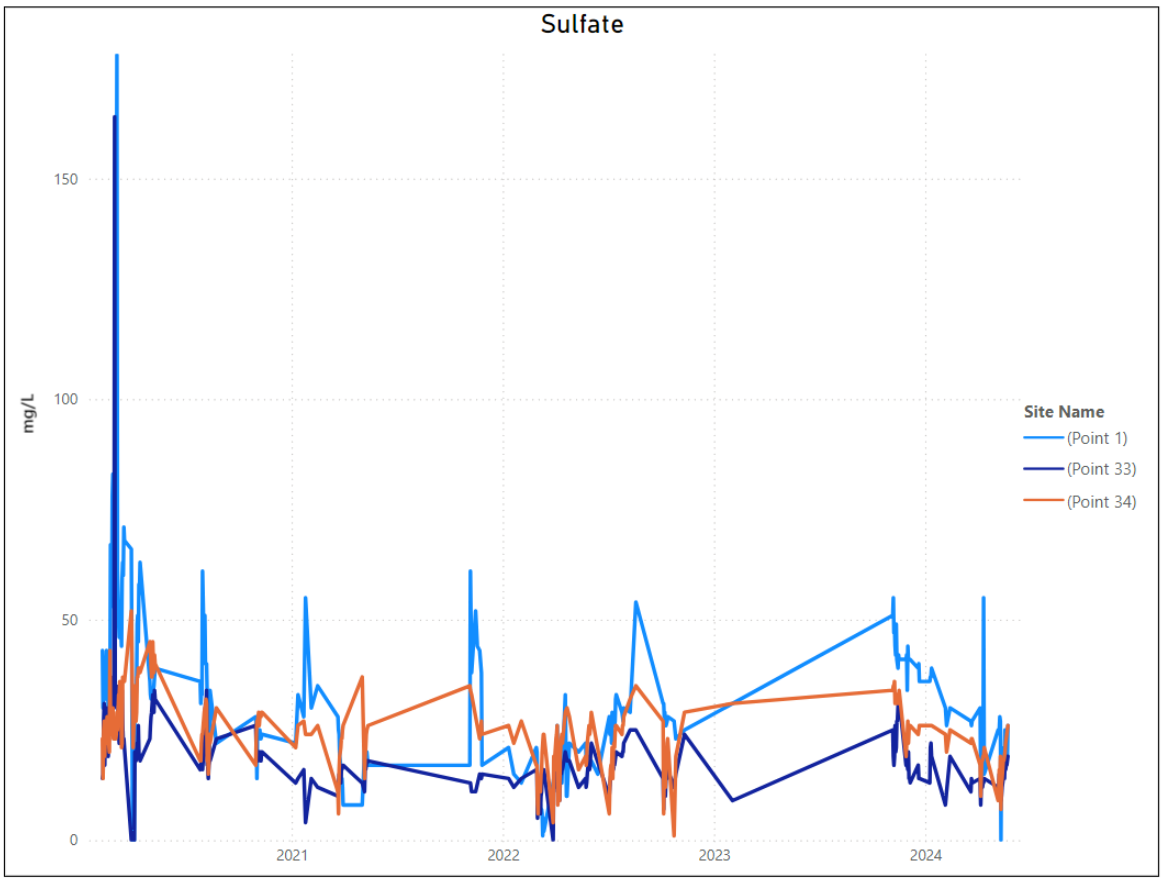

Fluoride
mg/L
0.8
0.6
0.4
0.2
0.0
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

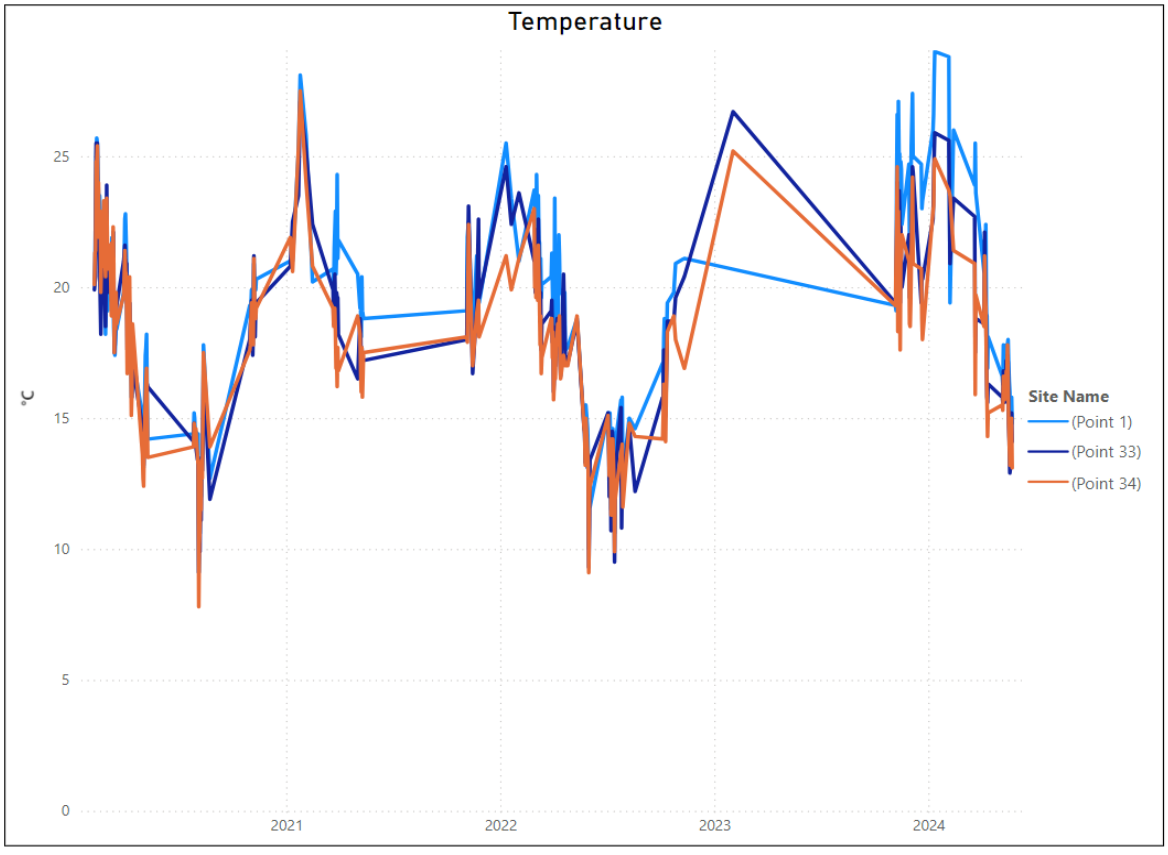

Magnesium
mg/L
40
30
20
10
0
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

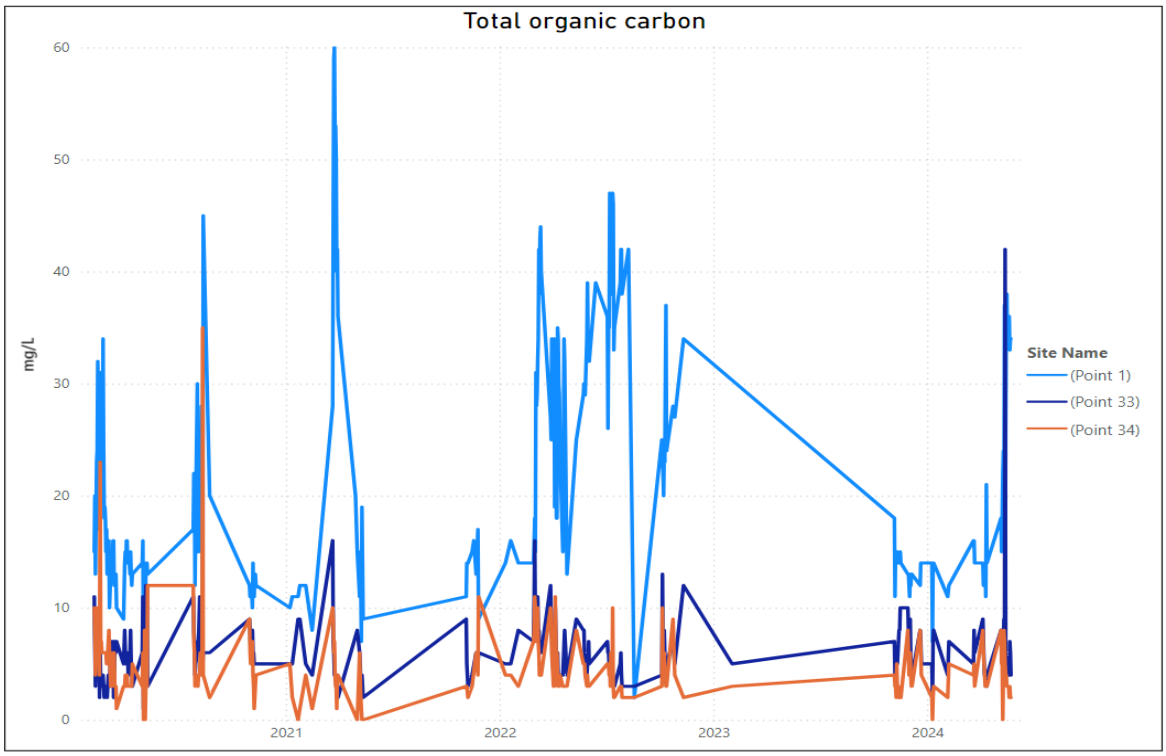

Nitrate as N
mg/L
6
5
4
3
2
1
0
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

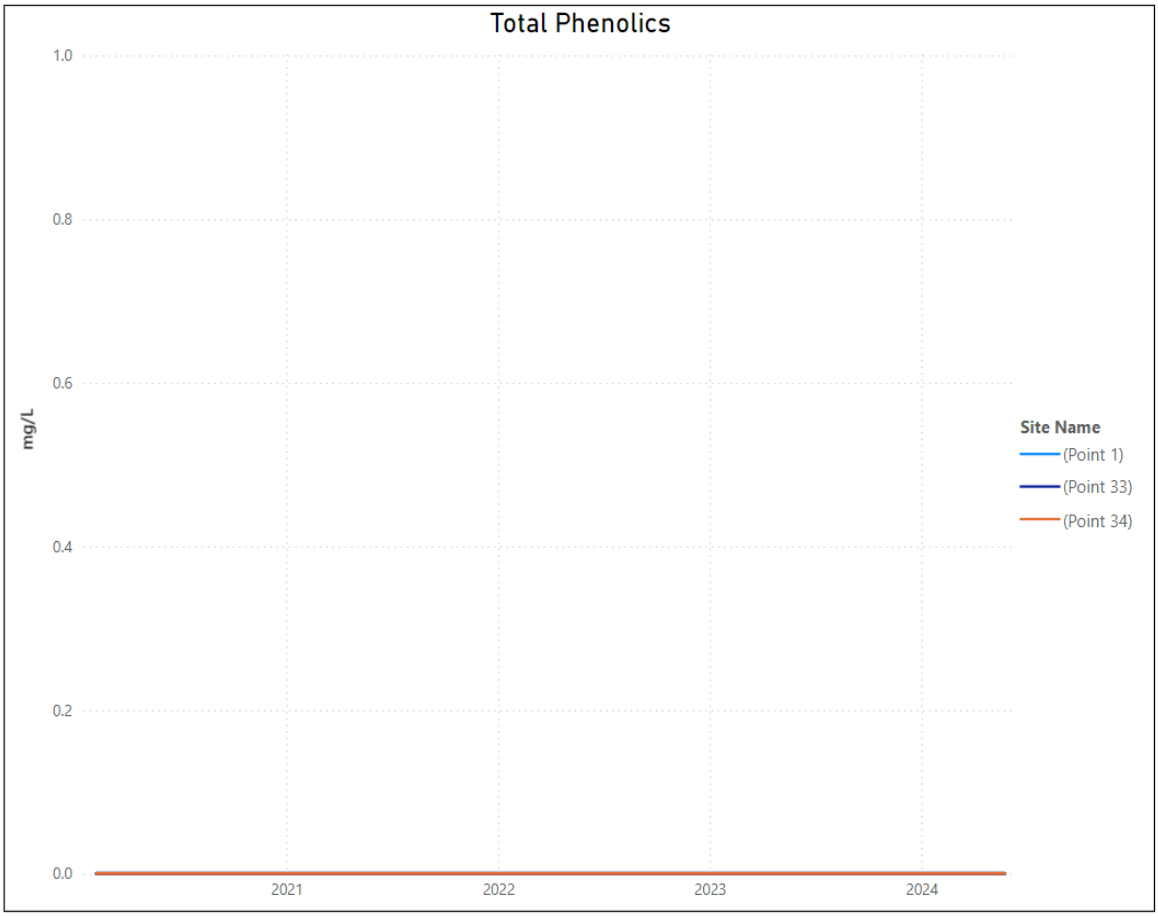

pH
8
6
4
2
0
pH
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

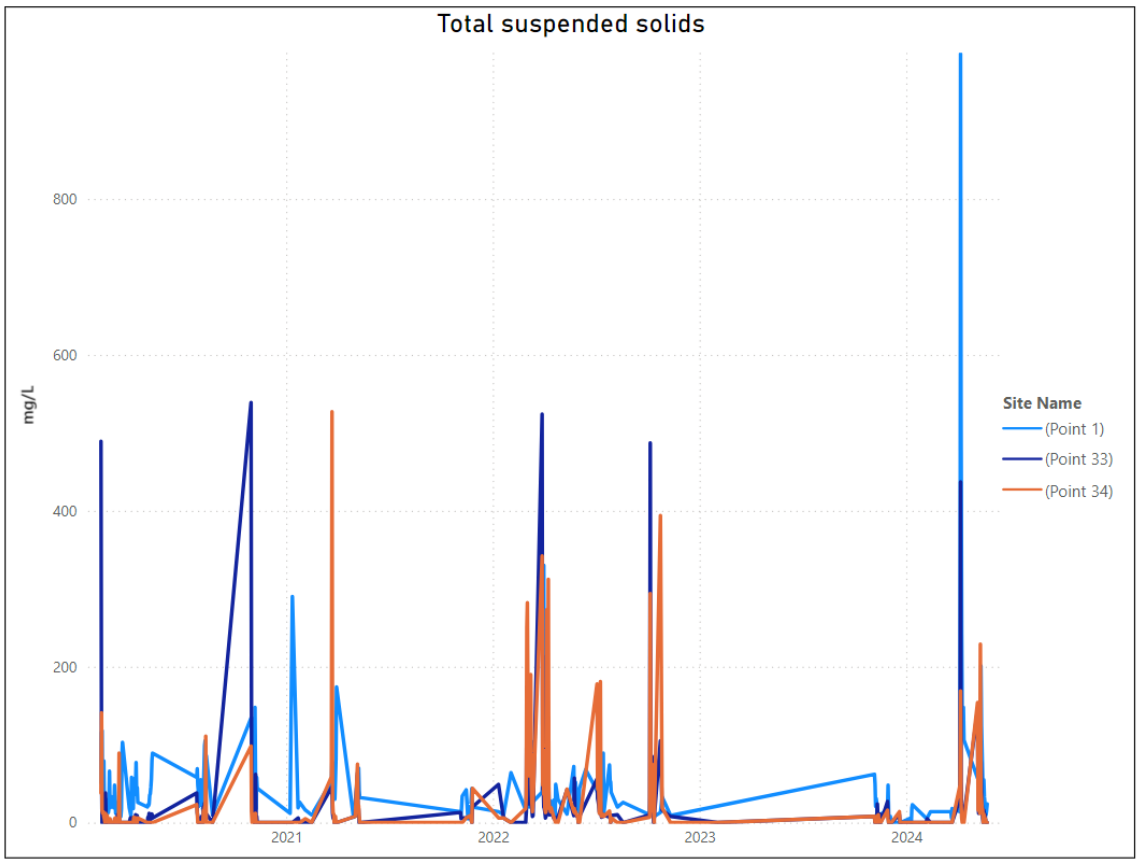

Potassium
120
100
80
60
40
20
0
mg/L
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)


Sulfate
150
100
50
0
mg/L
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

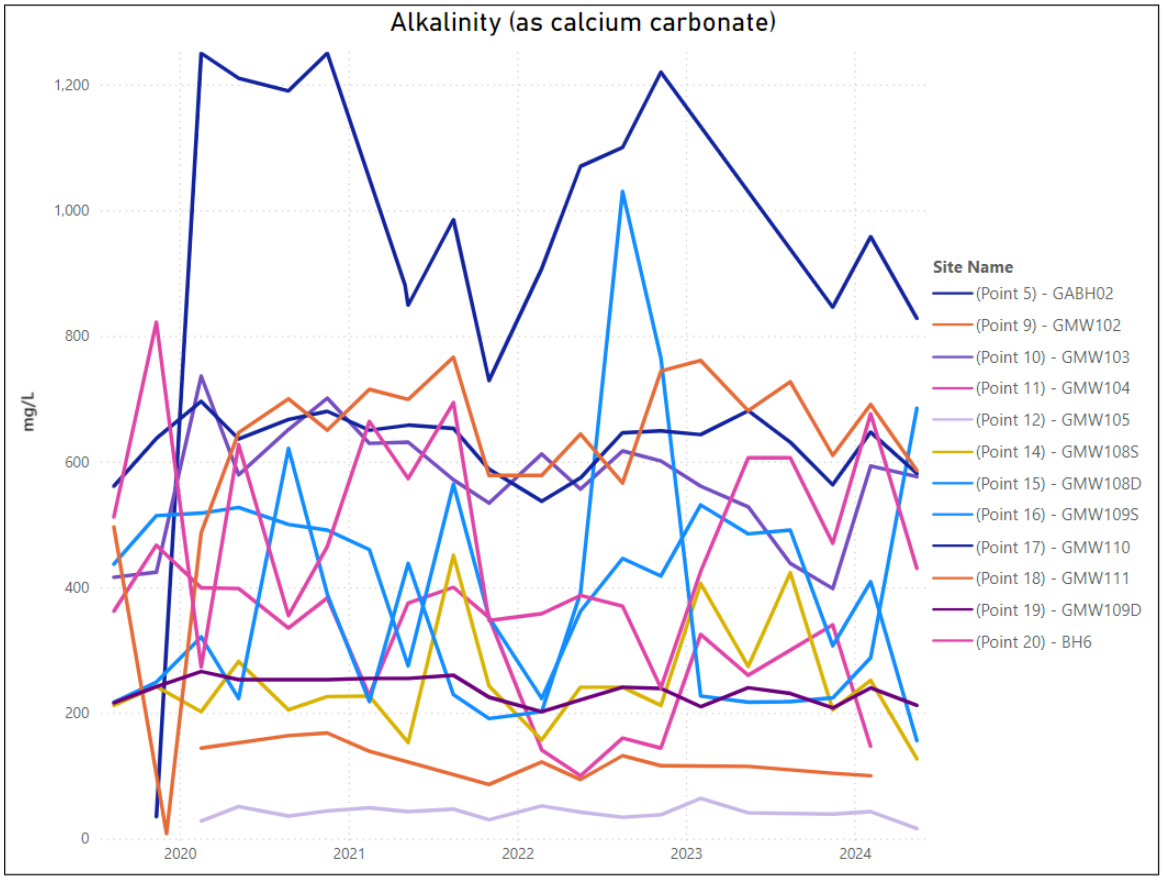

Temperature
25
20
15
10
5
0
°C
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

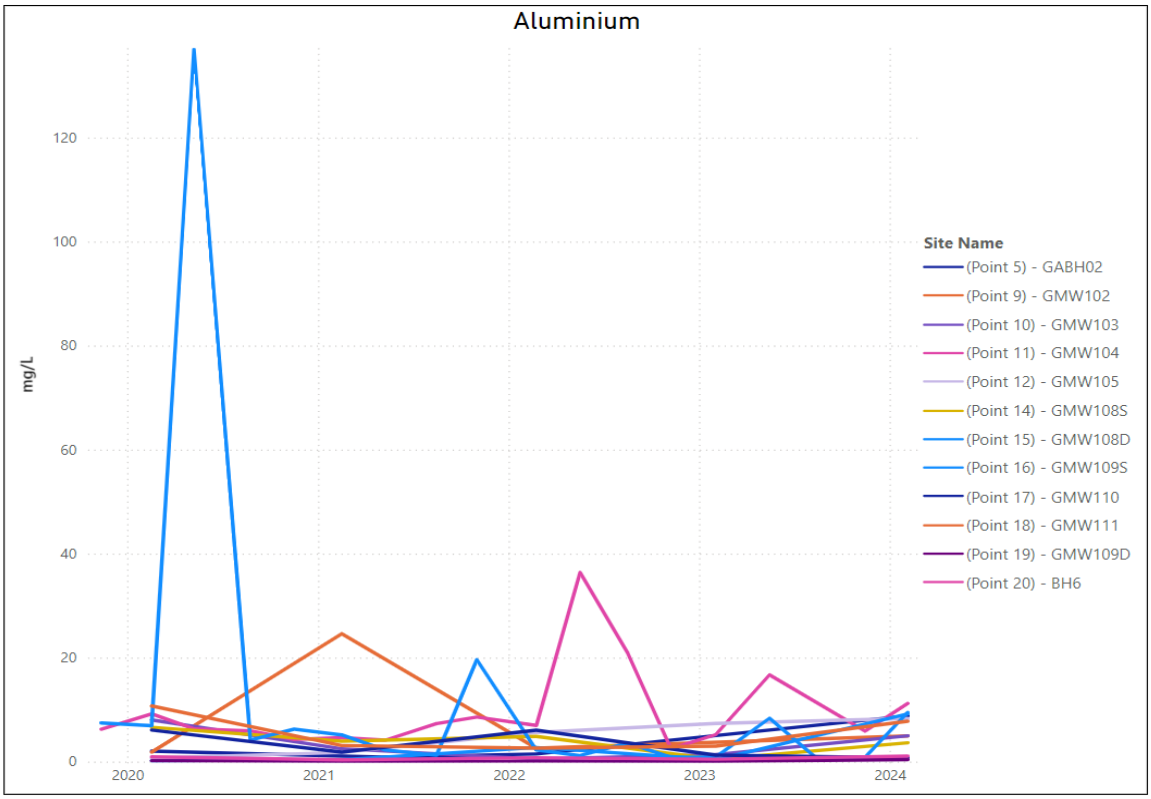

Total organic carbon
mg/L
60
50
40
30
20
10
0
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

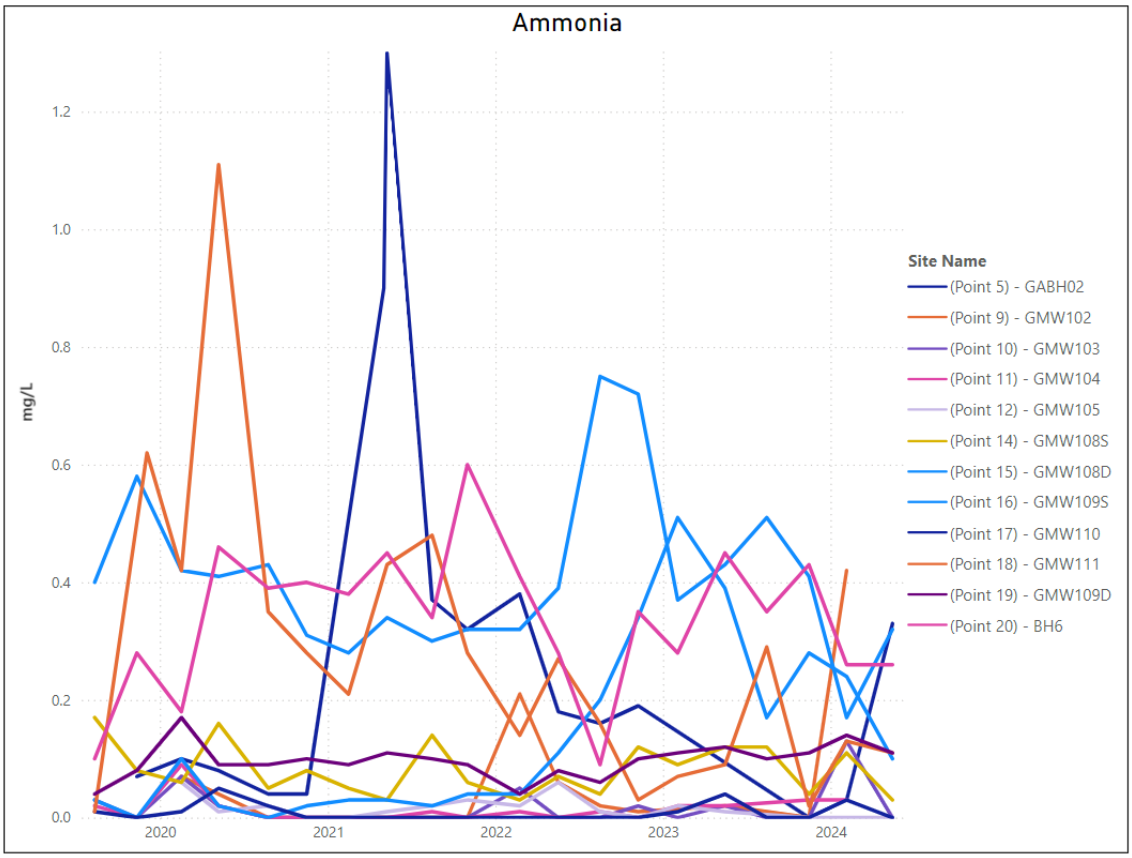

Total Phenolics
mg/L
1.0
0.8
0.6
0.4
0.2
0.0
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

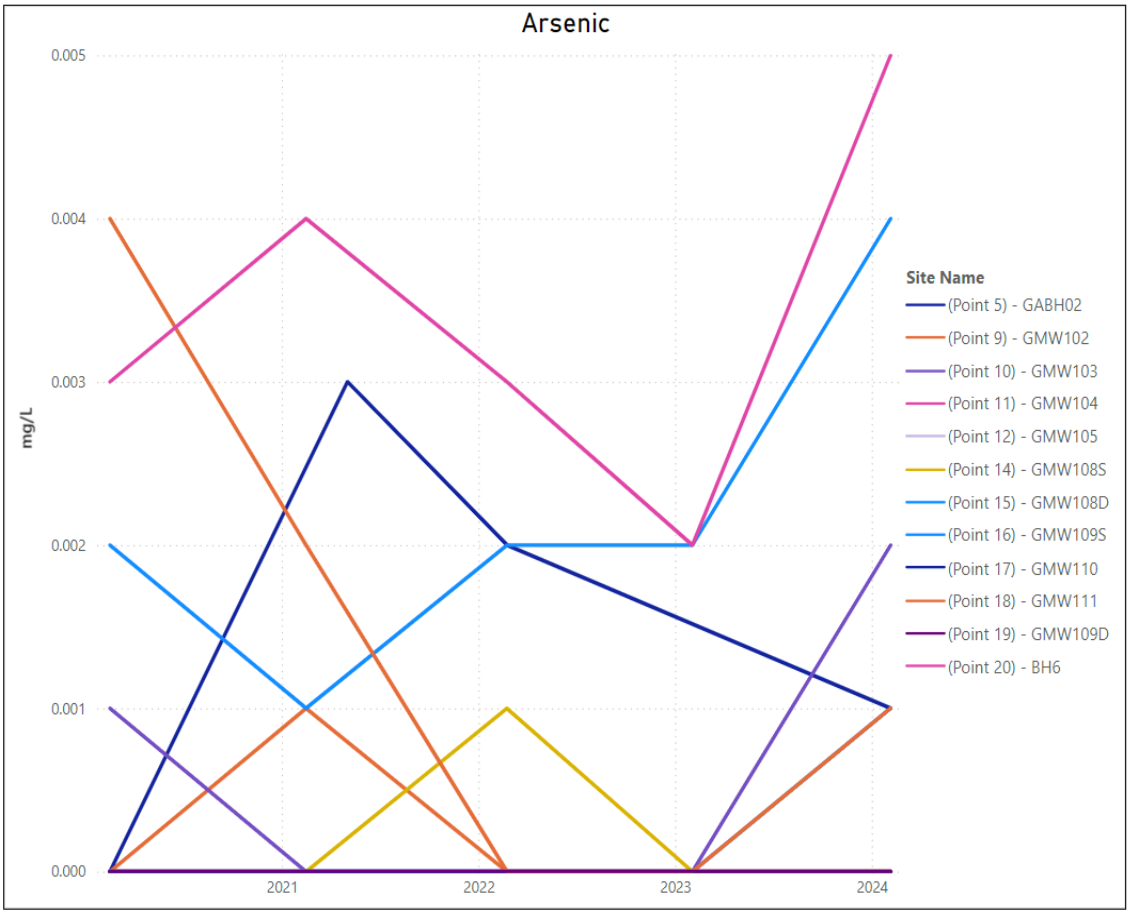

Total suspended solids
mg/L
800
600
400
200
0
2021
2022
2023
2024
Site Name
(Point 1)
(Point 33)
(Point 34)

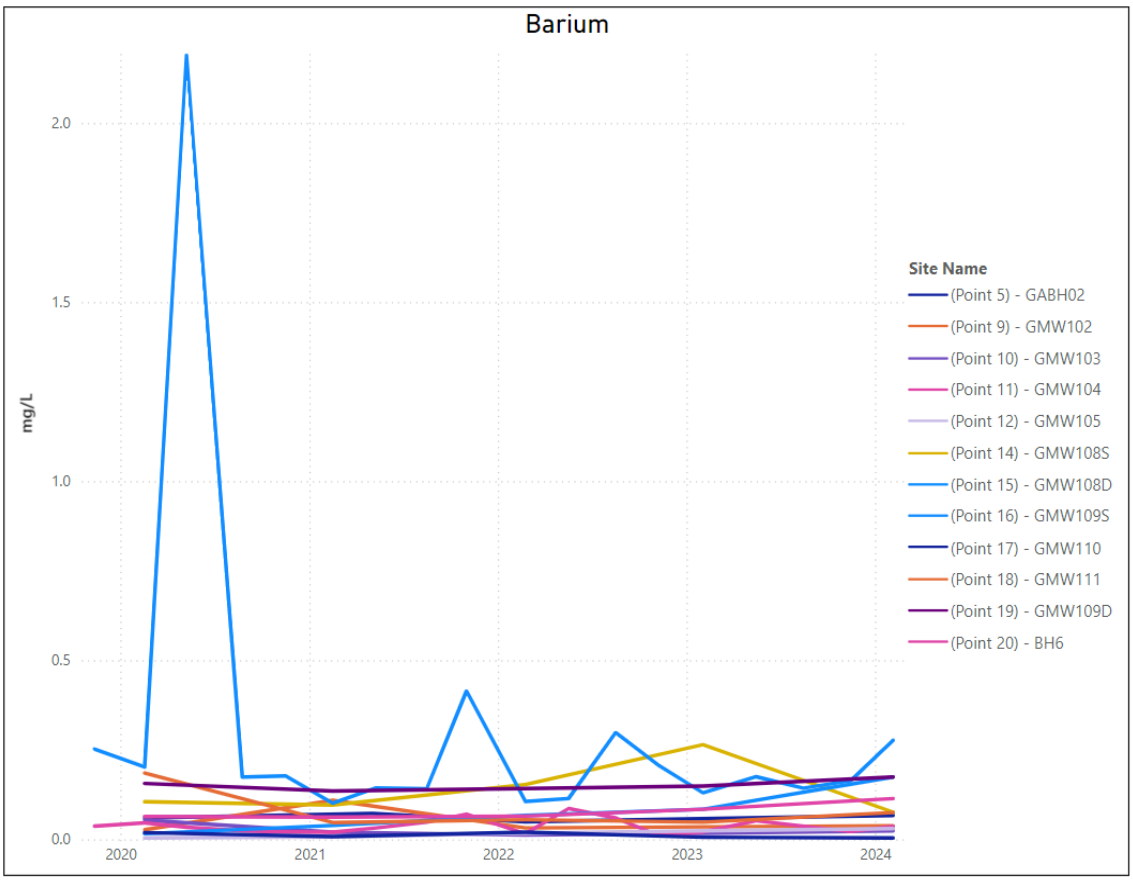
Ground Water Results 2023/24 Reporting Period

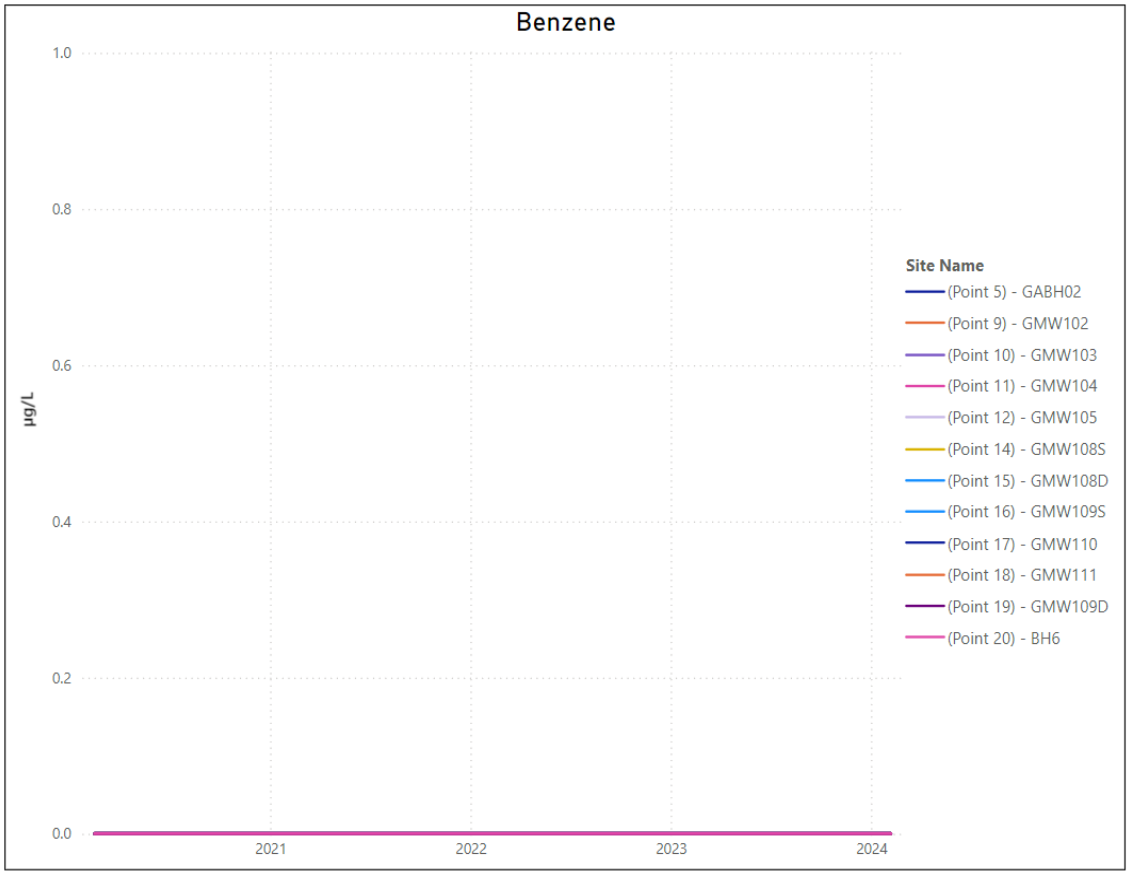


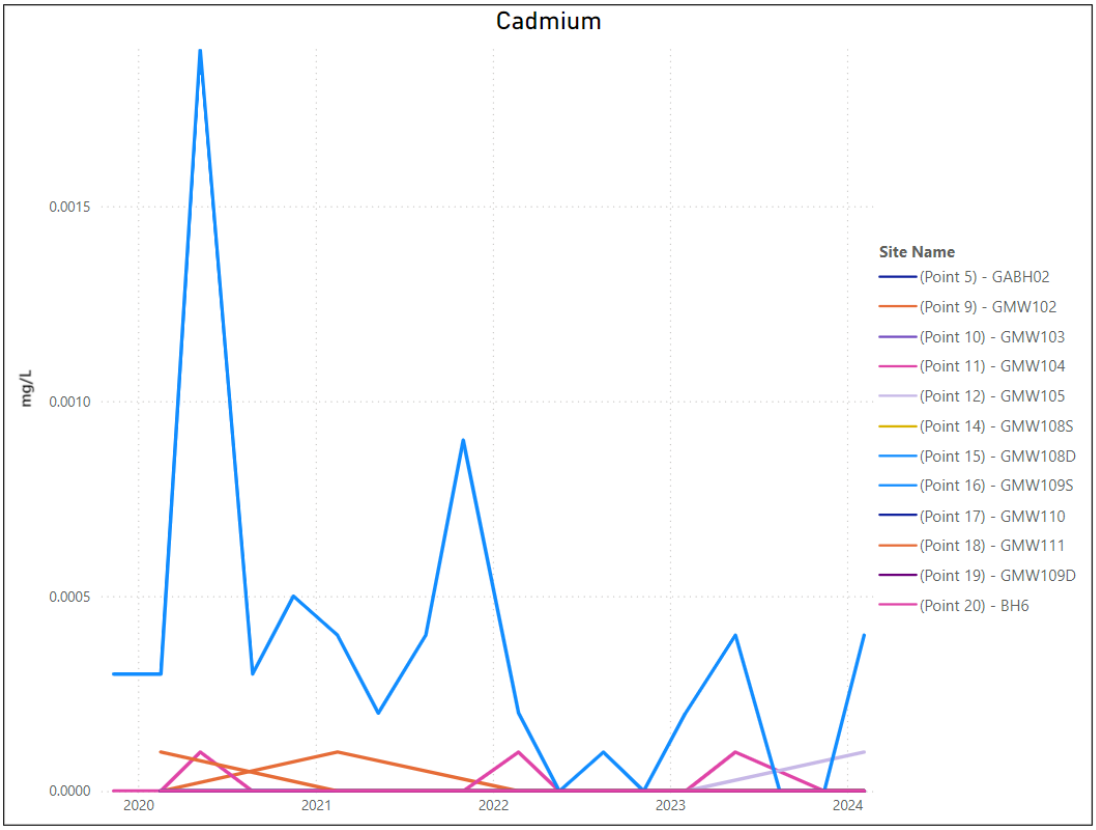


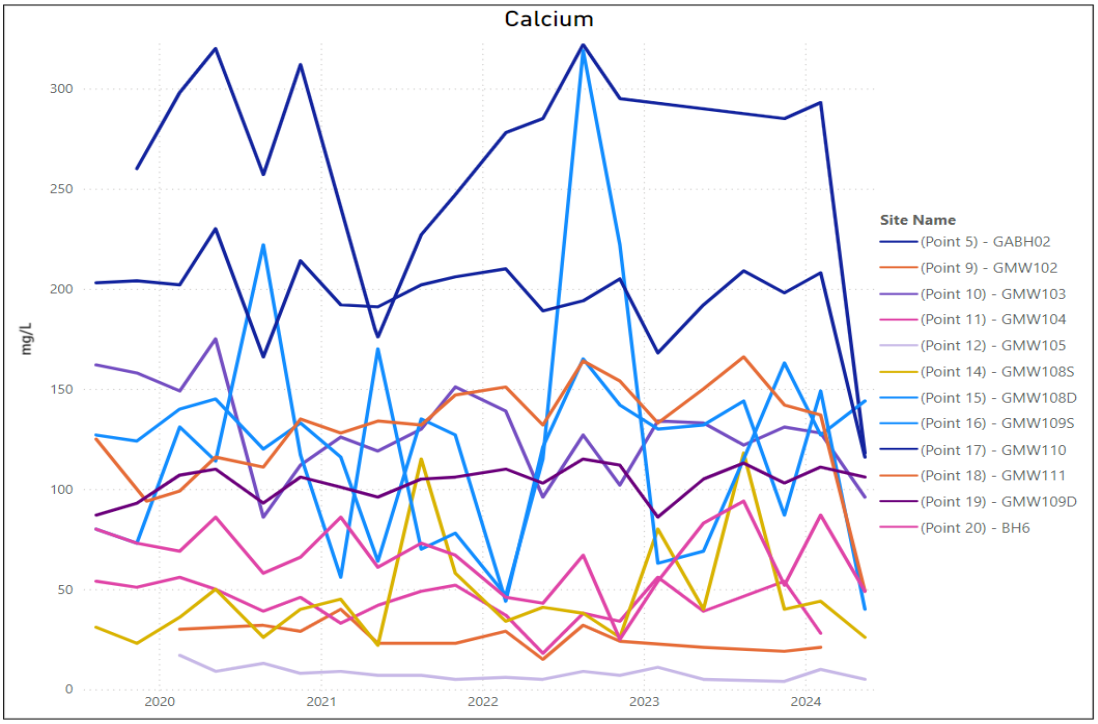

Ammonia
mg/L
1.2
1.0
0.8
0.6
0.4
0.2
0.0
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

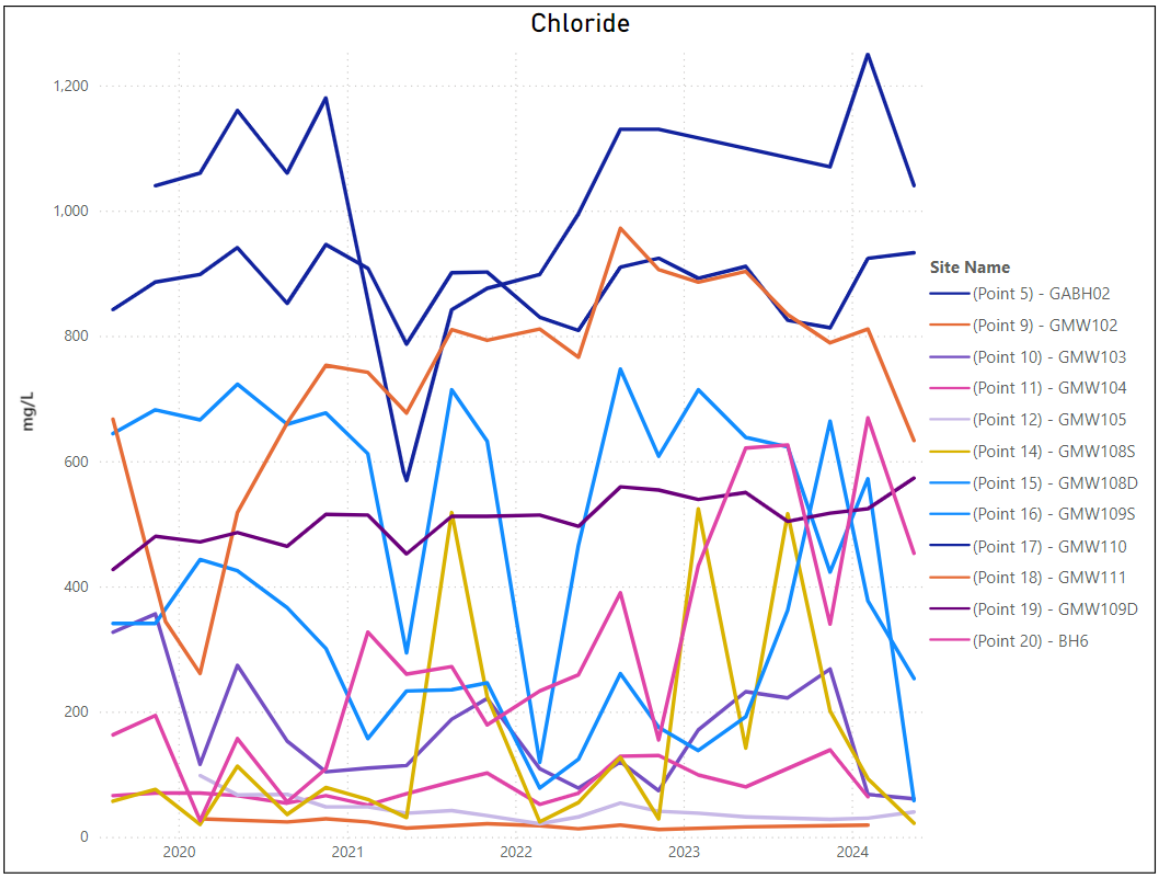

Arsenic
mg/L
0.005
0.004
0.003
0.002
0.001
0.000
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

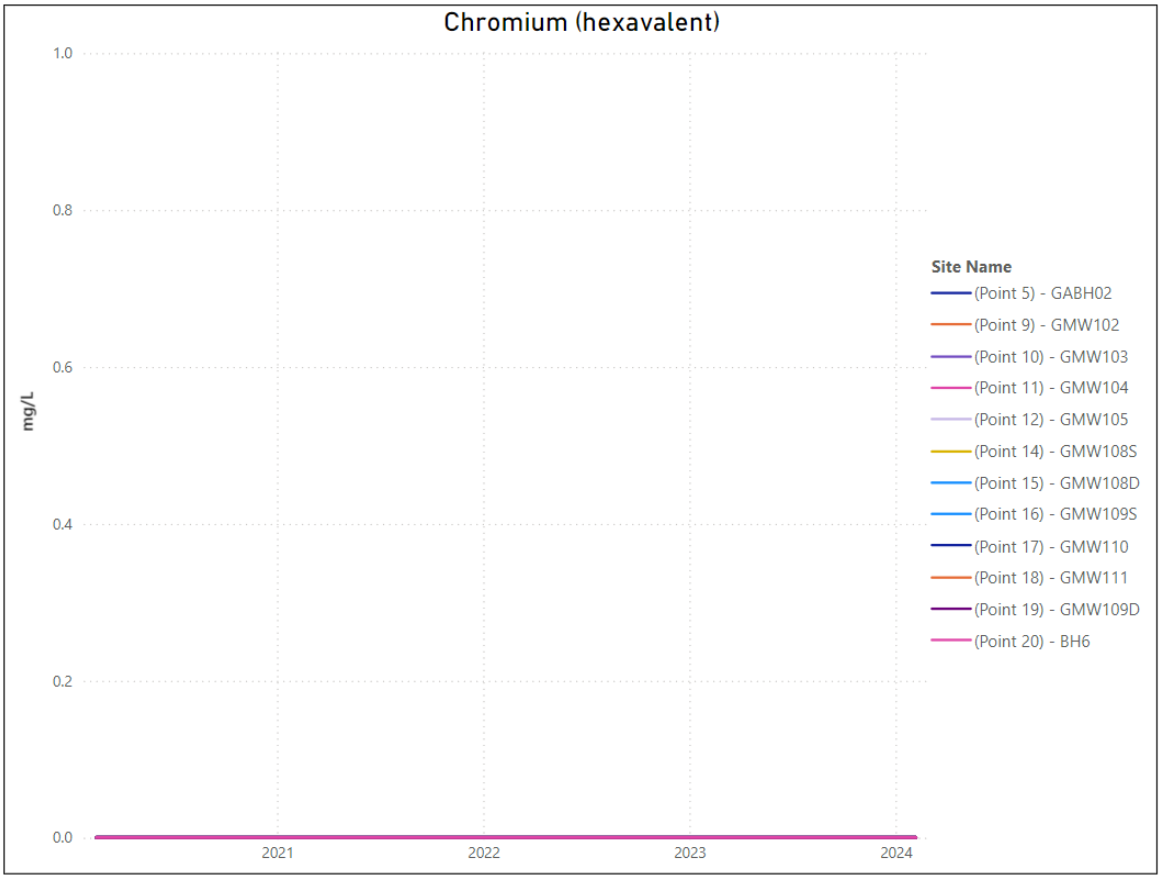

Barium
mg/L
2.0
1.5
1.0
0.5
0.0
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

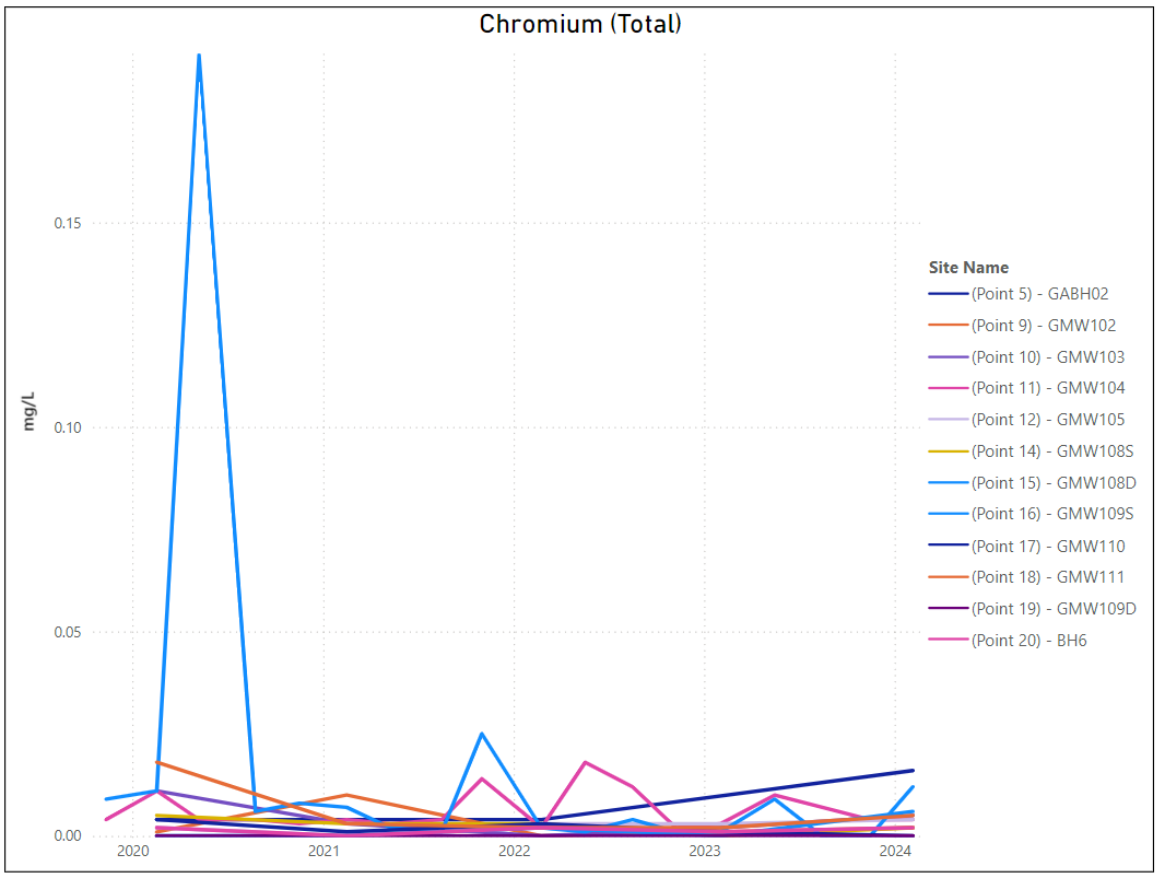

Benzene
µg/L
1.0
0.8
0.6
0.4
0.2
0.0
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

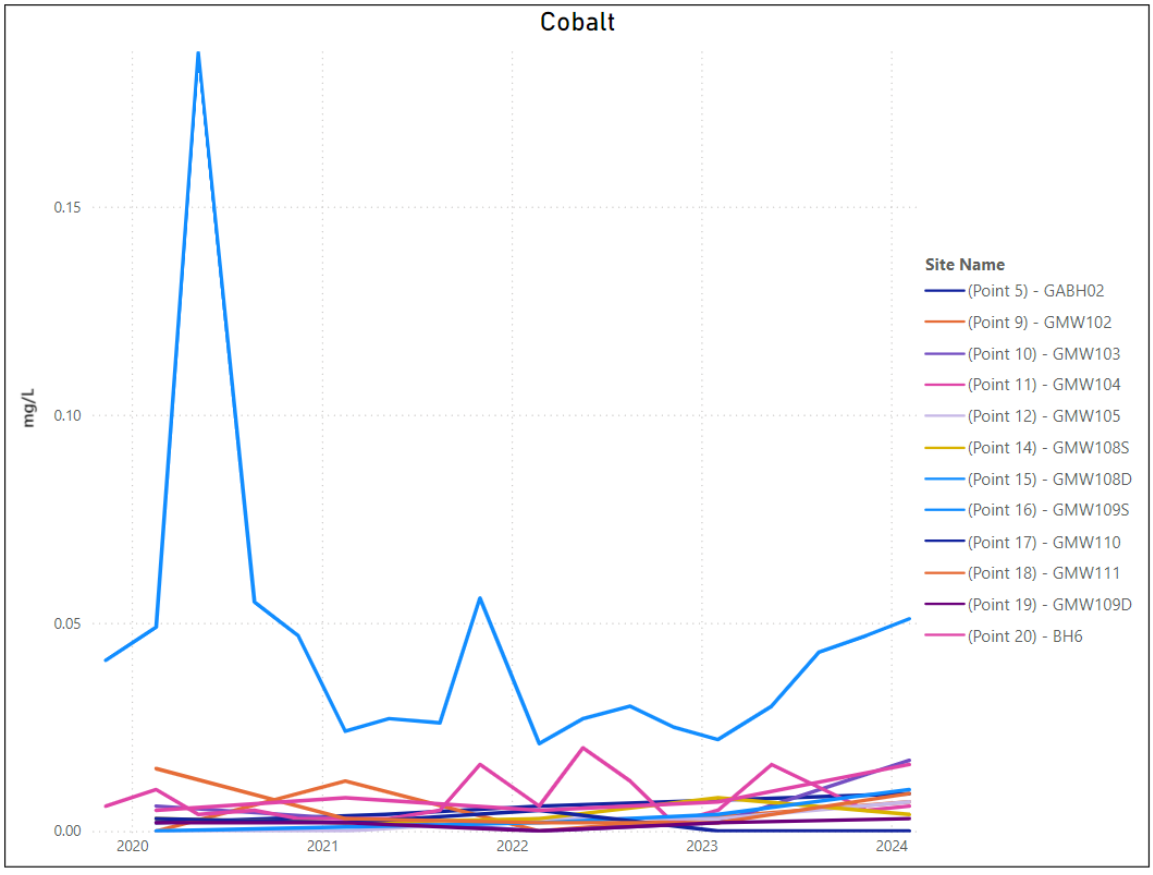

Cadmium
mg/L
0.0015
0.0010
0.0005
0.0000
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

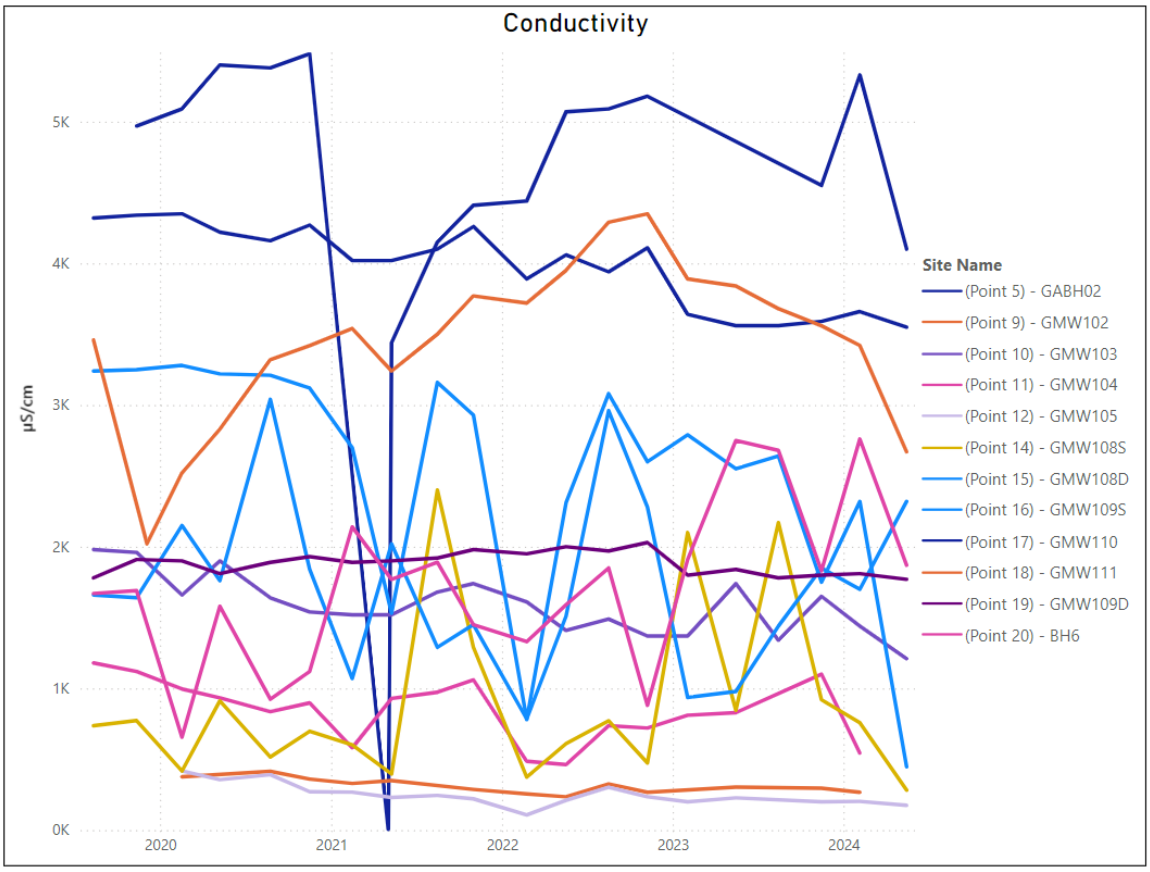

Calcium
mg/L
300
250
200
150
100
50
0
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

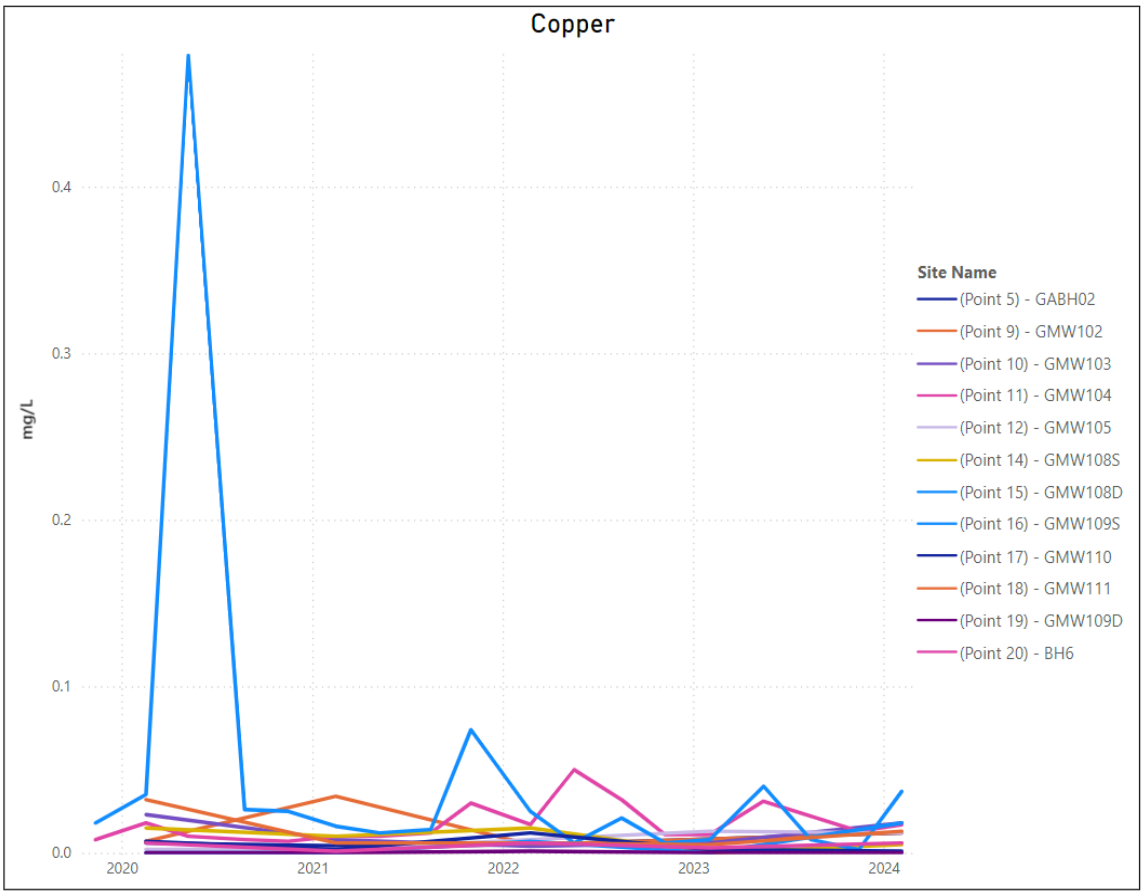

Chloride
1,200
1,000
800
600
400
200
0
mg/L
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

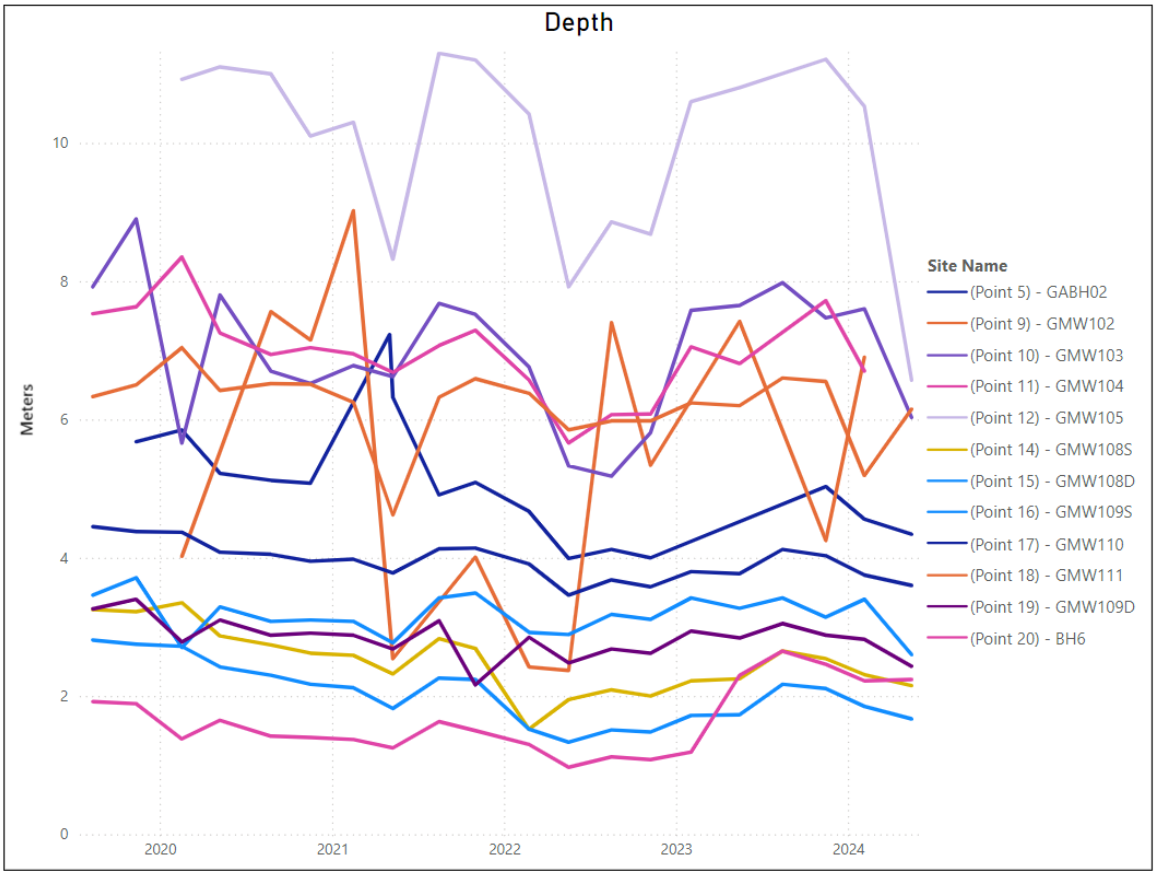

Chromium (hexavalent)
1.0
0.8
0.6
0.4
0.2
0.0
mg/L
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

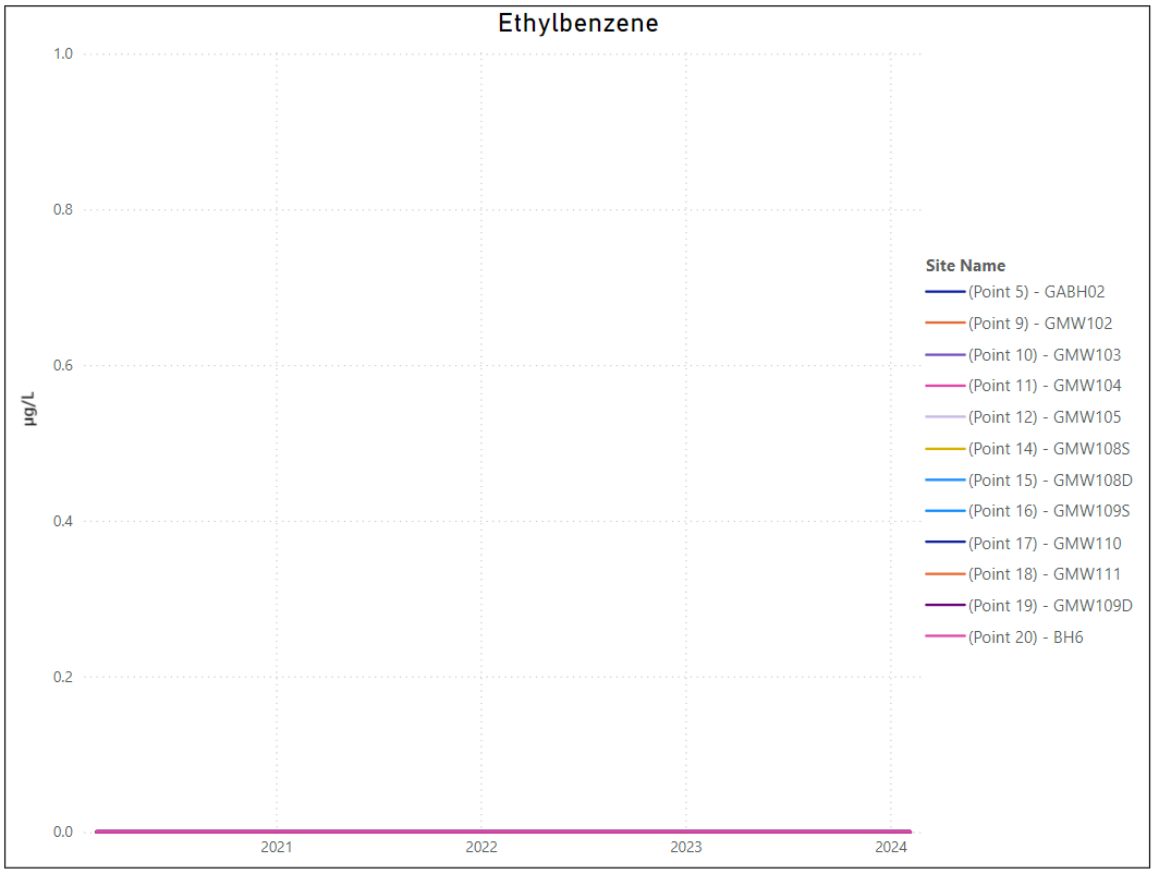

Chromium (Total)
mg/L
0.15
0.10
0.05
0.00
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

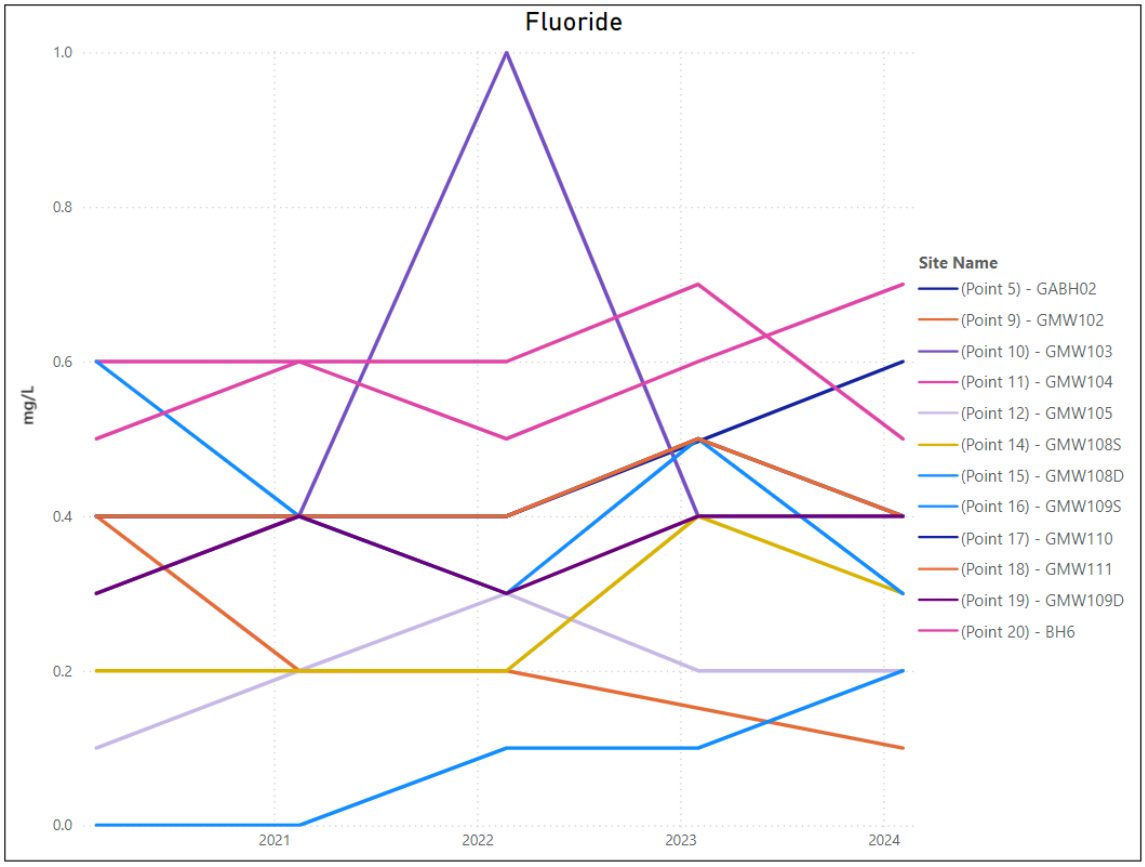

Cobalt
mg/L
0.15
0.10
0.05
0.00
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

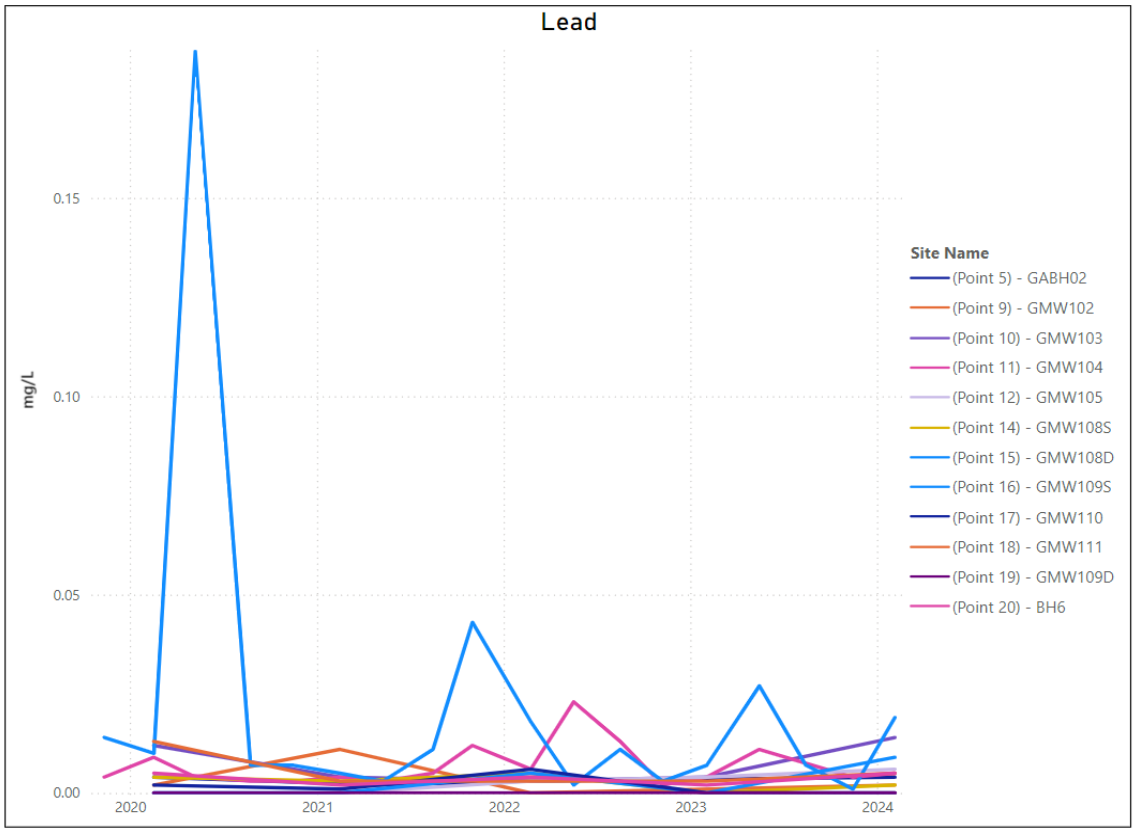

Conductivity
µS/cm
5K
4K
3K
2K
1K
0K
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

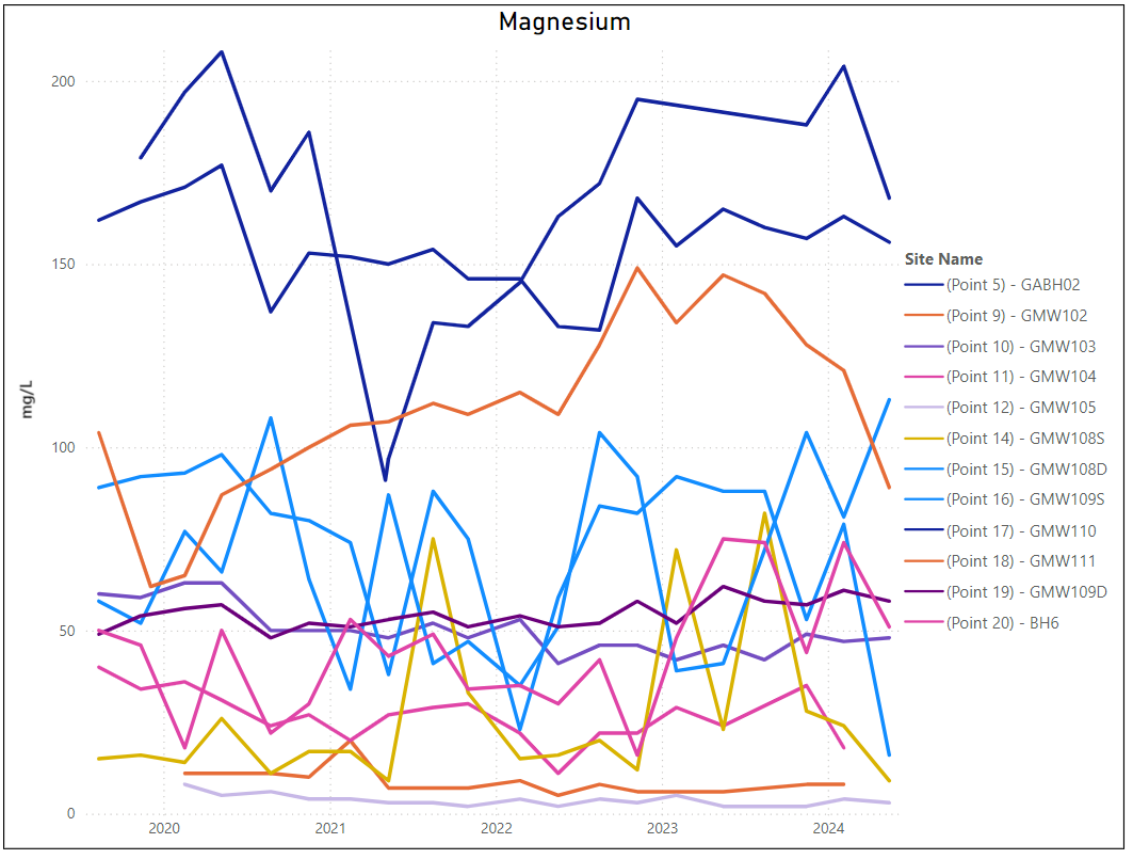

Copper
mg/L
0.4
0.3
0.2
0.1
0.0
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

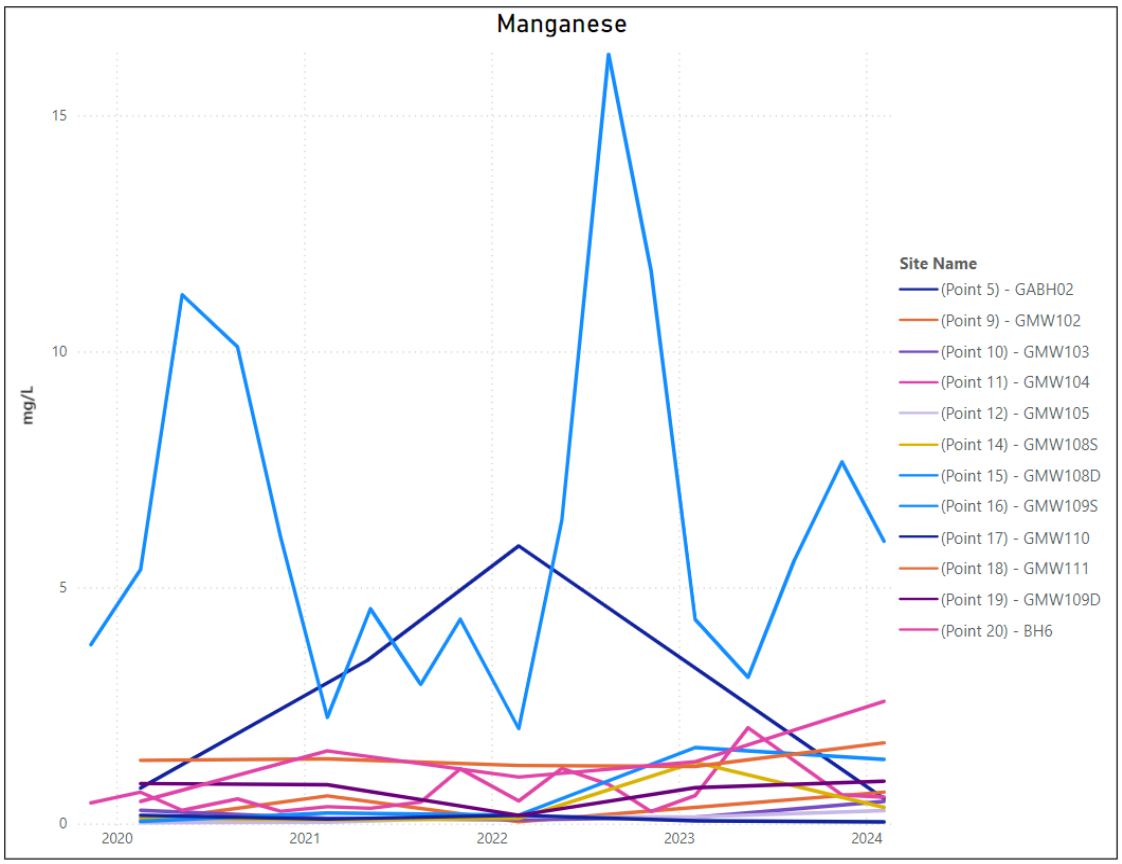

Depth
Meters
10
8
6
4
2
0
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

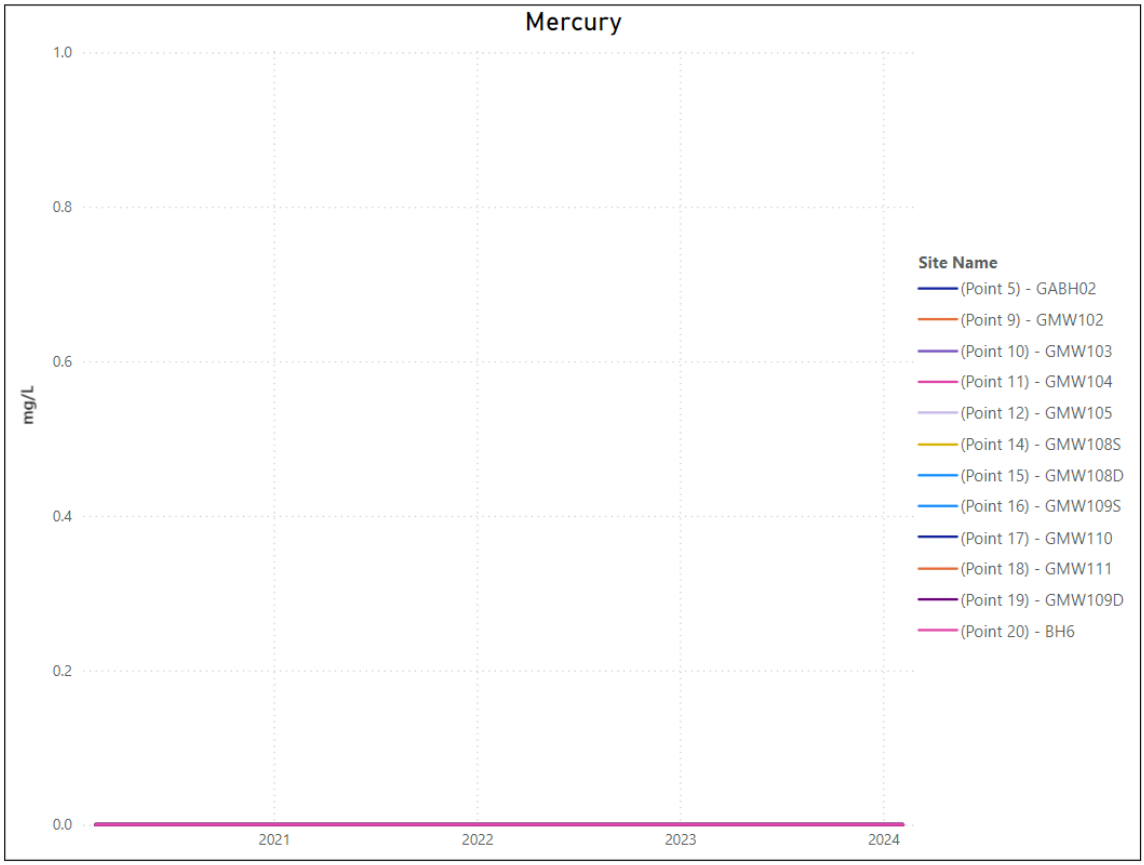

Ethylbenzene
µg/L
1.0
0.8
0.6
0.4
0.2
0.0
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

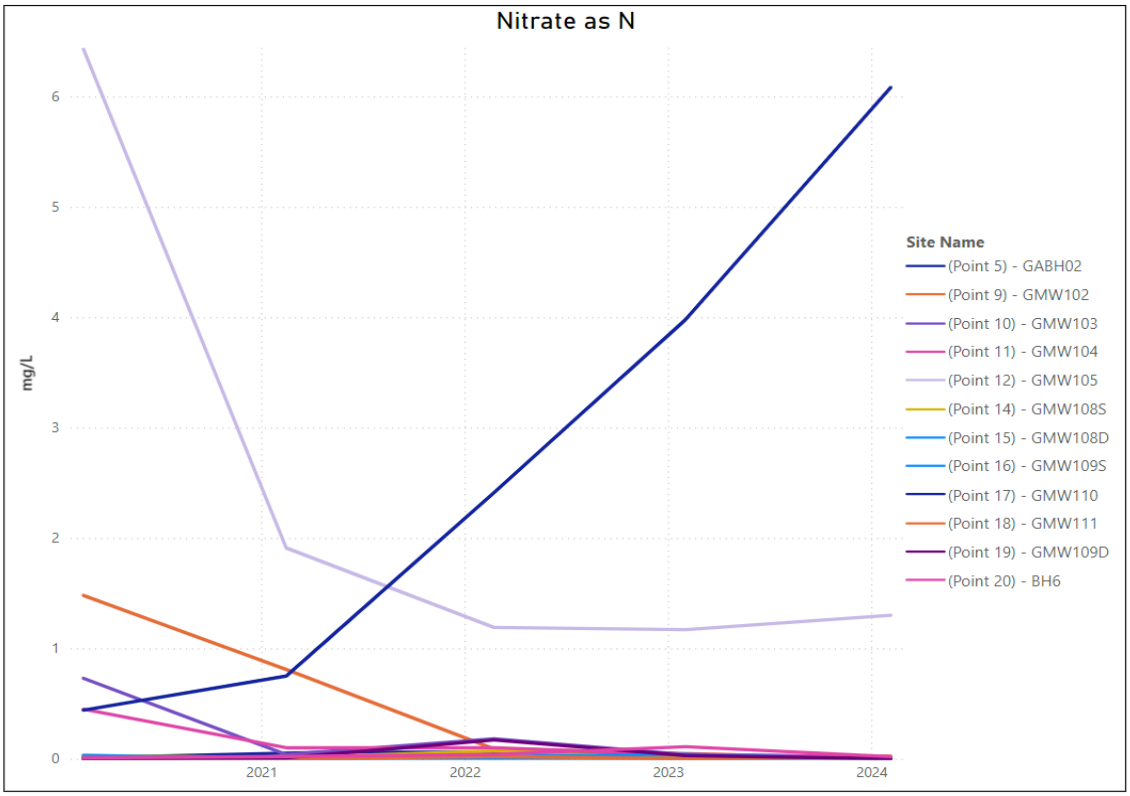

Fluoride
1.0
0.8
0.6
0.4
0.2
0.0
mg/L
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

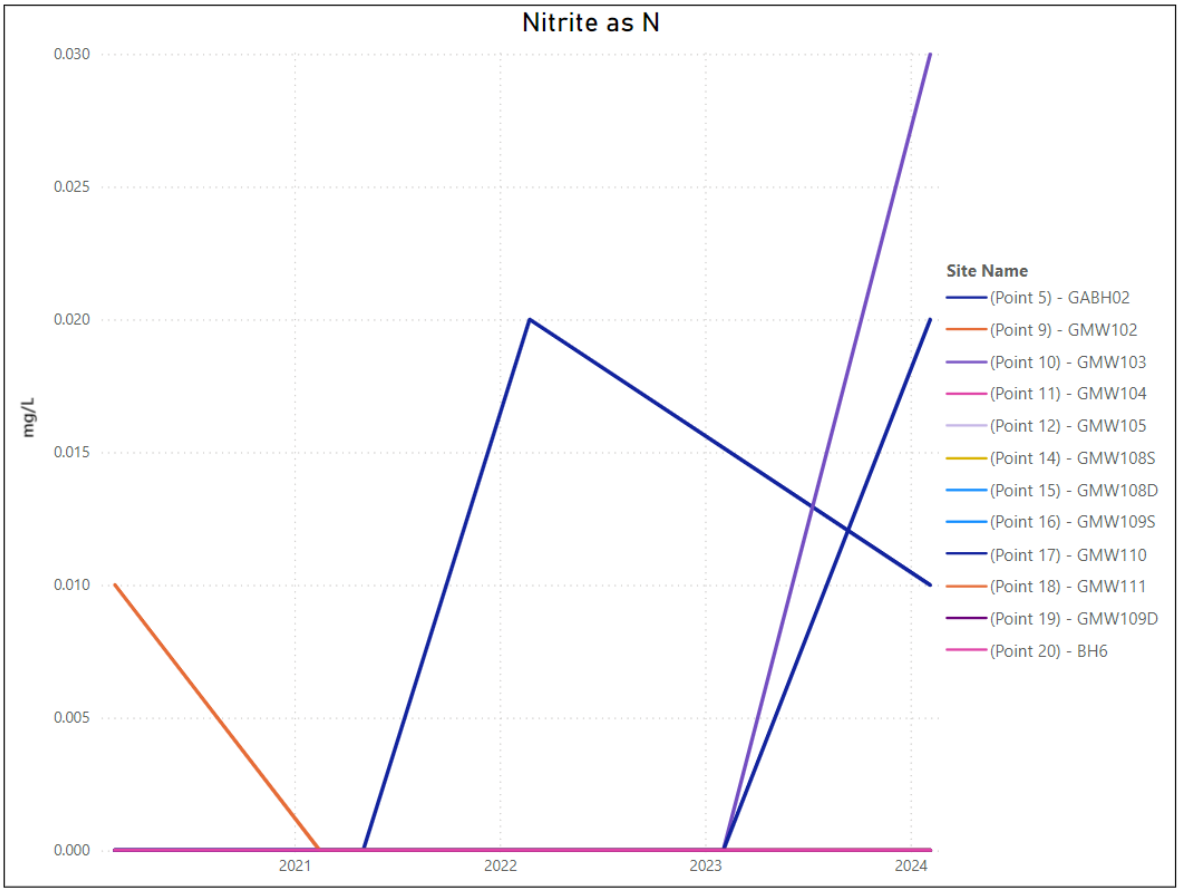

Lead
0.15
0.10
0.05
0.00
mg/L
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

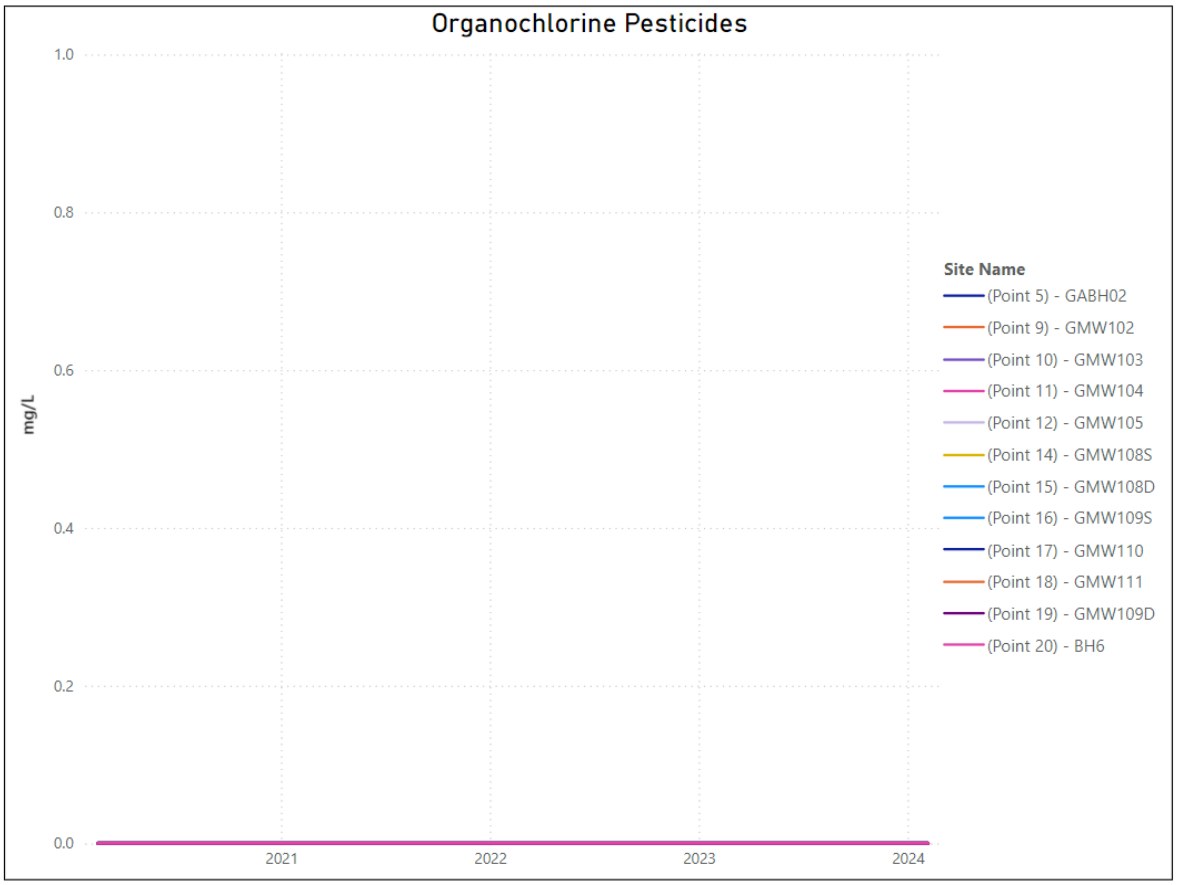

Magnesium
mg/L
200
150
100
50
0
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

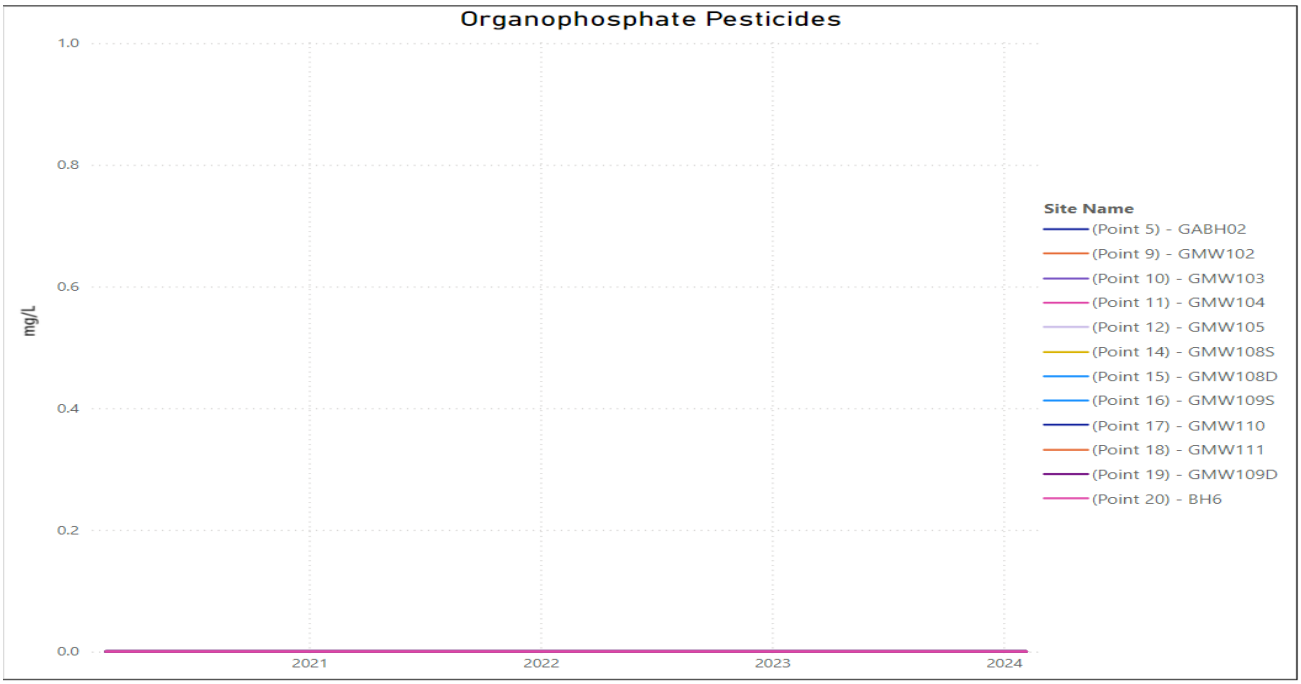

Manganese
mg/L
15
10
5
0
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

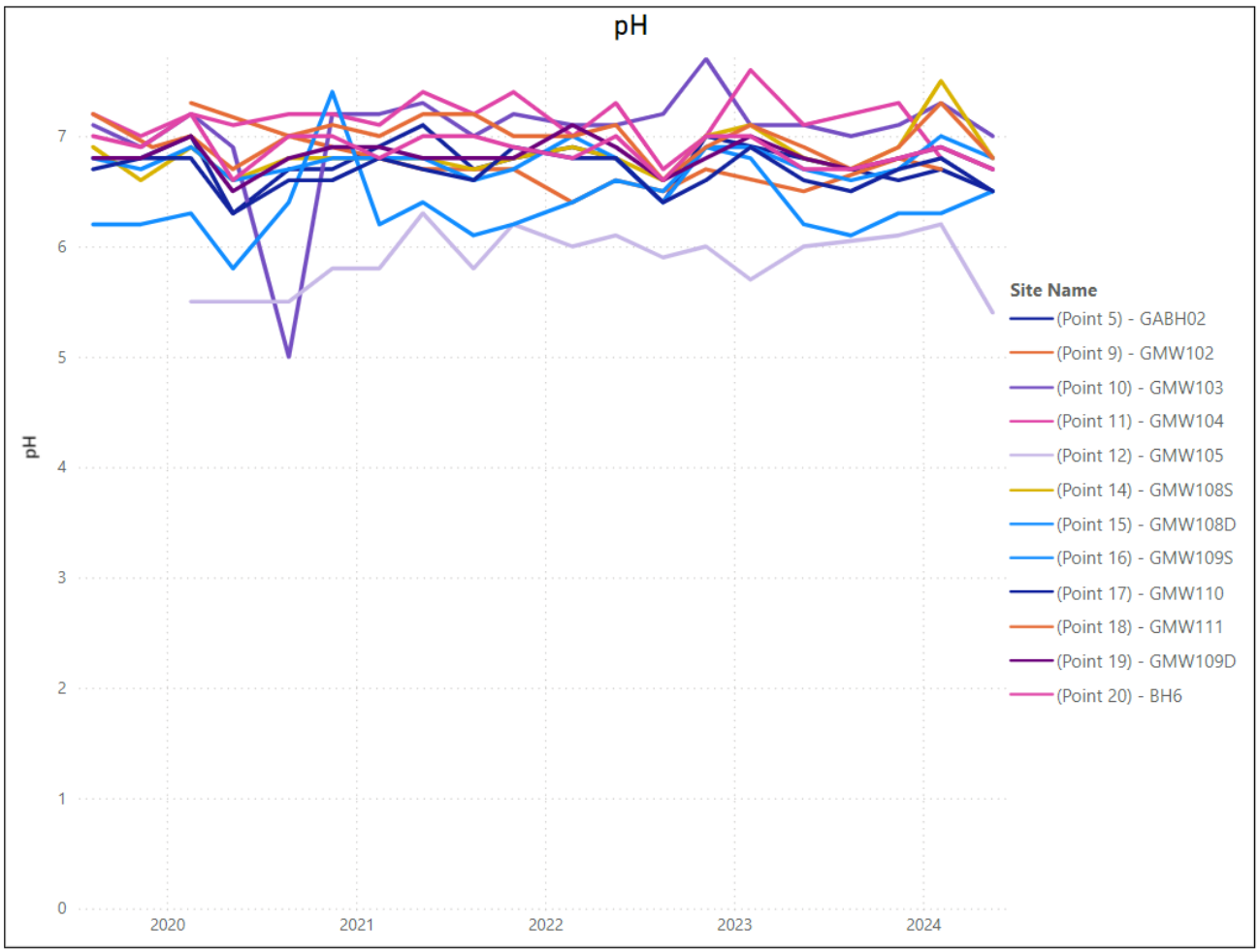

Mercury
1.0
0.8
0.6
0.4
0.2
0.0
mg/L
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

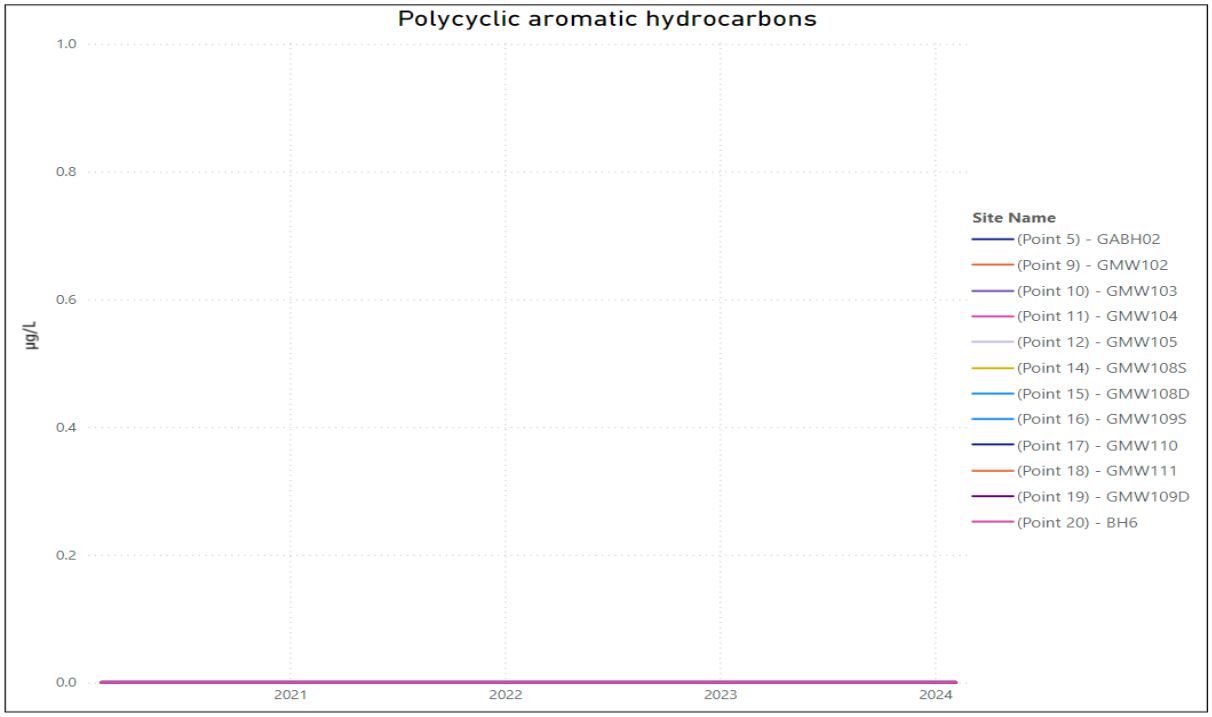

Nitrate as N
6
5
4
3
2
1
0
mg/L
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

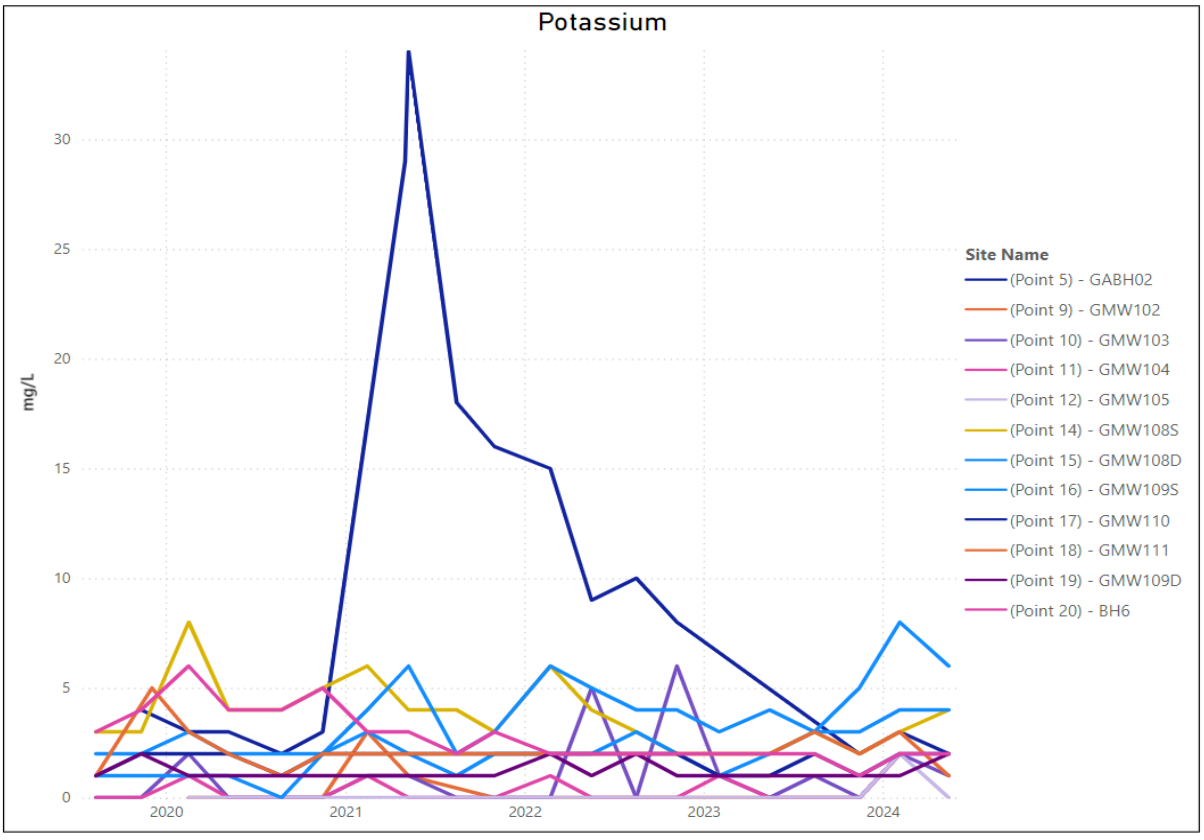

Nitrite as N
0.030
0.025
0.020
0.015
0.010
0.005
0.000
mg/L
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

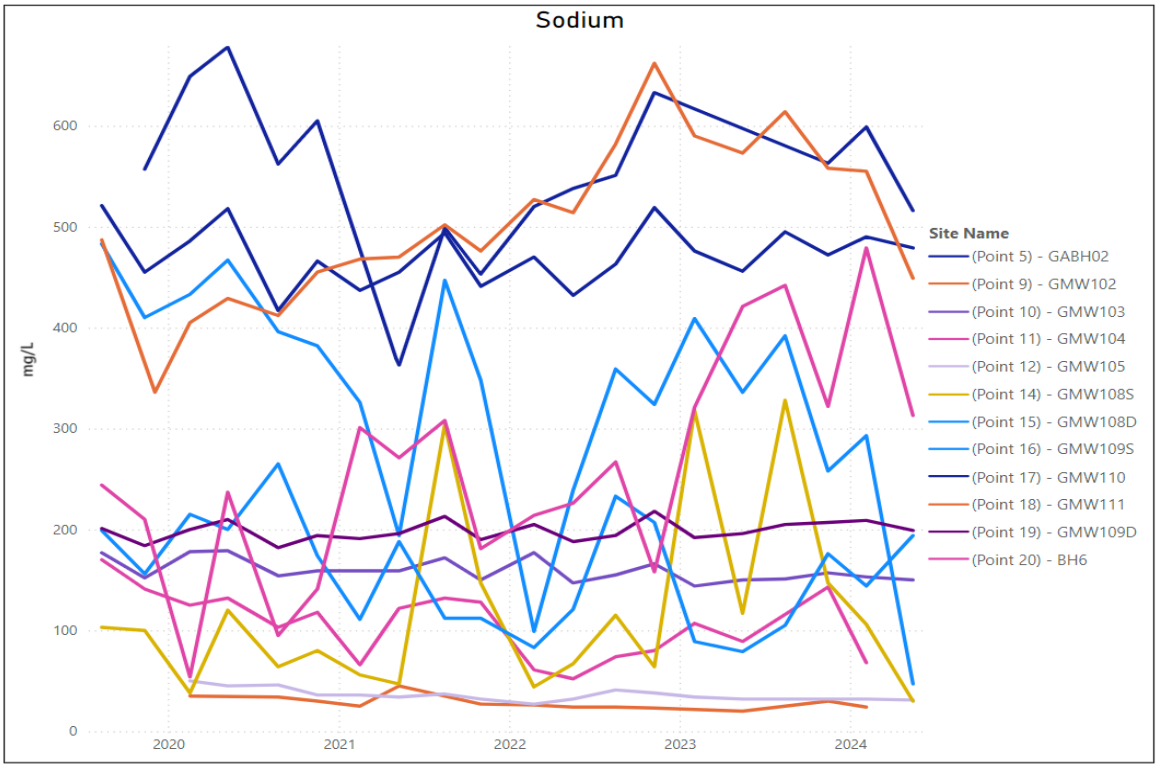

Organochlorine Pesticides
1.0
0.8
0.6
0.4
0.2
0.0
mg/L
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

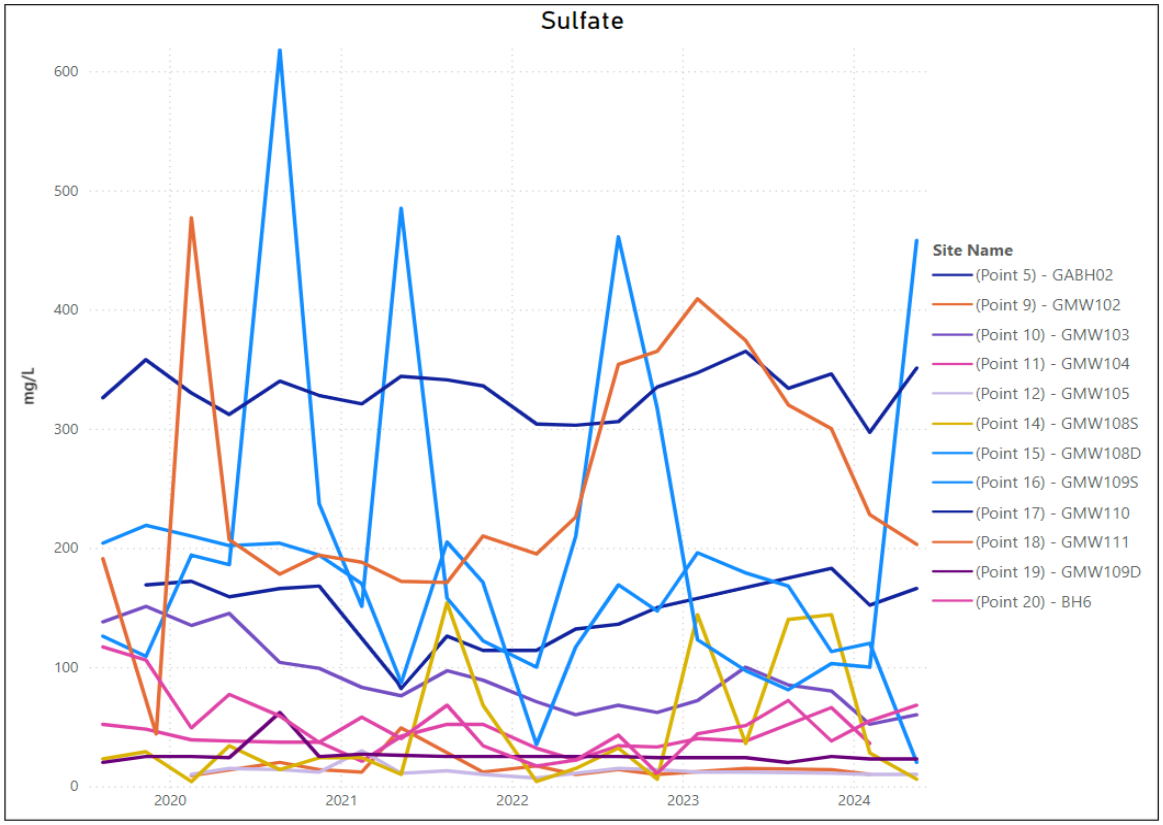

Organophosphate Pesticides
1.0
0.8
0.6
0.4
0.2
0.0
mg/L
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

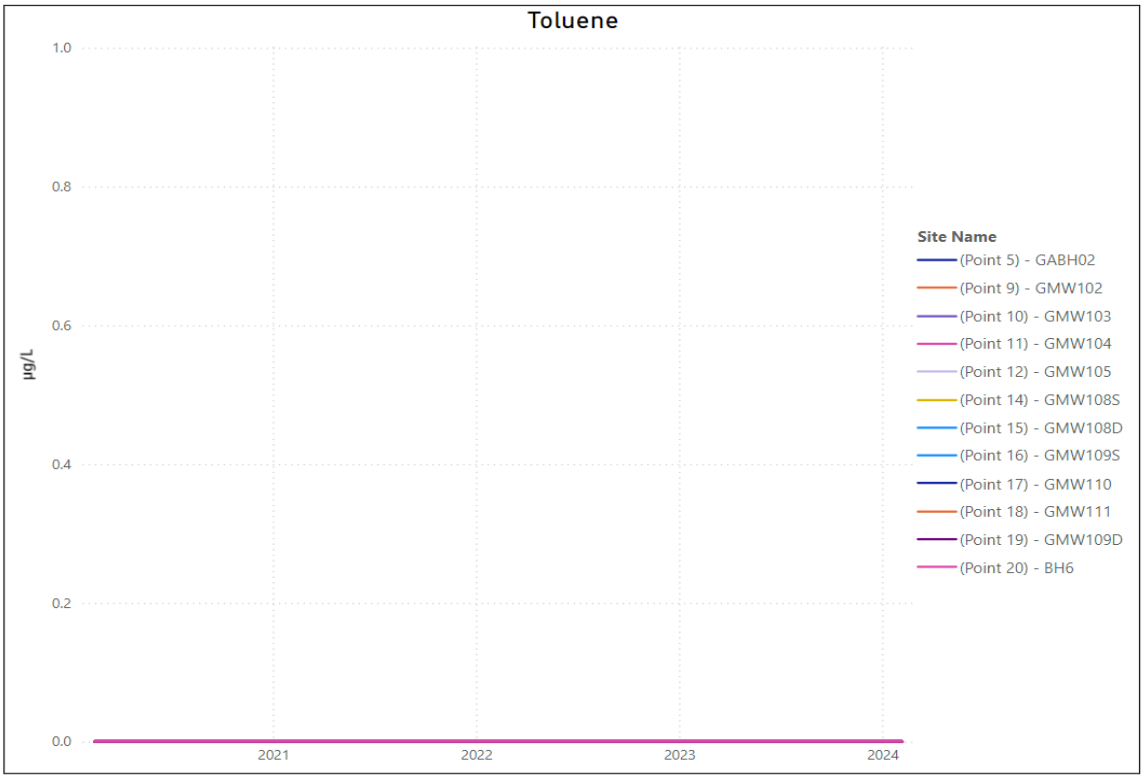

pH
7
6
5
4
3
2
1
0
pH
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

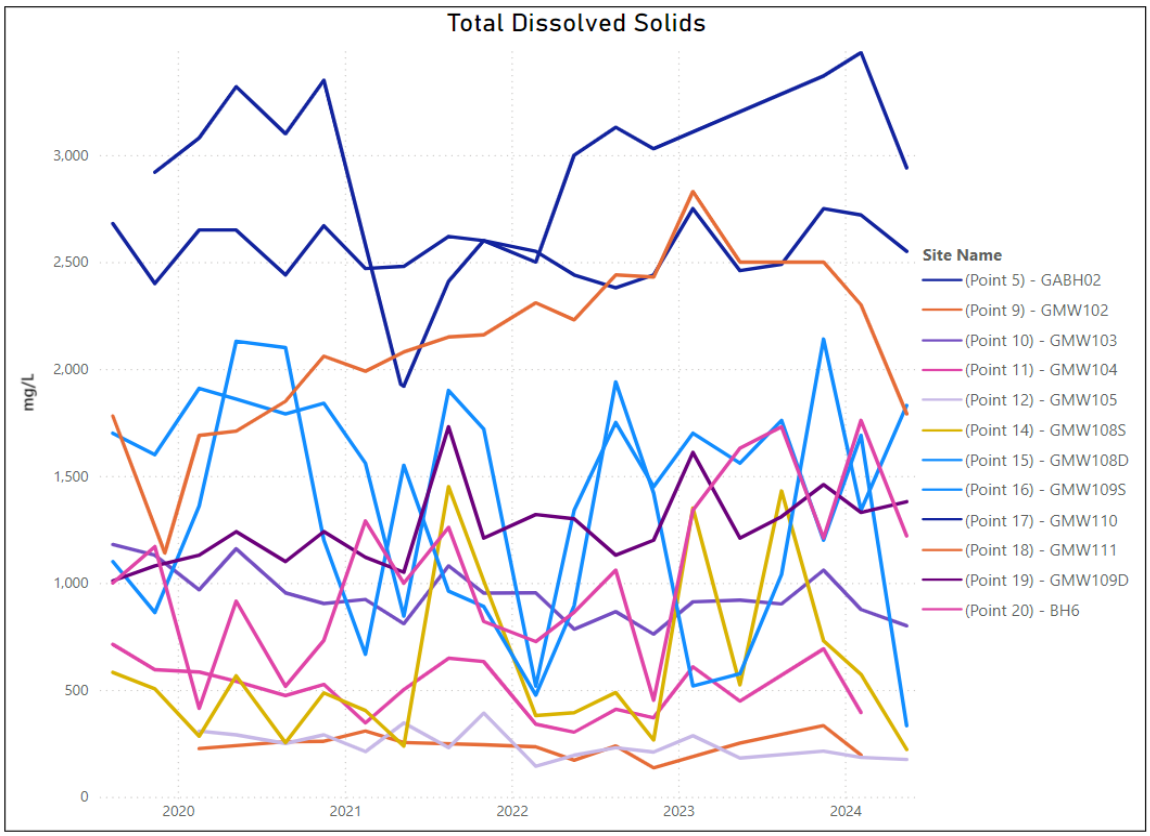

Polycyclic aromatic hydrocarbons
1.0
0.8
0.6
0.4
0.2
0.0
µg/l
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

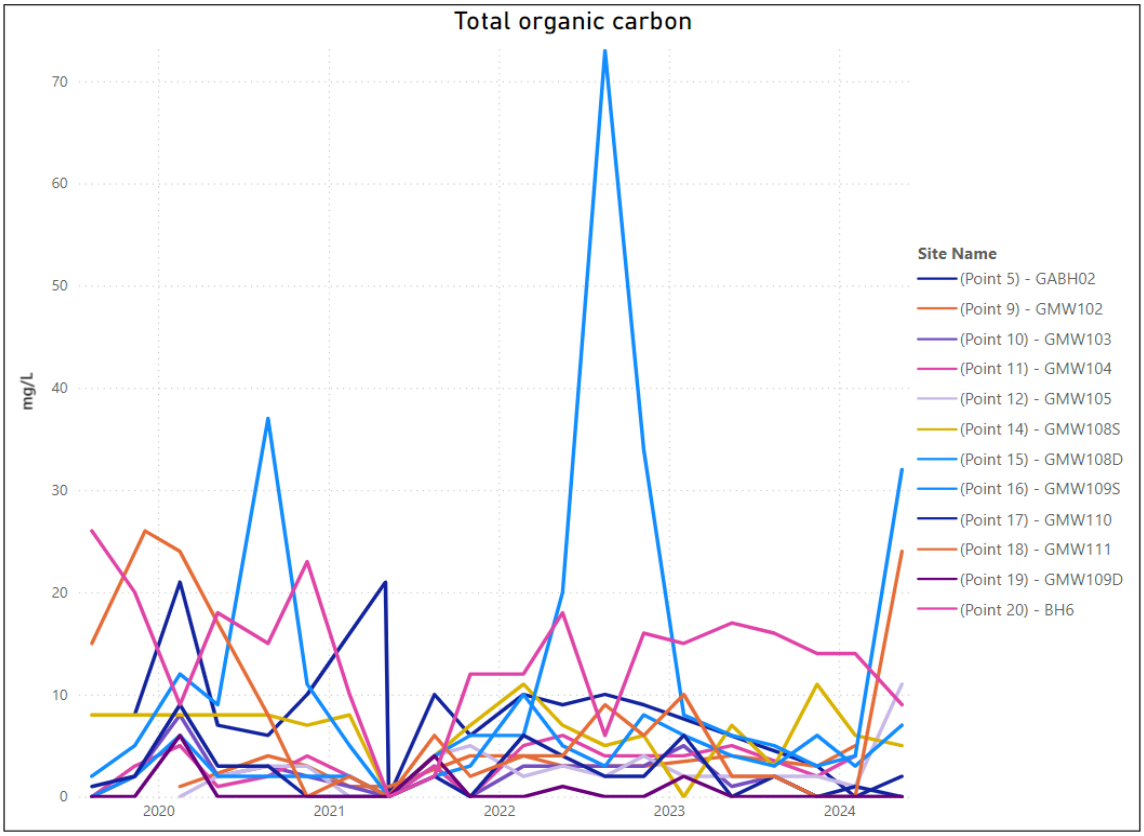

Potassium
30
25
20
15
10
5
0
mg/L
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

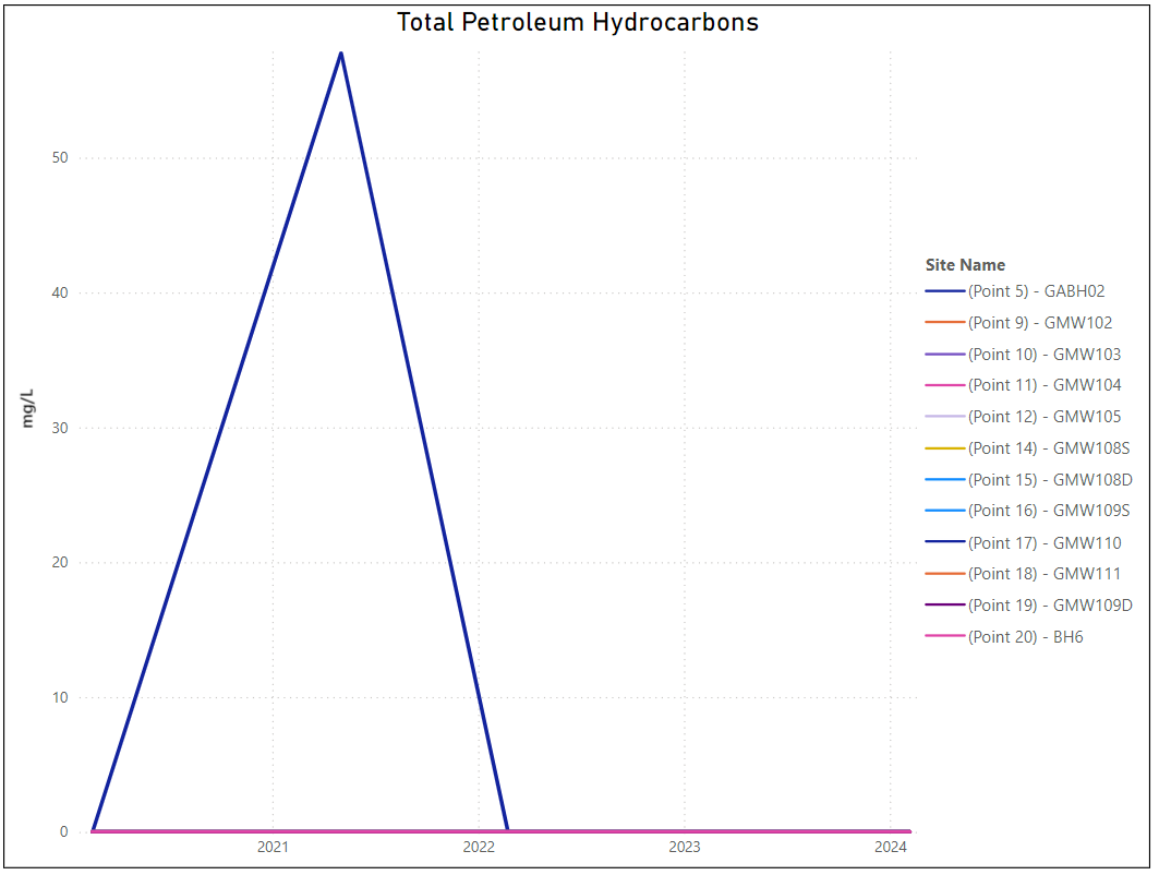

Sodium
mg/L
600
500
400
300
200
100
0
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

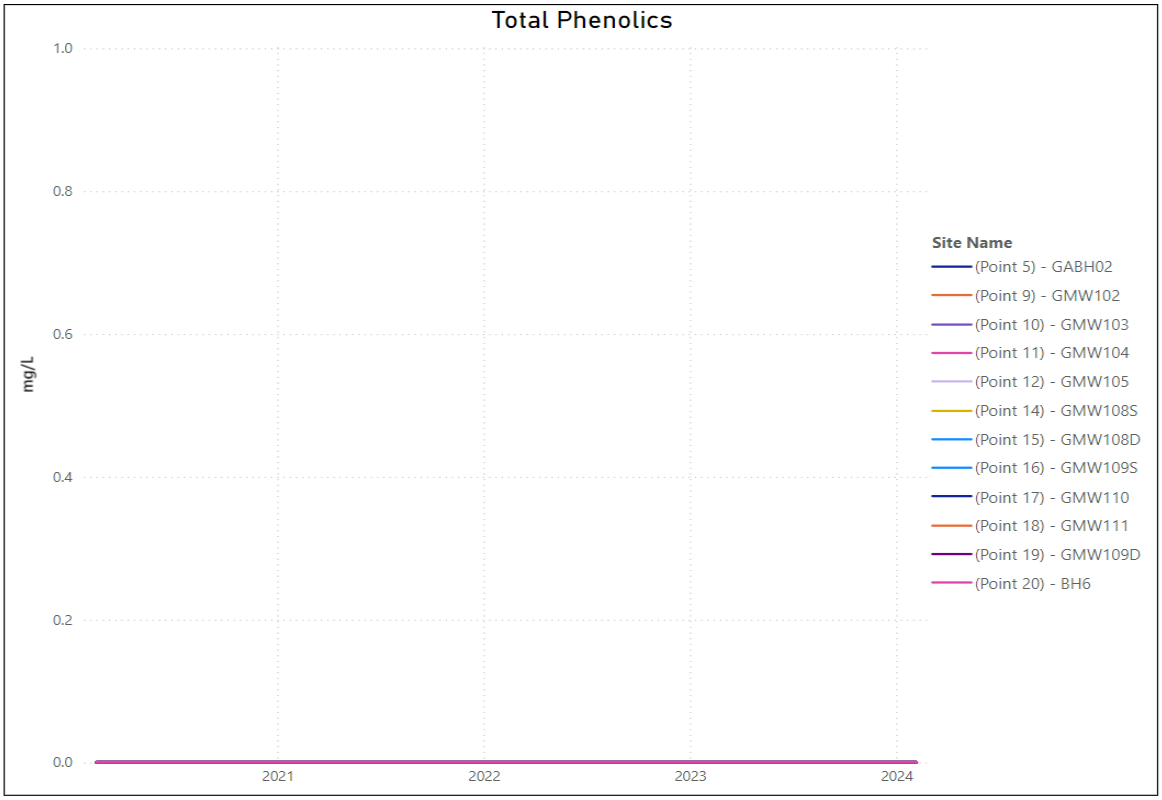

Sulfate
mg/L
600
500
400
300
200
100
0
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

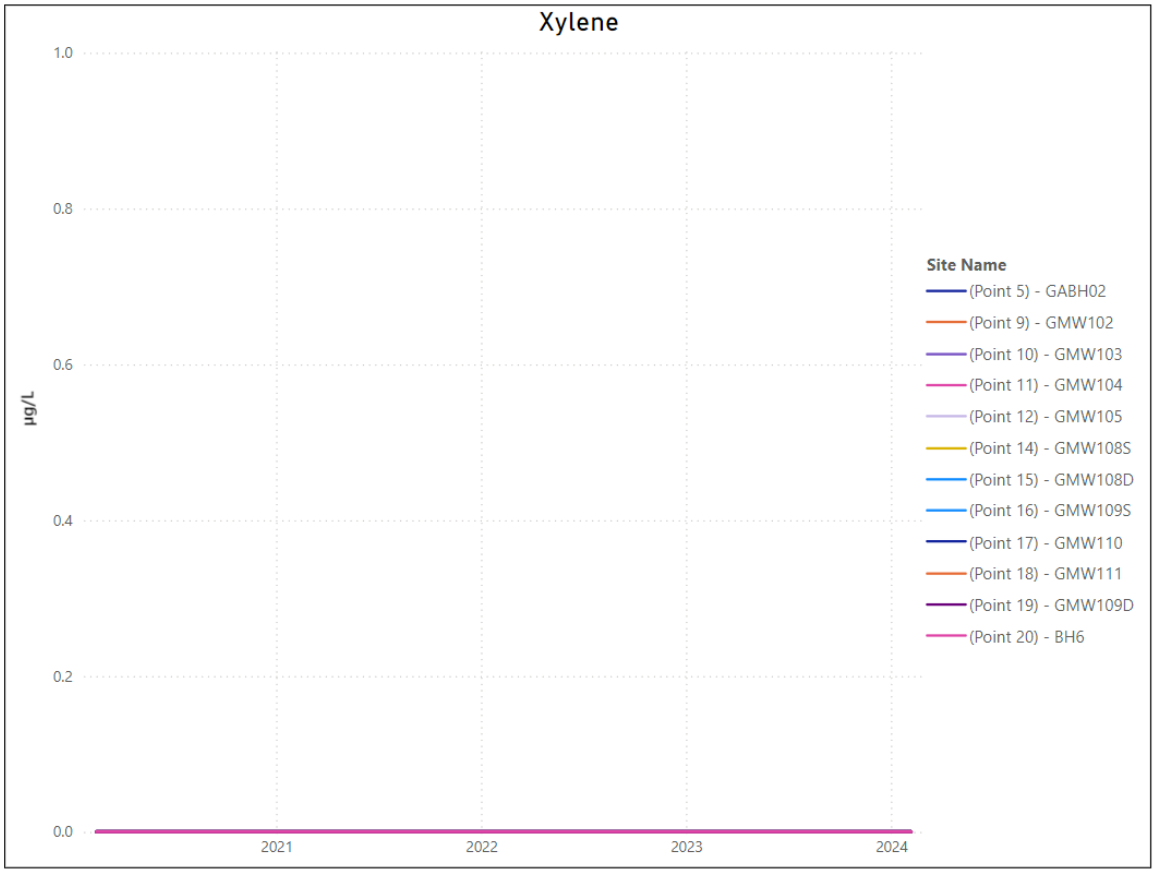

Toluene
1.0
0.8
0.6
0.4
0.2
0.0
µg/l
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

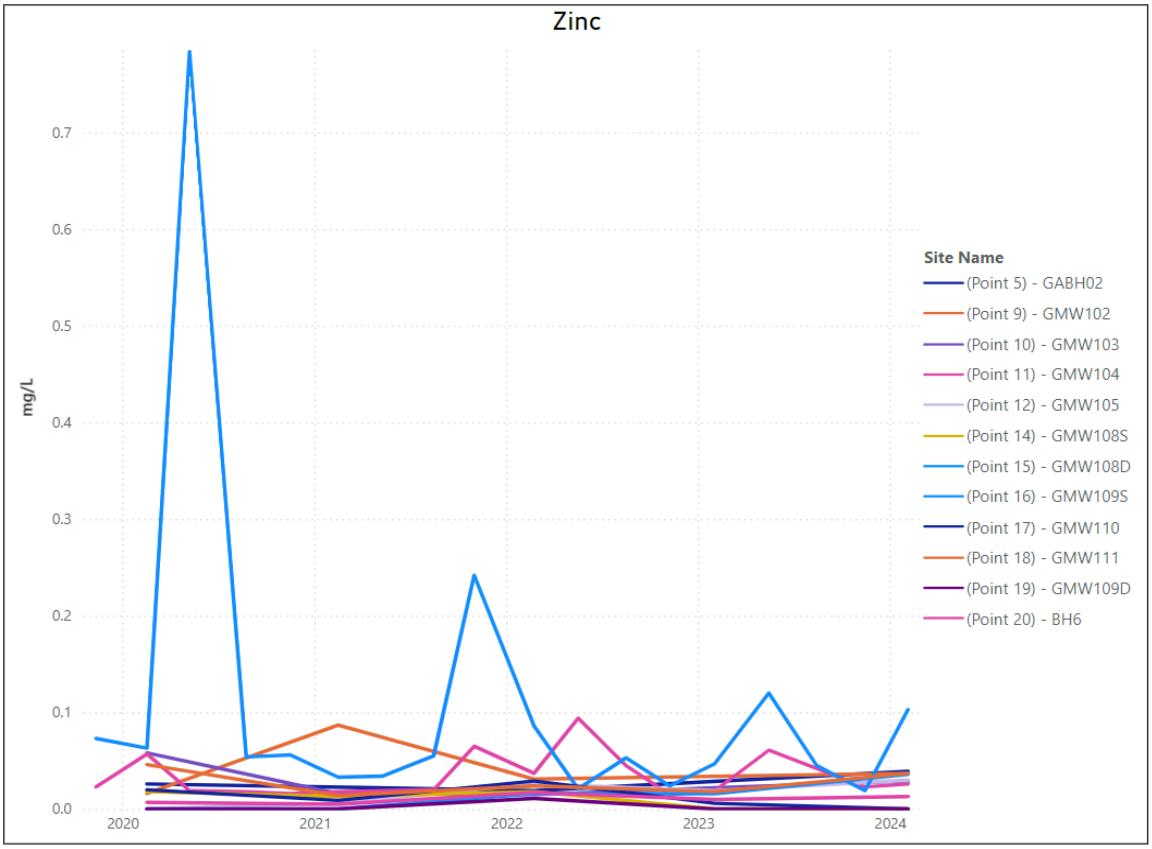

Total Dissolved Solids
3,000
2,500
2,000
1,500
1,000
500
0
mg/L
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6


Total organic carbon
mg/L
70
60
50
40
30
20
10
0
2020
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

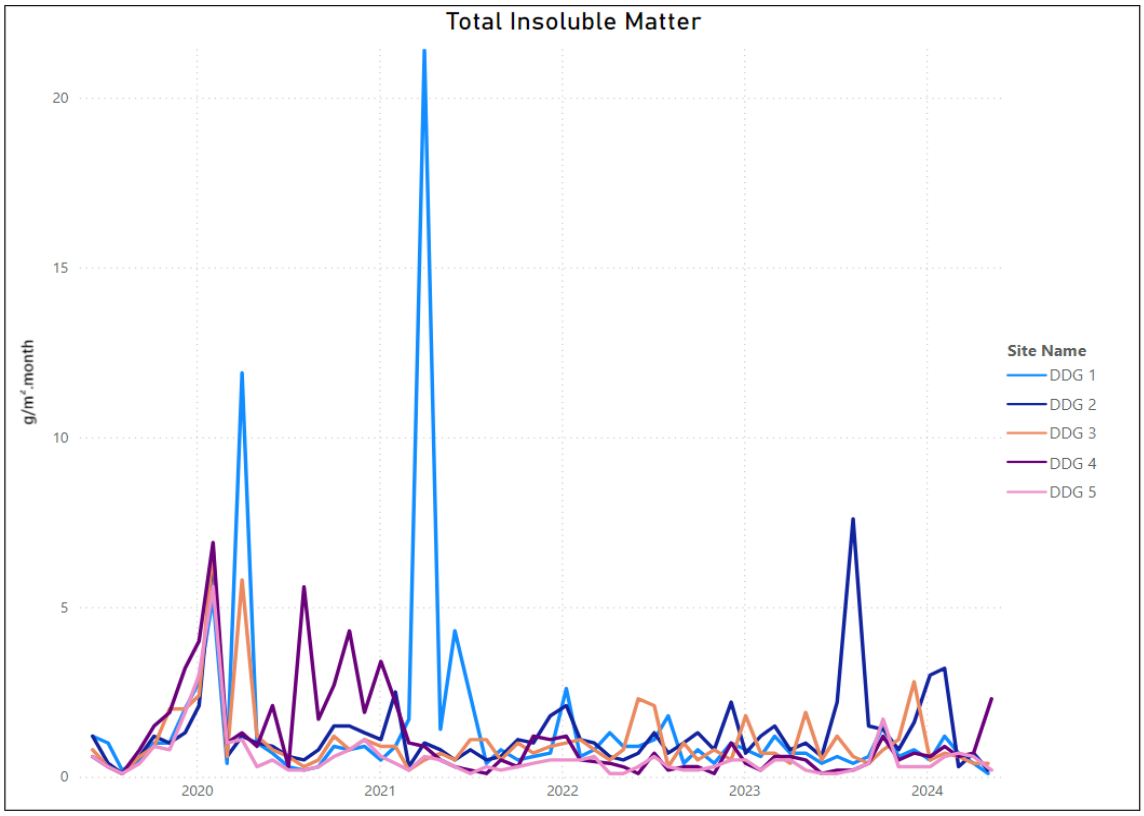

Total Petroleum Hydrocarbons
mg/L
50
40
30
20
10
0
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

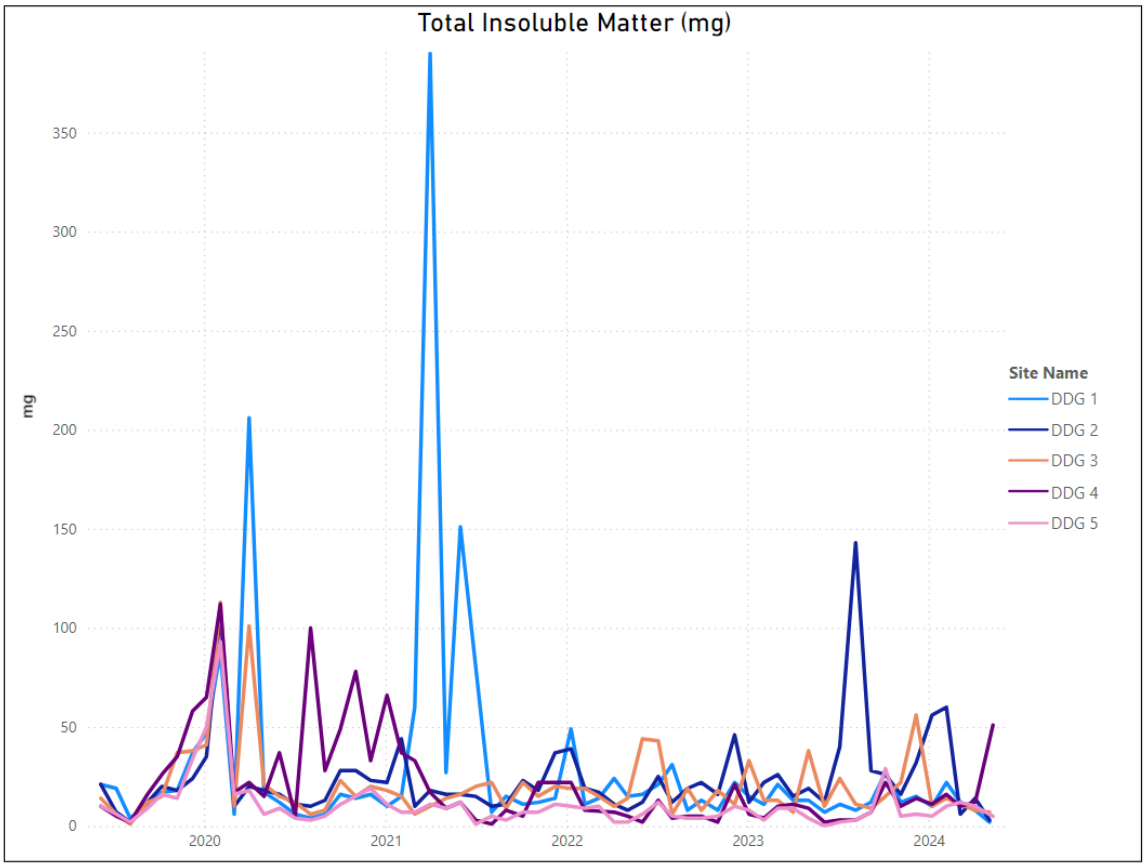

Total Phenolics
1.0
0.8
0.6
0.4
0.2
0.0
mg/L
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

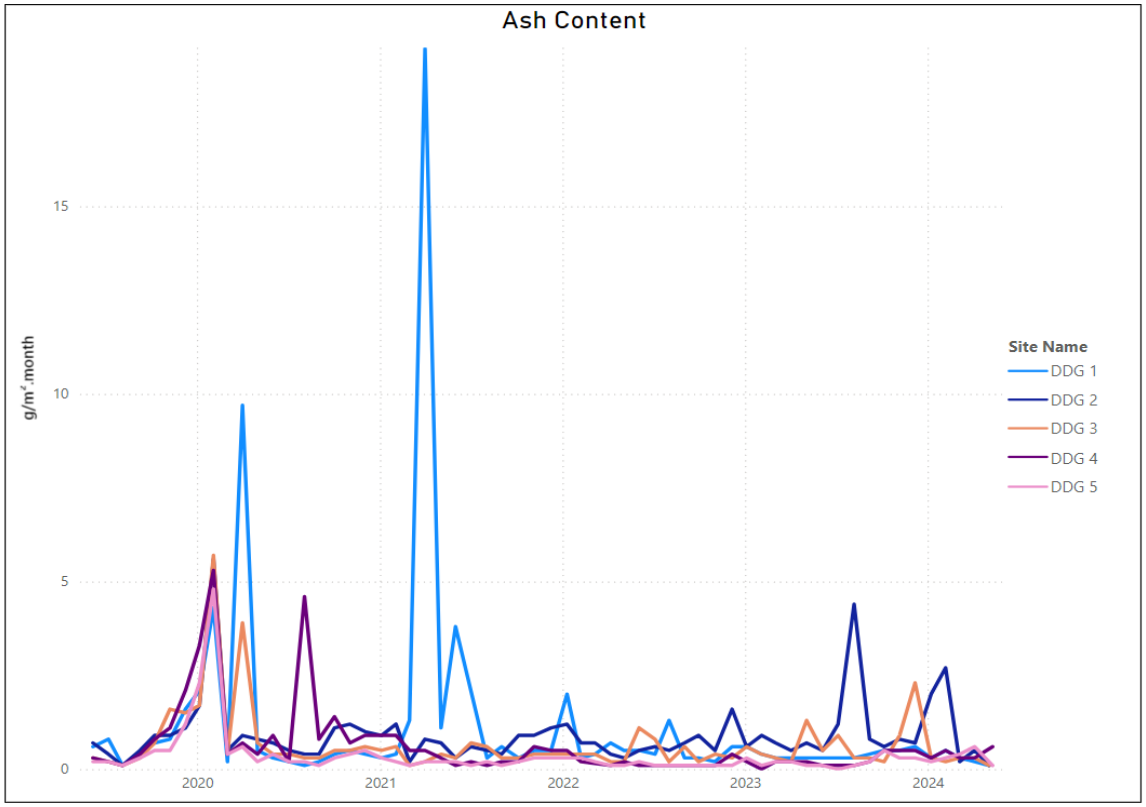

Xylene
1.0
0.8
0.6
0.4
0.2
0.0
µg/L
2021
2022
2023
2024
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

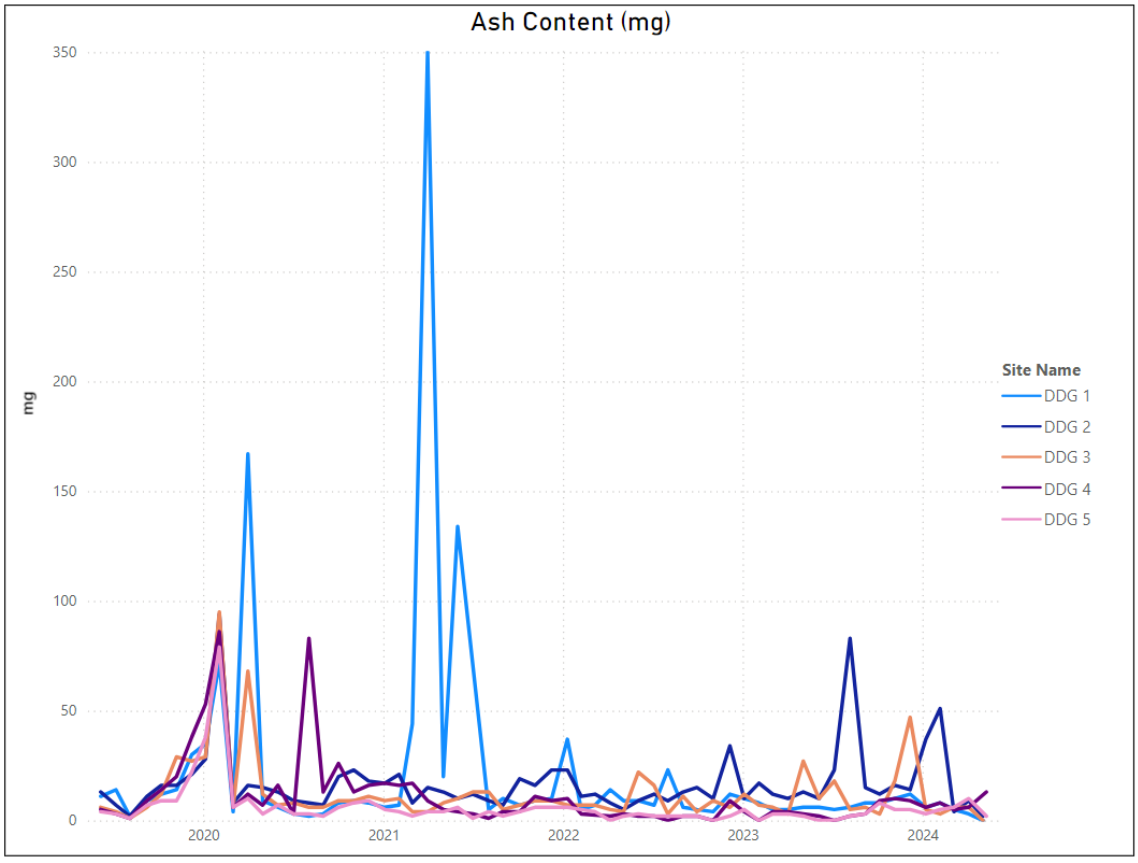


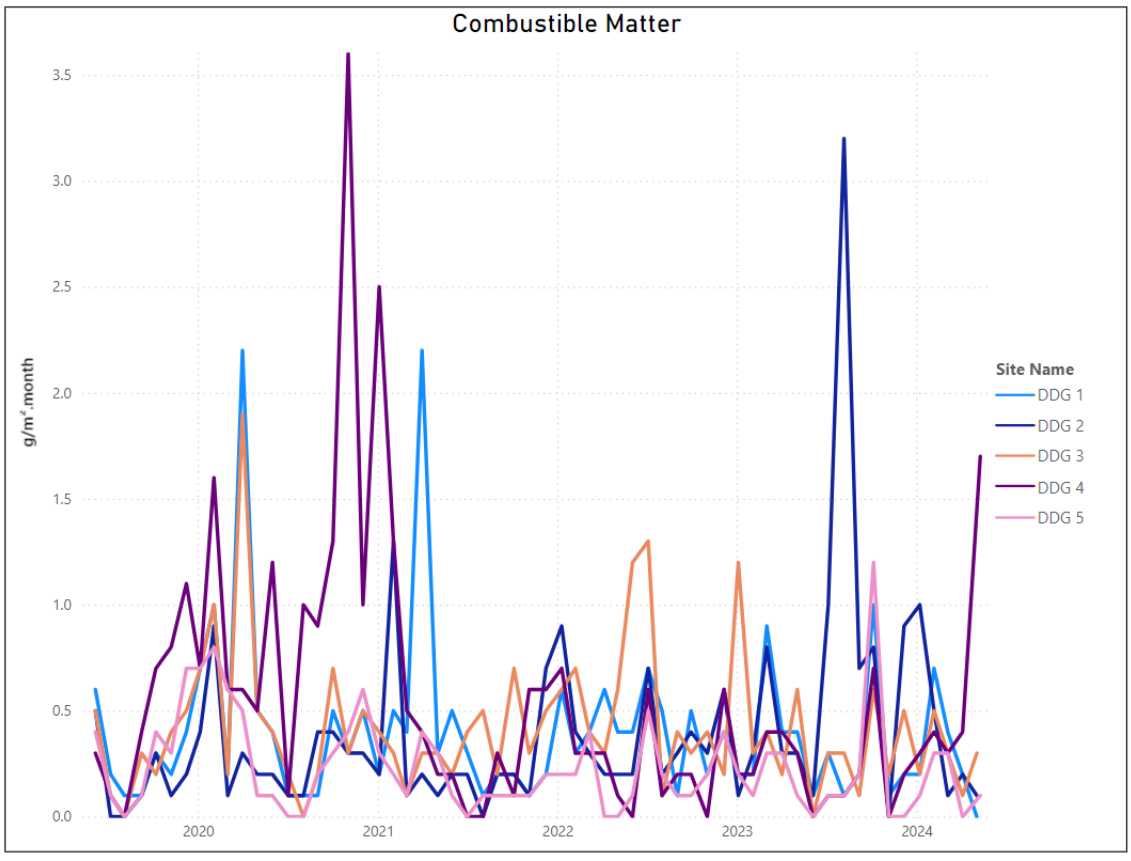
Deposited Dust Results 2023/24 Reporting Period

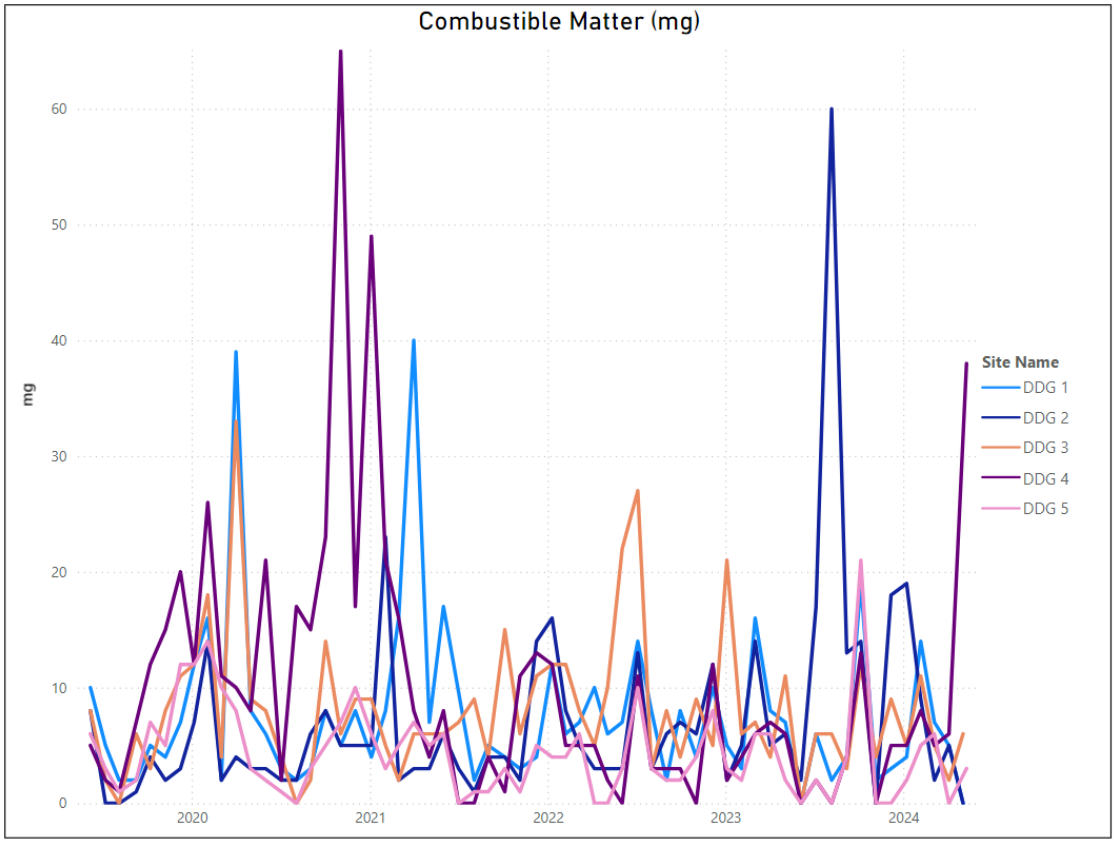



Total Insoluble Matter (mg)
mg
350
300
250
200
150
100
50
0
2020
2021
2022
2023
2024
Site Name
DDG 1
DDG 2
DDG 3
DDG 4
DDG 5

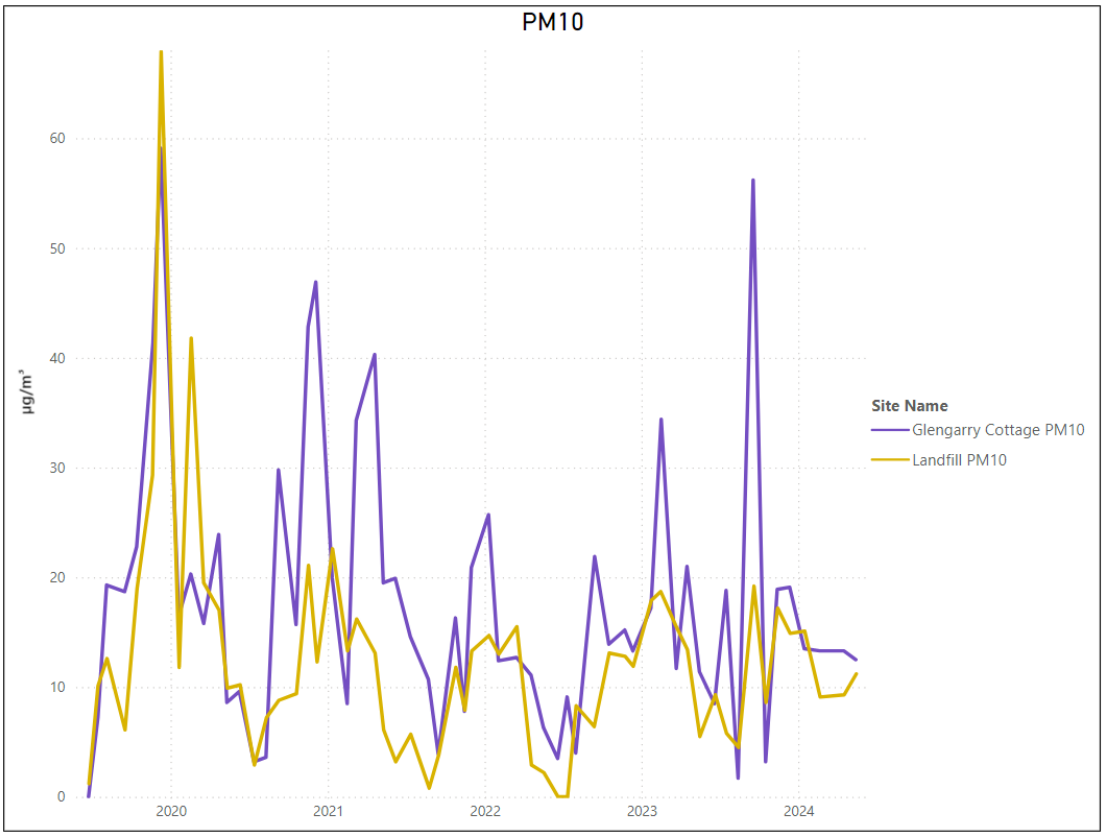

Ash Content
g/m².month
15
10
5
0
2020
2021
2022
2023
2024
Site Name
DDG 1
DDG 2
DDG 3
DDG 4
DDG 5

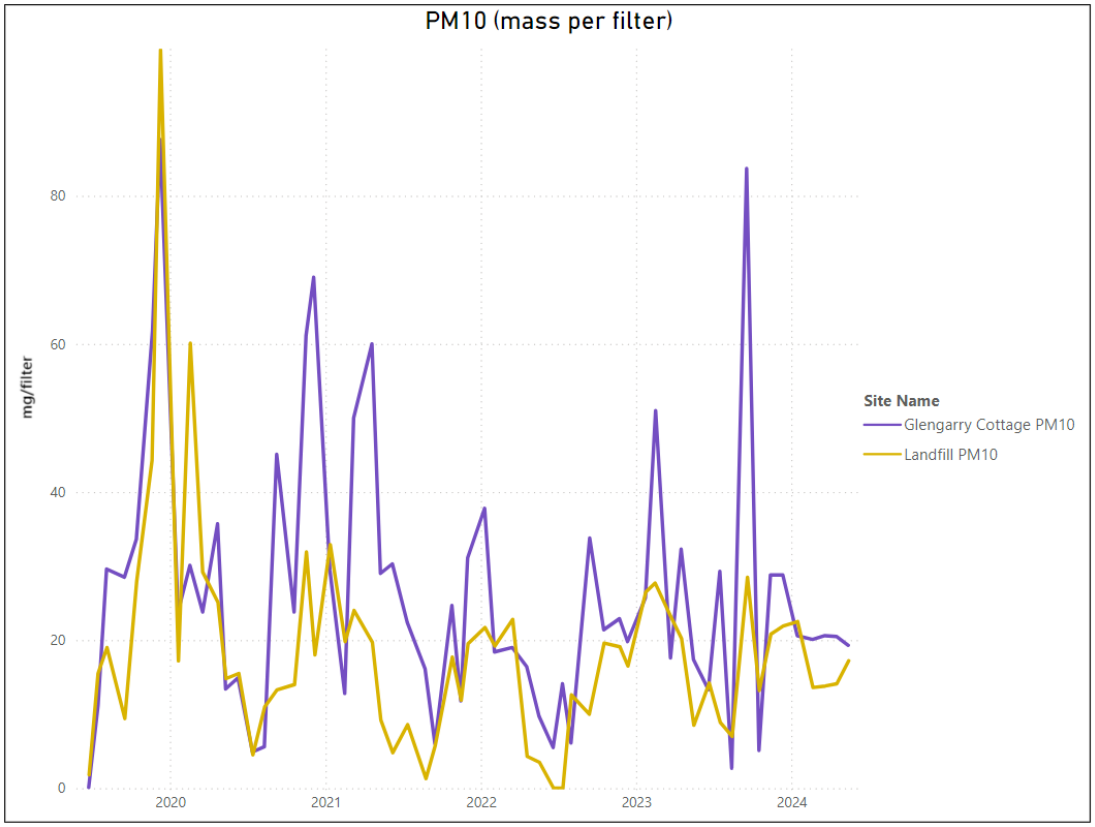

Ash Content (mg)
mg
350
300
250
200
150
100
50
0
2020
2021
2022
2023
2024
Site Name
DDG 1
DDG 2
DDG 3
DDG 4
DDG 5

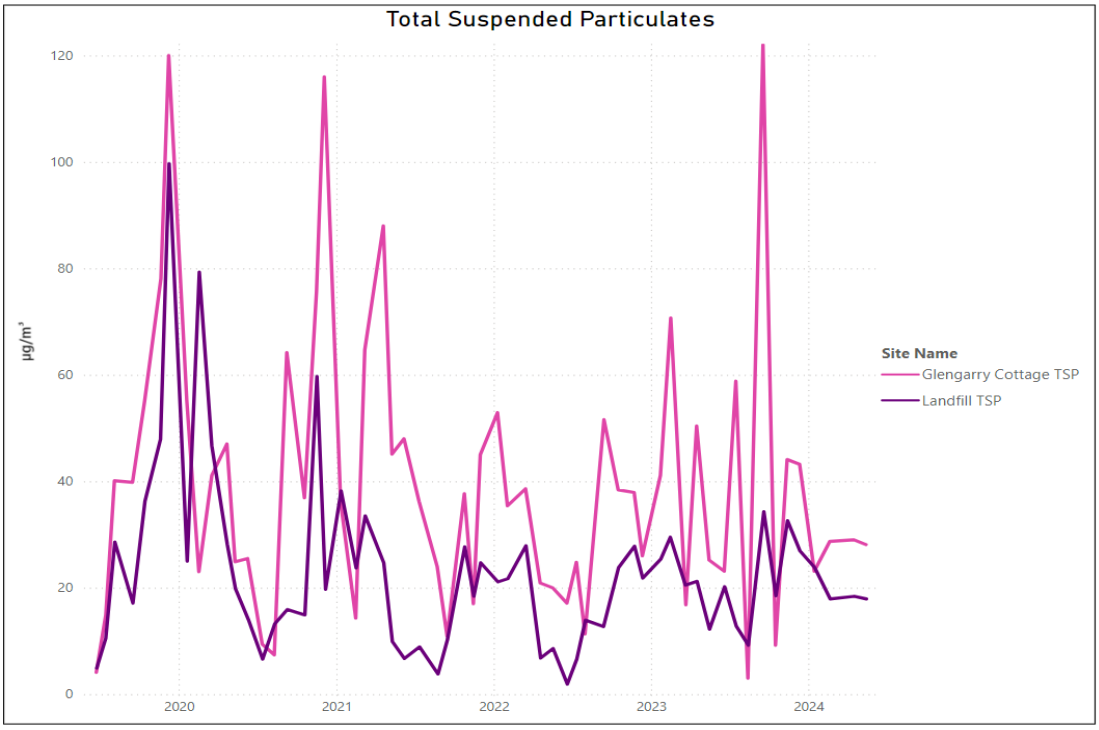

Combustible Matter
g/m².month
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2020
2021
2022
2023
2024
Site Name
DDG 1
DDG 2
DDG 3
DDG 4
DDG 5

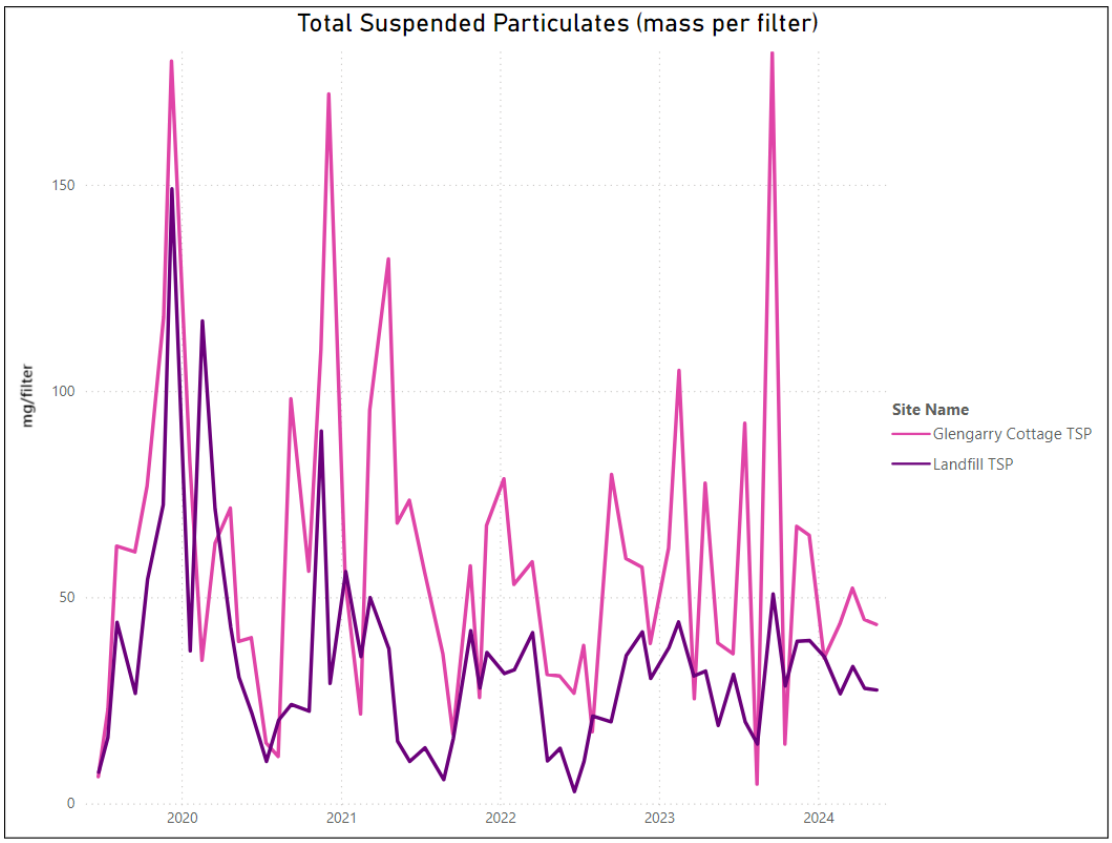


High Volume Dust Monitoring Results 2023/24 Reporting Period




PM10 (mass per filter)
mg/filter
0
20
40
60
80
2020
2021
2022
2023
2024
Site Name
Glengarry Cottage PM10
Landfill PM10


Total Suspended Particulates
µg/m³
0
20
40
60
80
100
120
2020
2021
2022
2023
2024
Site Name
Glengarry Cottage TSP
Landfill TSP


Total Suspended Particulates (mass per filter)
mg/filter
150
100
50
0
2020
2021
2022
2023
2024
Site Name
Glengarry Cottage TSP
Landfill TSP