WHYTES GULLY LANDFILL ANNUAL REPORT 2020/2021

WOLLONGONG CITY COUNCIL Waste Services

Contact Information

Wollongong City Council
Waste Services

Document Information

Prepared for	Wollongong City Council
Project Name	Whytes Gully Annual Report 2020/2021
Date	10 August 2021
Version Number	2

Author(s):

Nicole Diatloff
Senior Environmental Officer (Waste)
Wollongong City Council

Della Kutzner
WHS Quality Environmental Officer
Wollongong City Council

Approved By:

Chris Brown
Waste + Resource Recovery Manager (Acting)

Date Approved 13/08/2021

Paul Tracey
Manager Open Space & Environment Services

Date Approved 17/08/2021

Contents

1 Introduction 4
1.1 Background 4
1.2 Objectives 4
1.3 Scope 4
1.3.1 Fieldwork 4
1.3.2 Reporting 5
1.4 Site History and Configuration 5
1.4.1 Site History 5
2 Site Setting 6
2.1 Topography and Drainage 6
2.2 Soil and Geology 6
2.3 Climate 7
3 Field Investigations 8
3.1 Fieldwork Methodology 8
3.1.1 Surface Gas 8
3.1.2 Subsurface Gas 9
3.1.3 Gas Accumulation 9
3.1.4 Stormwater 10
3.1.5 Groundwater 11
3.1.6 Trade Wastewater 11
3.1.7 Dust and Odour 12
3.1.8 Waste Tyres 13
4 Data Quality Objectives 14
4.1 Data Quality Objectives 14
4.2 Data Quality Indicators 15
5 Performance Criteria 16
5.1 Surface Gas 16
5.2 Subsurface Gas 16
5.3 Gas Accumulation 16
5.4 Water 17
5.4.1 Stormwater 17
5.4.2 Leachate Discharge 17
5.4.3 Groundwater 18
5.5 Dust 18
5.6 Trade Wastewater 18
5.7 Waste - Tyres 18
5.8 Odour 19
6 Results 20

6.1 Gas 20
6.1.1 Surface Gas 20
6.1.2 Subsurface Gas 20
6.1.3 Gas Accumulation 20
6.2 Stormwater 20
6.2 Leachate 21
6.4 Groundwater 21
6.4.1 Groundwater Levels 21
6.4.2 Laboratory Results 21
6.5 Trade Wastewater 22
6.6 Waste Tyres 22
6.7 Odour and Dust 23
7 Quality Assurance / Quality Control 23
7.1 Laboratory QA/QC 23
7.2 Data Useability 23
8 Discussion 23
8.1 Surface Gas 24
8.2 Gas 24
8.3 Gas Accumulation 24
8.4 Stormwater 24
8.4.1 Trend Analysis 24
8.5 Groundwater 24
8.5.1 Groundwater Levels 24
8.5.2 Laboratory Results 25
8.6 Trade Wastewater 25
8.7 Waste Tyres 26
8.8 Odour 26
8.9 Conceptual Site Model 27
8.9.1 Data Gaps and Uncertainties 29
9 Conclusions and Recommendations 30
9.1 Conclusions 30
Recommendations 30
10 Limitations 33
11 References 33
APPENDICIES 34
Appendix A 35
Appendix B 39
Appendix C 54

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 south west 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 the Department of Planning, Infrastructure and Environment (DPIE). 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 2020 to the 28th of May 2021.
- Interpretation of monitoring data to assess the environmental performance of the Site considerate 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 2020/2021 reporting period was provided to the NSW EPA via their online lodgement platform E-Connect. Unfortunately, some difficulties in data collection, staffing and reporting were experienced during this reporting period due to COVID19 restrictions.

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 has recently been constructed and commenced filling in January 2019.

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 south west 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 on 21st May 2019 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

	2020							2021				
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Rainfall (mm)	23.1	191.8	179.2	23.6	114.4	59	75.6	73.4	84	265.4	2.2	▪ 188.4
Mean max temperature (ºC)	22	17.9	18.2	21.6	22.9	25.2	24.7	19.8	25	24.2	23.3	20.3
Mean min temperature (ºC)	11.1	7.4	13.6	9.6	12.2	14.3	16.3	27.5	17.5	15.9	10.2	▪ 9.8
Mean 9am wind speed (km/h)	11	13	14	14	11	11	13	11	9	10	7	▪ 11
Mean 3pm wind speed (km/h)	15	19	22	22	20	23	20	21	18	18	18	▪ 16
Mean 9am relative humidity (%)	78	78	66	61	72	69	71	75	78	79	67	▪ 74
Mean 3pm relative humidity (%)	61	60	53	58	65	63	66	68	71	68	54	▪ 60

Long-term averages for the Albion Park weather station are shown in **Table 2-2** and have been included for comparative purposes.

Table 2-2 Long Term Averages – Albion Park Weather Station

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Rainfall $(mm)_1$	94.5	51.4	55.3	42.7	64.5	83.1	67.0	72.9	140.5	122.3	73.8	▪ 55.8

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Mean max temperature (ºC)[1]	18.1	17.6	18.8	21.4	23.1	24.0	25.6	27.0	26.3	25.3	23.1	20.6
Mean min temperature (ºC)[1]	7.2	6.3	6.5	8.5	10.8	13.4	15.3	16.9	17.1	15.6	12.2	▪ 8.8
Mean 9am wind speed (km/h) [2]	13.6	14.4	15.0	15.3	14.4	12.9	12.7	11.6	9.8	8.1	10.7	▪ 12.4
Mean 3pm wind speed (km/h)[2]	17.6	18.1	21.8	22.6	20.9	20.9	21.5	21.6	20.0	18.9	17.7	▪ 17.1
Mean 9am relative humidity (%)[2]	73	68	61	57	58	67	66	68	74	76	68	▪ 69
Mean 3pm relative humidity (%	57	54	49	53	58	63	61	63	67	64	61	▪ 58

[1] Data recorded from 1999 – 2021

[2] Data recorded from 1999 - 2010

The climate data showed rainfall occurred in every month, ranging from 2.2 mm in April 2021 to 265.4 mm in March 2021. 5 months above average rainfall (around 200 mm), however compared to the previous reporting period climatic conditions were moderate.

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 3 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 4 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. 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 4 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.

Activity	Description
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 4 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 54 times when overflow occurred. The annual stormwater sampling event took place in February 2021.
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: ▪ 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 ▪ Ammonia ▪ Calcium ▪ Chloride ▪ conductivity ▪ dissolved oxygen ▪ filterable iron ▪ fluoride ▪ magnesium ▪ nitrate ▪ pH ▪ potassium ▪ sodium ▪ sulfate ▪ temperature ▪ total organic carbon ▪ total phenolics ▪ 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 4 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 2020 ▪ November 2020 ▪ February 2021 ▪ May 2021
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) ▪ Polycyclic aromatic hydrocarbons (PAH) ▪ Total petroleum hydrocarbons (TPH) ▪ Total phenolics ▪ Quarterly ▪ Alkalinity ▪ Calcium, magnesium, potassium, sodium, chloride, sulfate ▪ pH and conductivity ▪ Standing water level ▪ Total dissolved solids (TDS) ▪ Total organic carbon (TOC) ▪ Nitrogen (ammonia)

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 2018).

The fieldwork methodology for trade wastewater monitoring is summarised below in **Table 3.5**. The trade waste monitoring location is shown on Figure 4 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. ▪

Activity	Description
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, 2018) 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 dust deposition gauges 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

Activity	Description
	• 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 in a steel bin and 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, TRIM No. Z16/175510) 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 2020/2021 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 2020 to the 28th of May 2021 (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. ▪ Laboratory QA/QC results will indicate reliability and representativeness of the data set.

Activity	Description
	▪ 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 in **0** 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.

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, 2017). 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 this reporting period, the number of odour complaints increased significantly. To address this, the EPA include the following variation:

Inclusion of special conditions E1.4 and E1.5 to undertake an odour assessment and provide a copy of the final report to the EPA.

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 30 April 2021.

E1.5 The licensee is required to undertake a detailed risk assessment of the premises including the following:

a) The risk assessment must identify all significant odour-generating sources at the premises.

b) 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.

c) 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 must be revised to include site specific data.

d) The Licensee must undertake a detailed feasibility study to consider and evaluate options to reduce odour emissions from the highest ranked odour generating sources.

e) The feasibility study should evaluate the expected change in offsite odour impacts via a revised odour impact assessment.

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 four occasions within the reporting period. Two of these readings were on the 23 April 2021 at Transect 7.2 (542.8 ppm) and at Transect H.3 (678 ppm). The other readings were on the 8th September 2020 at Transect 12.1 (936 ppm) and the 15th March 2021 (580.3 ppm) at Transect 12.1.

The rest of the results fell within the threshold values for surface gas.

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

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

On 26 occasions at Point 1, TSS values were recorded over 50 mg/L. This was attributed to the breaking of the drought in February 2020, leading to elevated surface water levels and instability in the water column throughout the latter part of 2020.

Upstream and downstream results were influenced by these rainfall events in this reporting period also. On the 31st October 2020, downstream Point 33 had a recording of 539 mg/L. pH fluctuated slightly, but generally remained stable averaging 7.3. At Point 34, an upstream recording 527 mg/L TSS occurred on 23rd March 2021. pH was stable peaking at 7.9 on the 8th August 2020.

The heavy rainfall events triggered 26 non-compliant discharges where Total Suspended Solids exceeded the license condition of 50 mg/L.

Stormwater monitoring results from the annual sampling event are summarised in Appendix B with the pertinent findings provided below:

- Ammonia was reported at a concentration of 6.42 mg/L in the stormwater sample collected from Point 1, above the ANZECC 90% protection trigger level of 1.43 mg/L. This is significantly less that the levels in the last reporting period after the extended periods of heavy rainfall and instability.
- The highest reported concentration of TSS was 489mg/L in the stormwater sample collected from Point 33. The TSS concentration of Point 34 was 527 mg/L, also above the EPL limit. Point 1 was recorded at 290 mg/L.
- pH range for all sampling points were within range in this reporting period.

6.2 Leachate

Based on the reported results, pertaining to trade wastewater discharged, the facility was in conformance for the 2020-2021 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 1.37m below ground level (bgl) in groundwater monitoring Point 20 (BH6) to 11.1m bgl in groundwater monitoring point 12 (GMW105). These have increased significantly since the drought conditions were broken in February 2020.

6.4.2 Laboratory Results

Groundwater pH was reported to be relatively neutral averaging between 6.5 to 7 for the reporting period. The exception was Point 12 (GMW105) that averaged between 5.5 and 5.8. This bore has been dry until the last reporting period.

Electrical Conductivity varied greatly across the site with the lowest value recorded being 268 µS/L at Point 12 (GMW105) on the 15th February 2021 sampling event and the highest value recorded being 5940 µS/L at Point 5 (GABHO2).

Heavy rainfall in 2020 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 0.03mg/L in monitoring point 19 to 6.24 mg/L in point 16, with most samples containing aluminium above the ANZECC 90% protection trigger level of 0.08 mg/L the ANZECC 90% trigger level.
  - Arsenic, barium and mercury were below reported at concentrations below the adopted performance criteria for all samples.
  - Cadmium (total) concentrations ranged from below the laboratory limit of reporting (multiple samples) to 0.0006 mg/L in monitoring point 11. The concentration recorded for point 11 is above the ANZECC 90% protection trigger level of 0.0004 mg/L but below the ADWG criteria of 0.002 mg/L. Dissolved cadmium was below the laboratory LOR in point 11.
  - 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.

- Copper (total) concentrations ranged from 0.001 mg/L (multiple samples) to 0.008 mg/L (point 10) with all 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 0.004 mg/L (point 10) with all results above the ANZECC 90% protection trigger level of 0.0018 mg/L but below the ADWG criteria of 2 mg/L. Dissolved lead was below the laboratory LOR for point 11 and point 16.
- Manganese (total) concentrations ranged from 0.027 (point 12) to 10.1 mg/L (point 16) with 2 samples above the ANZECC 90% protection trigger level of 2.5 mg/L and 4 samples above the ADWG criteria of 0.5 mg/L.
- Zinc (total) concentrations ranged from under 0.005 mg/L (multiple samples) to 0.056 mg/L (point 16) with twelve samples above the ANZECC 90% protection trigger level of 0.015 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 1.11 mg/L in point 18, with all samples except this one below the adopted performance criteria of 0.9 mg/L.
- Fluoride concentrations ranged from 0.1 mg/L (point 12) to 0.6 mg/L in point 15, with all samples below the adopted performance criteria.
- Nitrate concentrations ranged from 0.001 mg/L (several samples) to 6.43 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

A summary of trade wastewater monitoring is provided below and tabulated in Appendix B. Trade wastewater monitoring was undertaken 17 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, 2017).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

A total of ninety seven complaints were received by Council or the EPA from members of the public during the reporting period relating to offensive odour detected at an offsite location. An Environmental Incident Form was completed for each complaint and recorded in Council's complaint register. Complaints ranged between 2/11/2020 though to 3/3/2021.

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

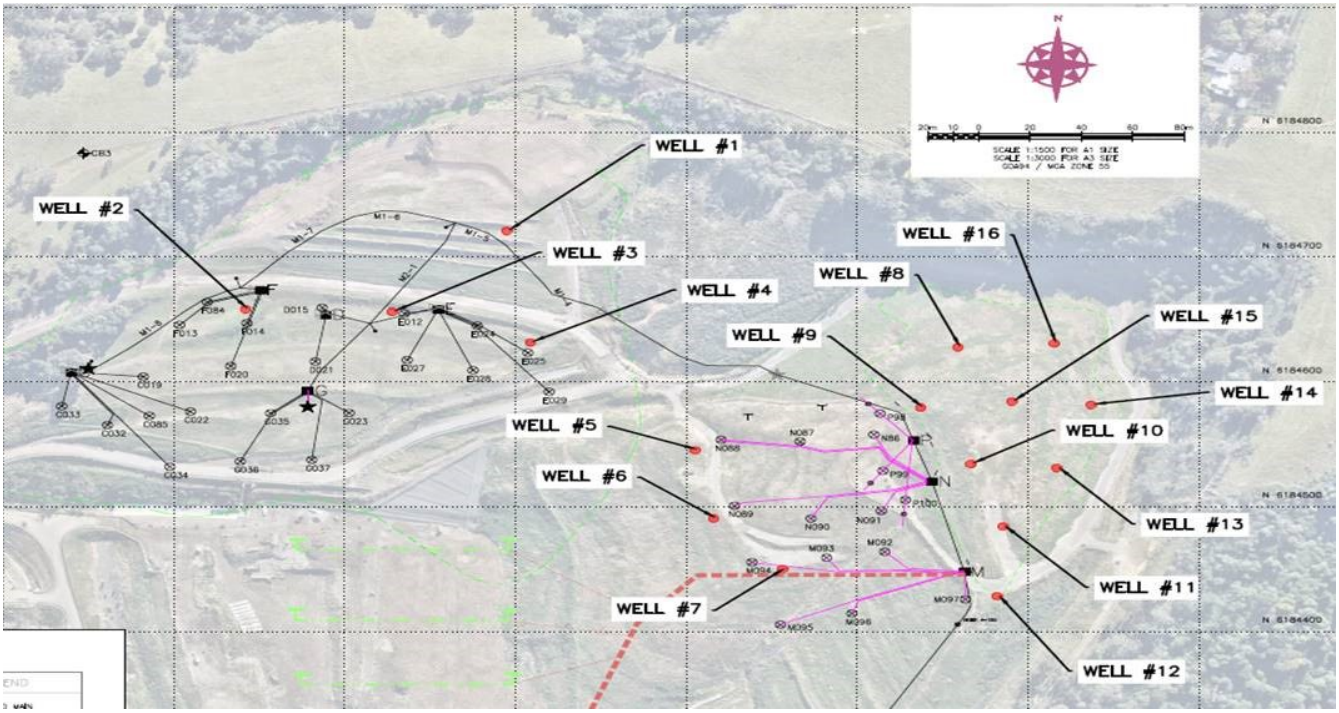
The data and information gathered during the reporting period is discussed below in consideration of the performance criteria. In addition, and in accordance with Section 6 (R1.8) of EPL 5862, historical laboratory results have been tabulated and presented in graphical format that compares data from 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 four exceedances that occurred after the 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 uncapped areas of the landfill covered by Transect 9. Once the ground dried out, methane levels were once again under 500 ppm.

To manage future non-compliance levels, works are currently being undertaken to install additional gas infrastructure to collect methane gas throughout the site (see site plan below).



8.2 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 breaking of the drought and heavy rainfall significantly influenced pH and TSS in the stormwater system. The other parameters were also influenced but remained within threshold limits.

In general, it can be seen that it took approximately 4 months to balance water quality to previous levels that were stable for the beginning of the reporting period.

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 groundwater monitoring point 13 returned to being dry during the beginning of the reporting period. This well is located in the higher elevations of the site along the northern and western boundary. However, after the rain event in February 2020, the standing water levels were able to be measured and continued to raise significantly.

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 significant movement in the levels of groundwater parameters including nitrate, ammonia, total organic carbon, pH and conductivity as water enters the groundwater system and soluble analytes are mobilised. It is hard to discern any trends until groundwater levels stabilise and there is another year of groundwater flow data.

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 above the adopted performance criteria during the reporting period including aluminium, cadmium, copper, lead, manganese, nickel 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. Monitoring Points 11 and 16 typically had the highest concentrations of total metals and samples from both locations were analysed for both total and dissolved metals on during the September monitoring event. The results show that that dissolved heavy metal concentrations were significantly lower than total metals, with exceedances of the adopted criteria generally limited to aluminium, copper, manganese and zinc in Point 16.

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 several monitoring wells were dry during the annual monitoring event and therefore trend analysis was unable to be completed for the entire well network.

8.6 Trade Wastewater

Trade wastewater was discharged into the sewer network in accordance with the Consent (Sydney Water 2017) with no non-conformances during the reporting period.

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 ninety seven complaints relating to odour were received from members of the public during the reporting period.

In response to odour concerns in the catchment, Council worked with EPA to assess the Site's odour management and address the Special Conditions included in the most recent Variation. The "Wollongong Waste and Resource Recovery Park (WWRRP) – Odour Investigation Assessment was undertaken by specialist consultants, The Odour Unit Pty Ltd. This assessment meets 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 are made based on proactive mitigation measures to manage the risk of adverse conditions.

The Recommendations were as follows:

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. Upgrade the capacity and capability of the current leachate management system. This includes upgrading 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. It is understood that this is already being undertaken by an external contractor. 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 has developed a 4-year Infrastructure Delivery and Operational Program which will assist odour management, during times of increased risk. This will include:

- $350 000 allocated toward leachate treatment system upgrade.
- $400 000 allocated to leachate pond upgrades.
- $100 000 allocated to stormwater pond upgrades.
- $50 000 allocated to landfill cover upgrades.
- An enclosed Small Vehicle Transfer Station to be constructed in 2021/2022.
- Trialling of Biocover to improve localised gas management.
- Phase 3 of the Landfill Gas extraction project is continuing with a further 16 wells scheduled for installation in the next 12 months.
- Vegetation Management Plan implementation – enhancing vegetation buffer plantings and increasing maintenance along the property boundary.

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 COVID19restrictions in this reporting period made it extremely challenging to undertake environmental monitoring and compliance activities. Although a number of 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.
- Council implemented an environmental monitoring program during the 2019/20 reporting period that satisfied the conditions and requirements of EPL 5862 and the *Consent to Discharge Industrial Trade Wastewater* (Sydney Water, 2018).
- Heavy metals were detected above the performance criteria in groundwater at numerous monitoring wells, however, samples were submitted for analysis of total metals and therefore the elevated concentrations may be due to the presence of sediments. Future monitoring events should also assess dissolved concentrations of heavy metals to determine if elevated metals are attributed to sediment or if they exist in dissolved phase.
- Management and handling of waste tyres at the Site was undertaken in a manner that was compliant with the EPL conditions.

  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 undertaken during this repoting period in accordance with EPA requirements.

Recommendations

Based on the conclusions of this report the following action plan is recommended to improve stormwater management at Whytes Gully.

Short Term

1. Desilting of stormwater ponds.

The current ponds currently contain some silt, resulting in less than optimum storage and settling volume. It is planned to stage desilting of the three stormwater ponds progressively over the next six months.

Stormwater Pond 3 (where water is discharged from) will be taken offline in February 2021 and excess sediment removed and stockpiled for reuse on the site. Stormwater Pond 1 will be desilted in March 2021 with the final Stormwater Pond 2 being desilted in April 2021. Where possible, the re-established wetland system will be kept to maintain water quality treatment.

Siltation control measures will be put in place and all works will be monitored to ensure no water leaves the site during work.The timing of the work will be reviewed closer to proposed commencement and will be dependent on short-term and long-term weather forecasts.

2. Stabilisation of Pond Water Quality

The unusually heavy rainfall event of February 2020 (156.5 mm recorded) resulted in leachate migrating into the stormwater management system and impacting water quality. This resulted in a number of treatment methods being put in place based on stormwater analysis results and specialist advice. The methods used were based on a multifaceted approach using a combination of:

- Aeration
- Addition of microorganisms
- Flocking (calcium chloride)

These treatment methods will continue to be used to maintain and stabilise water quality after rainfall events.

3. Conduct an Independent Assessment of the Existing Stormwater Management System at Whytes Gully. This will include:

    - Developing a preliminary desktop water balance based on historical data.
    - Recommendations for improvement and sustainable management of the existing system
    - Developing a formalised maintenance & monitoring plan
    - Assessing suitability of EPL license conditions under the current flow regime and putting forward recommendations.
4. Relocation of Stormwater Monitoring Point 1

The current location of Stormwater Monitoring Point 1 is on the opposite side of the stormwater discharge outlet on Reddalls Road, Kembla Grange (see attached site plan). This point was considered representative of Whytes Gully stormwater discharge quality when the EPL was first issued due to the rural land use surrounding the site. In recent years there have been significant changes to the catchment, including. an increase in light industrial development. It is believed that the monitoring point could potentially be contaminated by other industries discharging to the creek and therefore be better placed within the site boundary, on the opposite side of the road to the current location (see attached site plan).

Long Term

5. Water Balance Model for Whytes Gully Waste Facility

Consultants have recently been engaged by Wollongong City Council to address the issues triggered by the February stormwater contamination event. The consultants will review the original water balance (used in the original designs for the site); and develop an updated comprehensive water balance based on the existing site conditions and future planned landfill expansion. This will incorporate leachate, groundwater as well as stormwater.

6. Stormwater Management Plan

Specifications are currently being developed to update the Stormwater Management Plan for the site. This is in accordance with Department of Planning requirements and will include the findings from the Independent Assessment of the existing Stormwater Management System, the water balance model, as well as the stormwater investigation outcomes from the Eastern Gully Stormwater Diversion Project currently in the design phase.

The purpose of the Plan is to have a practical stormwater management plan that is specifically designed to address the issues at Whytes Gully.

Other recommendations include:

- Development of a data management system to ensure exceedances are reported in a timely manner and addressed promptly in accordance with EPL 5862.
- The laboratory limit of reporting was above the adopted screening criteria for several contaminants including PAHs, OCPs and OPPs. Future analysis of these contaminants should be undertaken at an ultra-trace level to ensure the limit of reporting is below the applicable criteria.
- Consideration should be given to the replacement or removal of EPA groundwater monitoring well 13. The well has been recorded as consistently dry since 2012 with only two records of groundwater interception during monitoring.
- Investigate the source and management of methane gas exceedances in this reporting period.
- The current site weather station should be updated to provide more accurate data in real time on site conditions.

- Historically water samples have been submitted for laboratory analysis of total heavy metals in accordance with EPL 5862. Water samples should also be analysed for dissolved metals (ie filtered) to determine if elevated metals are attributed to sediment or if they exist in dissolved phase.

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.

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

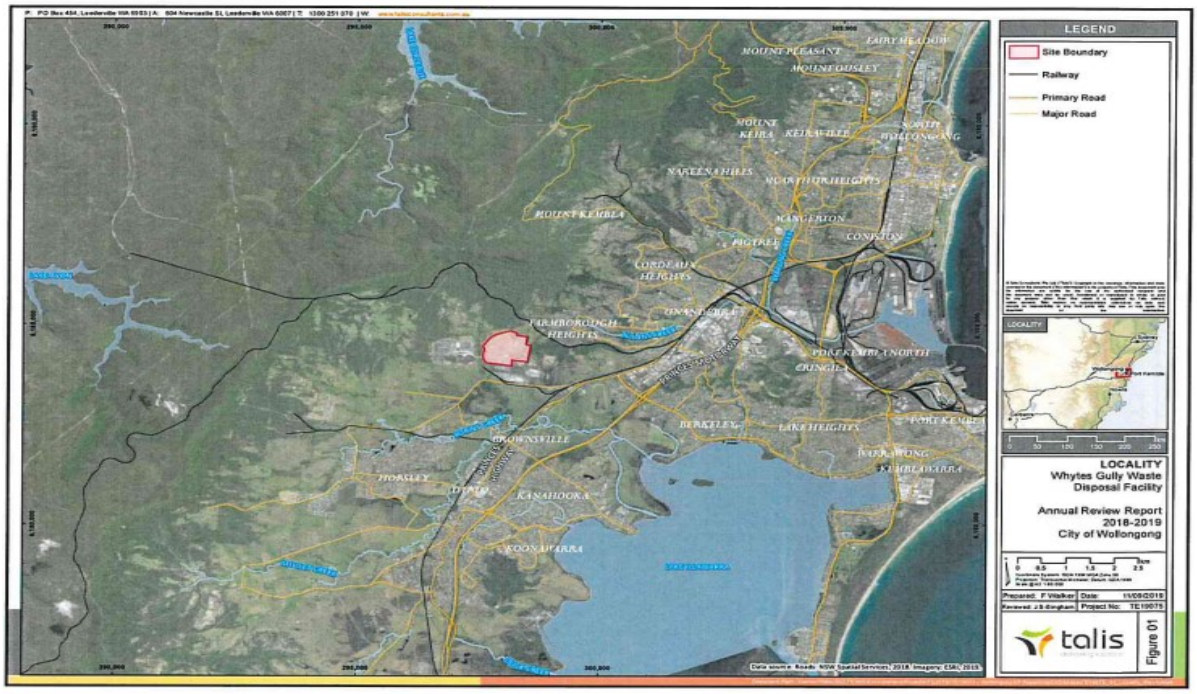


Figure 2 : Site Aerial Plan

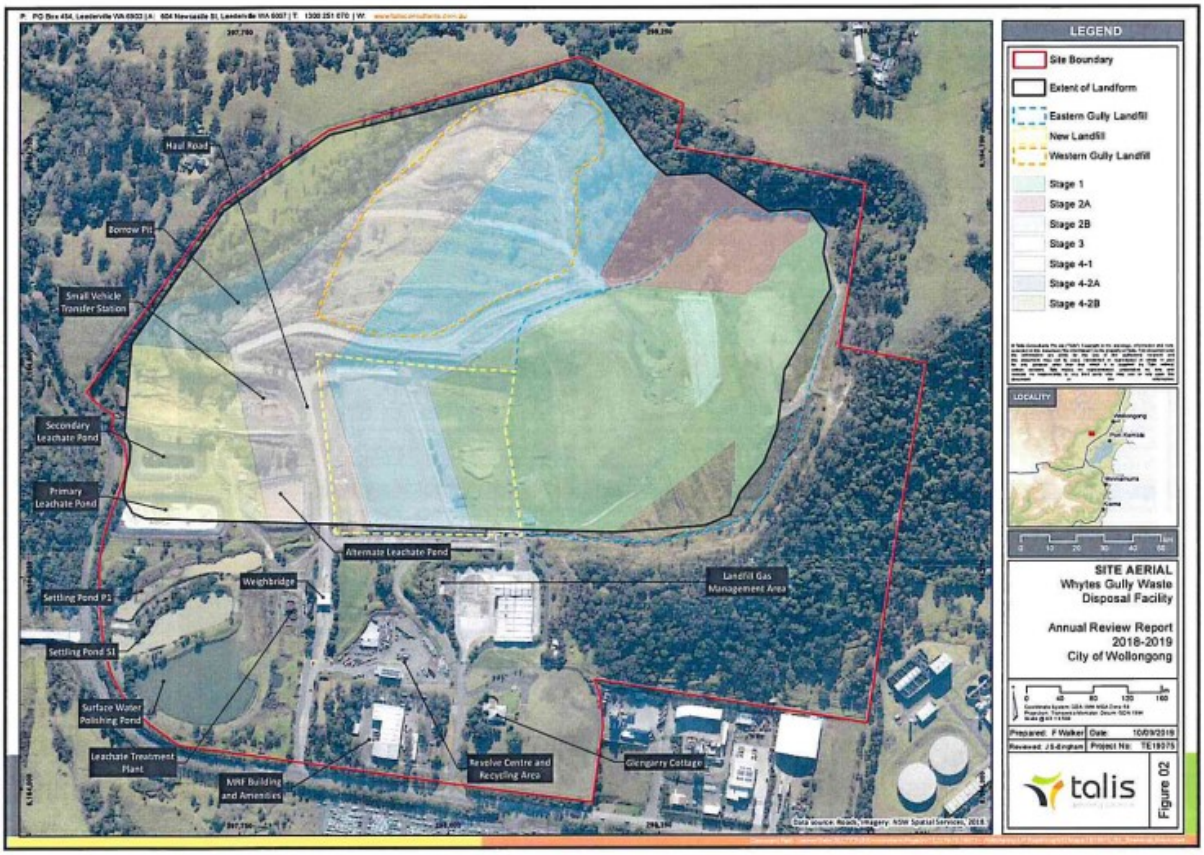


Figure 3: Groundwater Sampling Locations

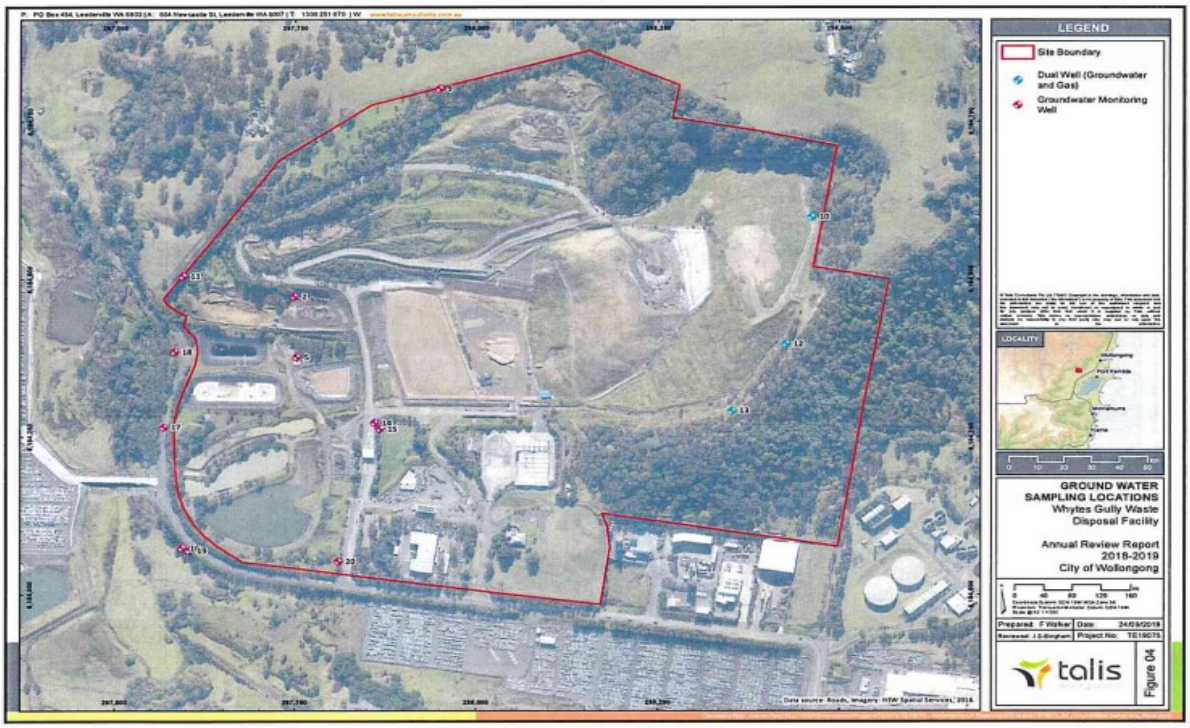


Figure 4: Wastewater and Leachate Sampling Locations

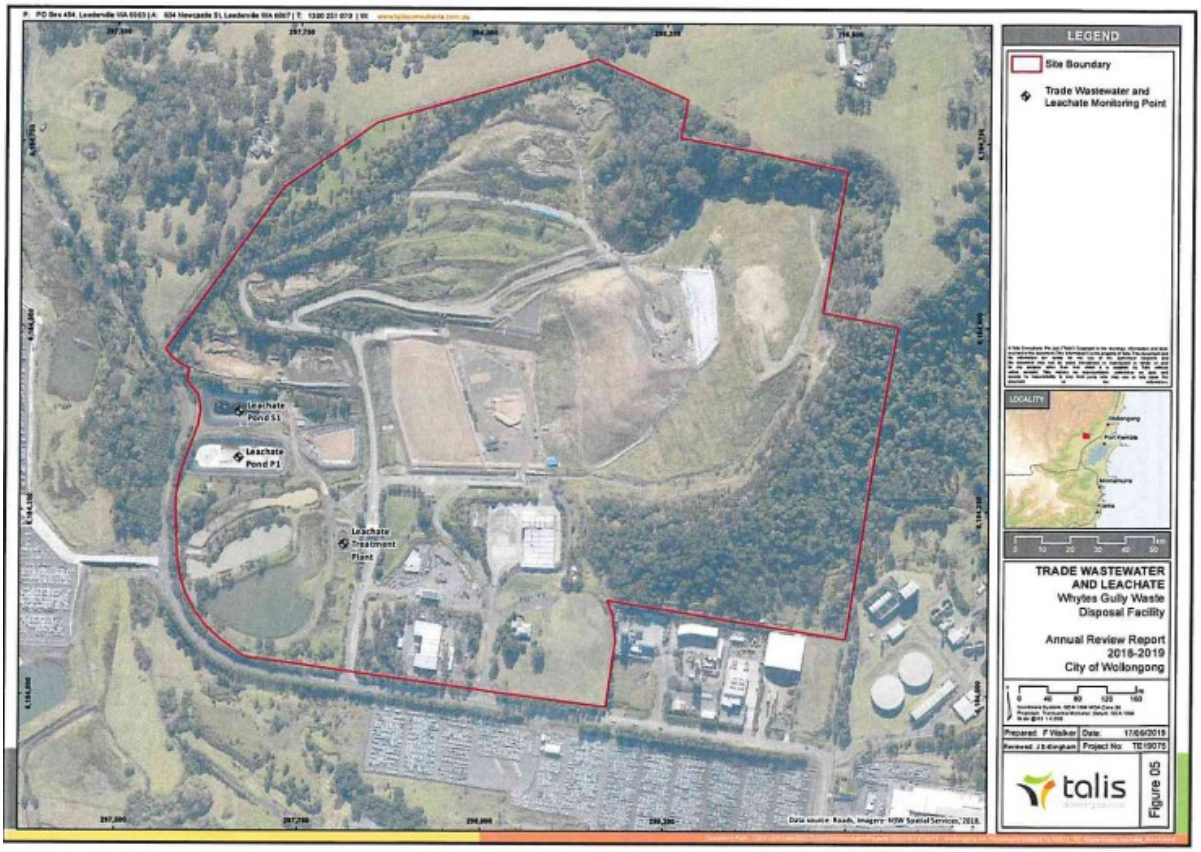


Figure 5: Landfill Gas Monitoring Locations

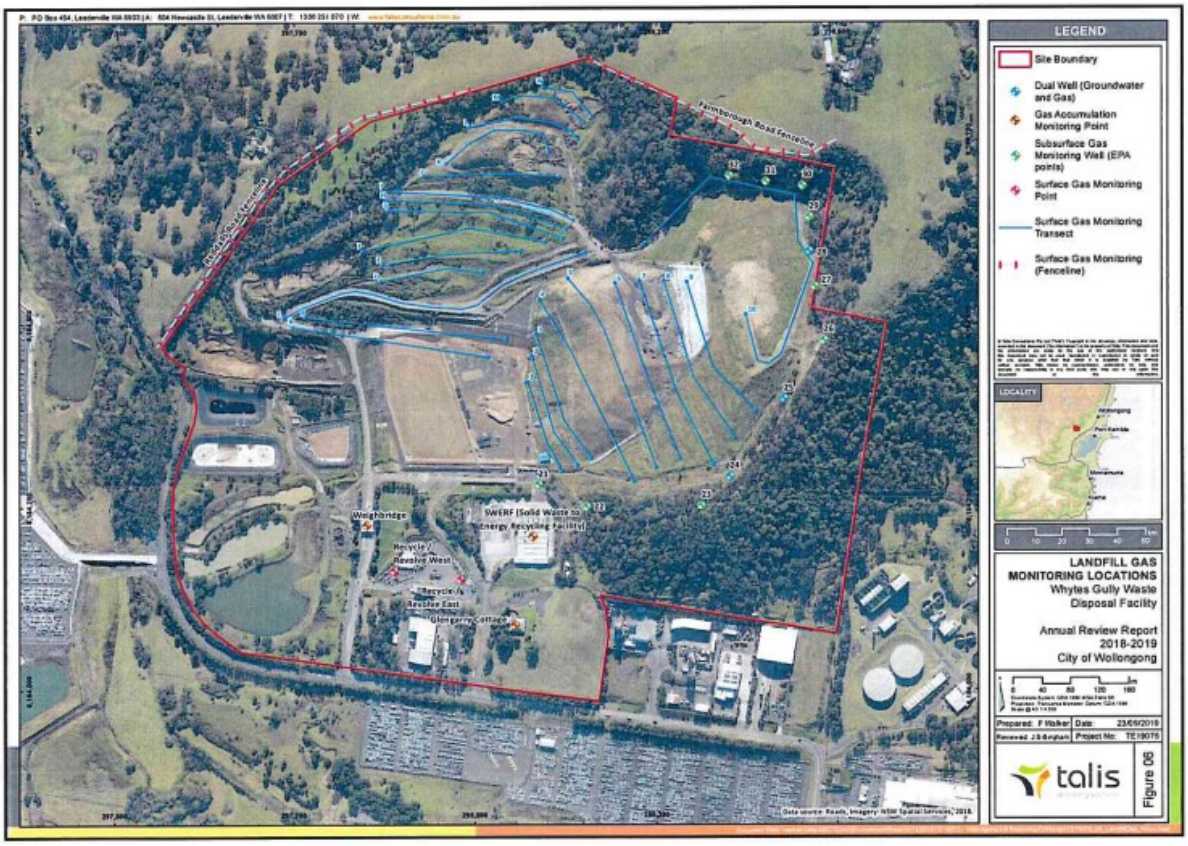


Figure 6: Dust Monitoring Locations

Appendix B

Table 1: Groundwater Results 2020-2021 Reporting Period

Site Name	Sample Date	Alkalinity (as calcium carbonate) mg/L	Aluminium mg/L	Ammonia mg/L	Arsenic mg/L	Barium mg/L	Benzene µg/L	Cadmium mg/L	Calcium mg/L	Chloride mg/L	Chromium (hexavalent) mg/L	Chromium (Total) mg/L	Cobalt mg/L	Conductivity µS/cm	Copper mg/L	Depth Meters	Ethyl benzene µg/L	Fluoride mg/L	Lead mg/L	Magnesium mg/L
(Point 5) - GABH02	24/08/2020	1,190		0.04					257	1,060				5,380		5.12				170
	16/11/2020	1,250		0.04					312	1,180				5,480		5.08				186
	03/05/2021	881	0.88	0.9	0.003	0.072	0	0	180	584	0	0.004	0.004	4.68	0.004	7.23	0	0.4	0.002	91
	10/05/2021	849		1.3					176	569				3,440		6.32				97
(Point 9) - GMW102	24/08/2020	164		0					32	24				415		7.56				11
	16/11/2020	168		0					29	29				360		7.15				10
	15/02/2021	139	24.6	0	0.001	0.109	0	0.0001	40	24	0	0.01	0.012	329	0.034	9.02	0	0.2	0.011	20
	10/05/2021	122		0					23	14				349		2.54				7
(Point 10) - GMW103	24/08/2020	651		0					86	153				1,640		6.7				50
	16/11/2020	701		0					112	104				1,540		6.52				50
	15/02/2021	629	2.49	0	0	0.02	0	0	126	110	0	0.003	0.003	1,520	0.008	6.78	0	0.4	0.004	50
	10/05/2021	631		0					119	114				1,520		6.62				48
(Point 11) - GMW104	24/08/2020	335	5.94	0		0.024		0	39	54		0.004	0.005	836	0.008	6.94			0.003	24
	16/11/2020	383	4.28	0		0.021		0	46	66		0.003	0.003	898	0.007	7.04			0.003	27
	15/02/2021	228	4.6	0	0	0.02	0	0	33	51	0	0.004	0.003	581	0.01	6.95	0	0.6	0.004	20
	10/05/2021	375	4.13	0		0.032		0	42	69		0.003	0.003	930	0.01	6.68			0.003	27
(Point 12) - GMW105	24/08/2020	36		0.02					13	68				391		11				6
	16/11/2020	44		0					8	48				271		10.1				4
	15/02/2021	49	1.76	0	0	0.007	0	0	9	48	0	0	0	268	0.002	10.3	0	0.2	0	4
	10/05/2021	43		0.01					7	38				231		8.32				3
Monitoring Point 13	13/08/2020	42	23.4	0.02	0.003	0.064	0	0.0001	21	31	0	0.036	0.003		0.029	1.58	0	0	0.02	8
	11/11/2020	39		0.01					18	15						2.99				8
	10/02/2021	37		0.02					15	19						3.48				6
	17/05/2021	34		0.03					16	30						2.73				6
(Point 14) - GMW108S	24/08/2020	205		0.05					26	36				516		2.74				11
	16/11/2020	226		0.08					40	79				698		2.62				17
	15/02/2021	227	3.94	0.05	0	0.096	0	0	45	60	0	0.003	0.002	601	0.01	2.59	0	0.2	0.003	17
	10/05/2021	153		0.03					22	31				396		2.32				9
(Point 15) - GMW108D	24/08/2020	500		0					120	659				3,210		2.3				82
	16/11/2020	491		0.02					133	677				3,120		2.17				80
	15/02/2021	460	0.35	0.03	0	0.039	0	0	116	612	0	0	0.001	2,700	0	2.12	0	0.4	0	74
	10/05/2021	275		0.03					64	294				1,530		1.82				38
(Point 16) - GMW109S	24/08/2020	621	4.16	0.43		0.174		0.0003	222	366		0.006	0.055	3,040	0.026	3.08			0.007	108
	16/11/2020	389	6.24	0.31		0.177		0.0005	117	301		0.008	0.047	1,840	0.025	3.1			0.007	64
	15/02/2021	218	5.15	0.28	0.001	0.101	0	0.0004	56	157	0	0.007	0.024	1,070	0.016	3.08	0	0	0.005	34
	10/05/2021	438	2.24	0.34		0.144		0.0002	170	233		0.002	0.027	2,020	0.012	2.77			0.003	87
(Point 17) - GMW110	24/08/2020	667		0.02					166	852				4,160		4.05				137
	16/11/2020	680		0					214	946				4,270		3.95				153
	15/02/2021	650	1.83	0	0	0.008	0	0	192	908	0	0.001	0.002	4,020	0.002	3.98	0	0.4	0.001	152
	10/05/2021	658		0					191	787				4,020		3.78				150
(Point 18) - GMW111	24/08/2020	700		0.35					111	661				3,320		6.52				94
	16/11/2020	650		0.28					135	753				3,420		6.51				100
	15/02/2021	715	3.11	0.21	0.002	0.047	0	0	128	742	0	0.003	0.003	3,540	0.006	6.25	0	0.4	0.003	106
	10/05/2021	699		0.43					134	677				3,240		4.62				107
(Point 19) - GMW109D	24/08/2020	253		0.09					93	464				1,890		2.88				48
	16/11/2020	253		0.1					106	515				1,930		2.91				52
	15/02/2021	255	0.03	0.09	0	0.135	0	0	101	514	0	0	0.002	1,890	0	2.88	0	0.4	0	51
	10/05/2021	255		0.11					96	452				1,900		2.68				53
(Point 20) - BH6	24/08/2020	355		0.39					58	56				924		1.42				22
	16/11/2020	465		0.4					66	109				1,120		1.4				30
	15/02/2021	664	0.33	0.38	0.004	0.062	0	0	86	327	0	0	0.008	2,140	0.001	1.37	0	0.6	0.002	53
	10/05/2021	573		0.45					61	260				1,770		1.25				43

Site Name	Sample Date	Manganese mg/L	Mercury mg/L	Nitrate as N mg/L	Nitrite as N mg/L	Organochlorine Pesticides mg/L	Organophosphate Pesticides mg/L	pH pH	Polycyclic aromatic hydrocarbons µg/L	Potassium mg/L	Sodium mg/L	Sulfate mg/L	Toluene µg/L	Total Dissolved Solids mg/L	Total organic carbon mg/L	Total Petroleum Hydrocarbons mg/L	Total Phenolics mg/L	Xylene µg/L	Zinc mg/L
(Point 5) - GABH02	24/08/2020							6.7		2	562	166		3,100	6				
	16/11/2020							6.7		3	605	168		3,350	10				
	03/05/2021	3.45	0	0.06	0	0	0	7.1	0	29	370	87	0	1,930	21	57.77778	0	0	0.022
	10/05/2021							7.1		34	363	82		1,920	0				
(Point 9) - GMW102	24/08/2020							7		0	34	20		258	4				
	16/11/2020							6.9		0	30	14		260	3				
	15/02/2021	0.587	0	0.81	0	0	0	6.8	0	3	25	12	0	308	1	0	0	0	0.087
	10/05/2021							6.7		1	45	49		254	1				
(Point 10) - GMW103	24/08/2020							5		0	154	104		954	3				
	16/11/2020							7.2		0	159	99		904	2				
	15/02/2021	0.11	0	0.04	0	0	0	7.2	0	1	159	83	0	923	1	0	0	0	0.016
	10/05/2021							7.3		1	159	76		810	0				
(Point 11) - GMW104	24/08/2020	0.52						7.2		0	103	37		474	2				0.018
	16/11/2020	0.26						7.2		0	118	37		526	4				0.016
	15/02/2021	0.358	0	0.1	0	0	0	7.1	0	1	66	21	0	346	2	0	0	0	0.018
	10/05/2021	0.324						7.4		0	122	42		502	0				0.019
(Point 12) - GMW105	24/08/2020							5.5		0	46	14		250	3				
	16/11/2020							5.8		0	36	12		290	3				
	15/02/2021	0.027	0	1.91	0	0	0	5.8	0	0	36	30	0	212	0	0	0	0	0.006
	10/05/2021							6.3		0	34	11		346	0				
Monitoring Point 13	13/08/2020	0.124	0	1.19	0	0	0	6.2	0	4	16	74	0	199	12	0	0	0	0.111
	11/11/2020							6		6	14	23		252	6				
	10/02/2021							5.6		4	15	27		115	0				
	17/05/2021							5.9		4	15	29		217	1				
(Point 14) - GMW108S	24/08/2020							6.8		4	64	14		254	8				
	16/11/2020							6.8		5	80	24		486	7				
	15/02/2021	0.082	0	0.01	0	0	0	6.8	0	6	56	24	0	404	8	0	0	0	0.013
	10/05/2021							6.8		4	47	10		238	0				
(Point 15) - GMW108D	24/08/2020							6.7		0	396	204		1,790	2				
	16/11/2020							6.8		2	382	194		1,840	2				
	15/02/2021	0.225	0	0	0	0	0	6.8	0	4	326	170	0	1,560	2	0	0	0	0
	10/05/2021							6.8		6	194	87		845	0				

(Point 16) - GMW109S	24/08/2020	10.1						6.4		2	265	618		2,100	37							0.054
	16/11/2020	6.07						7.4		2	174	237		1,200	11							0.056
	15/02/2021	2.25	0	0	0	0	0	6.2	0	3	111	151	0	667	5	0		0	0	0.033		
	10/05/2021	4.55						6.4		2	188	485		1,550	0							0.034
(Point 17) - GMW110	24/08/2020							6.6		1	417	340		2,440	3							
	16/11/2020							6.6		2	466	328		2,670	0							
	15/02/2021	0.096	0	0.75	0	0	0	6.8	0	2	437	321	0	2,470	0	0		0	0	0.009		
	10/05/2021							6.7		2	455	344		2,480	0							
(Point 18) - GMW111	24/08/2020							7		1	412	178		1,850	8							
	16/11/2020							7.1		2	455	194		2,060	0							
	15/02/2021	1.37	0	0	0	0	0	7	0	2	468	188	0	1,990	2	0		0	0	0.014		
	10/05/2021							7.2		2	470	172		2,080	0							
(Point 19) - GMW109D	24/08/2020							6.8		1	182	62		1,100	0							
	16/11/2020							6.9		1	194	25		1,240	0							
	15/02/2021	0.824	0	0.01	0	0	0	6.9	0	1	191	27	0	1,120	0	0		0	0	0	0	
	10/05/2021							6.8		1	196	26		1,050	0							
(Point 20) - BH6	24/08/2020							7		4	95	59		517	15							
	16/11/2020							7		5	141	37		732	23							
	15/02/2021	1.54	0	0.02	0	0	0	6.8	0	3	301	58	0	1,290	10	0		0	0	0.005		
	10/05/2021							7		3	271	40		999	0							

Table 2 – Stormwater Results 2020-2021 Reporting Period

Site Name	Sample Date	Alkalinity (as calcium carbonate) mg/L	Ammonia mg/L	Calcium mg/L	Chloride mg/L	Conductivity µS/cm	Dissolved Oxygen mg/L	Filterable iron mg/L	Fluoride mg/L	Magnesium mg/L	Nitrate as N mg/L	pH pH	Potassium mg/L	Sodium mg/L	Sulfate mg/L	Temperature °C	Total organic carbon mg/L	Total Phenolics mg/L	Total suspended solids mg/L
(Point 1)	27/07/2020	160	0.5	41	52	564	8.59	0.08	0.3	42	1.02	7.9	133	462	36	14.4	17	0	58
	28/07/2020	140	0.95	25	39	484	5.52	0.11	0.3	15	0.66	7.6	8	50	31	15.2	22	0	69
	29/07/2020	167	0.76	34	46	521	3.78	0.14	0.3	16	0.03	7.6	9	55	33	15	22	0	48
	30/07/2020	164	1	32	53	531	4.68	0.12	0.3	16	0.04	7.6	8	55	33	14.2	12	0	40
	31/07/2020	206	0.52	48	159	949	8.91	0	0.4	29	0.27	7.9	11	104	61	14.5	18	0	21
	03/08/2020	180	0.97	38	62	644	8.03	0.12	0.3	20	0.04	7.8	9	69	41	14.2	30	0	55
	04/08/2020	207	0.87	44	104	776	7.9	0.1	0.3	23	0.02	7.7	10	84	51	14.4	20	0	36
	05/08/2020	184	1.06	38	64	653	9.31	0.09	0.3	19	0.06	8	10	67	40	9.1	15	0	49
	06/08/2020	183	1.06	37	59	642	9.15	0.12	0.3	19	0.09	7.8	10	68	40	10.6	18	0	21
	07/08/2020	188	1.1	37	59	676	9.76	0.08	0.3	19	0.03	7.8	9	65	40	10.6	18	0	16
	08/08/2020	181	1.17	34	47	549	7.7	0.21	0.3	17	0.37	7.8	8	55	33	12.2	17	0	46
	09/08/2020	162	1.12	30	41	483	6.92	0.17	0.2	15	0.02	7.7	8	48	28	12	17	0	70
	10/08/2020	172	2.14	33	37	481	6.28	0.22	0.2	14	0	7.7	8	45	25	13	28	0	99
	11/08/2020	173	2.59	33	38	481	4.5	0.23	0.2	14	0.01	7.6	8	45	25	13.5	26	0	105
	12/08/2020	73	0	21	37	485	4.14	0.12	0.1	10	0.41	7.6	2	24	20	14.4	4	0	8
	13/08/2020	235	1.89	43	56	621	0.76	1.41	0.3	18	0	7.3	8	56	34	17.8	45	0	86
	24/08/2020	196	2.11	36	46	548	6.57	0.08	0.3	15	0.12	7.3	8	50	22	12.7	20	0	10
	31/10/2020	184	1.22	38	95	699	8.47	0	0.3	20	0.37	7.7	9	70	28	19.3	12	0	134
	01/11/2020	160	0.73	33	59	567	6.79	0	0	17	0.89	7.6	8	61	25	18.9	11	0	134
	02/11/2020	150	0.74	30	68	517	6.82	0.08	0	16	0.66	7.2	8	57	14	19.3	12	0	97
	03/11/2020	146	0.66	31	70	520	6.69	0.07	0.3	17	1.02	7.4	9	52	24	19.9	12	0	60
	05/11/2020	136	0.41	27	50	456	7.28	0.08	0.3	12	0.72	7.5	6	40	25	18.1	10	0	15
	06/11/2020	151	0.54	31	57	512	5.25	0.08	0.3	15	0.91	7.4	8	48	24	18.9	14	0	23
	07/11/2020	164	0.13	34	61	532	5.84	0.1	0.3	16	1.38	7.5	8	53	25	20.9	11	0	148
	08/11/2020	164	0.12	32	54	534	6.16	0.1	0.3	15	1.36	7.5	8	53	23	20.2	11	0	57
	09/11/2020	158	0.13	33	54	533	6.9	0.09	0.3	16	1.35	7.5	8	51	23	20.3	13	0	18
	10/11/2020	154	0.12	33	62	547	5.67	0.1	0.3	16	1.39	7.4	8	56	24	19.9	13	0	58
	11/11/2020	173	0.09	34	68	575	5.42	0.07	0.3	16	1.36	7.5	8	57	24	20.3	12	0	44
	08/01/2021	194	0.04	43	35	471	5.27	0.17	0.3	13	0.06	7.4	3	40	22	21	10	0	12
	12/01/2021	287	0.3	57	130	924	5.18	0	0.4	29	0.09	7.4	7	93	33	21	11	0	290
	22/01/2021	232	0.34	38	101	764	6.95	0.09	0.5	23	0.05	7.9	10	93	28	25.2	11	0	19
	25/01/2021	258	0.58	38	102	794	6.79	0.08	0.4	23	0.11	7.7	10	93	55	28.1	12	0	26
	04/02/2021	213	0.23	35	73	702	7.57	0	0.4	19	0.14	8	9	75	30	25.8	12	0	16
	15/02/2021	277	0.2	55	177	1,010	7.4	0.16	0.5	29	0.07	7.5	4	108	35	20.2	8	0	10
	22/03/2021	202	2.02	37	56	589	6.82	0.17	0.3	18	0.02	7.8	11	62	28	20.7	28	0	53
	23/03/2021	201	4.53	36	43	614	2.2	0.28	0.2	16	0	7.7	11	54	25	19.7	46	0	78
	24/03/2021	206	5.31	36	45	601	1.89	0.37	0.3	16	0	7.6	10	54	24	21.5	59	0	74
	25/03/2021	210	6.42	47	45	602	2.06	0.34	0.3	17	0	7.7	14	53	19	22.2	60	0	60
	26/03/2021	229	6.42	40	45	610	1.65	0.29	0.3	18	0	7.8	12	58	18	22.9	52	0	53
	27/03/2021	224	6.41	38	44	602	2.71	0.5	0.3	16	0	7.6	11	61	15	20.5	53	0	44
	28/03/2021	216	5.96	41	44	617	1.8	0.38	0.3	17	0	7.6	11	59	13	21.3	50	0	30
	29/03/2021	234	5.7	41	45	602	7.38	0.36	0.3	17	0	8.1	12	59	14	24.3	40	0	55
	30/03/2021	266	5.12	54	73	804	3.57	3.59	0.3	27	0	7.2	11	80	12	21.1	42	0	82
	31/03/2021	222	5.89	38	46	613	5.53	0.39	0.3	17	0.02	8	11	59	8	21.8	36	0	174
	30/04/2021	268	4.15	42	54		4.4	0.57	0.3	20	0		12	64	8		20	0	7
	03/05/2021	273	4.78	43	60	689	8.15	0.71	0.3	20	0.06	7.9	13	65	8	20.5	15	0	26
	07/05/2021	359	1.97	36	47	551	8.16	0.17	0.3	19	1.57	7.9	12	56	20	19.2	11	0	61
	08/05/2021	204	2.69	36	53	571	6.72	0.18	0.2	20	0	7.9	13	66	21	19.2	15	0	54
	09/05/2021	199	2.76	38	50	547	6.79	0.19	0.2	18	0	8	12	59	20	18.1	12	0	70
	10/05/2021	214	2.88	38	51	565	7.51	0.16	0.3	17	0	8.1	12	57	19	20.4	7	0	41
	11/05/2021	216	2.64	35	53	570	6.85	0.13	0.3	19	0.02	8	13	64	20	19.1	19	0	32
	13/05/2021	202	2.32	37	55	589	8.04	0.14	0.3	18	0.02	8.2	11	60	17	18.8	9	0	32

Site Name	Sample Date	Alkalinity (as calcium carbonate) mg/L	Ammonia mg/L	Calcium mg/L	Chloride mg/L	Conductivity µS/cm	Dissolved Oxygen mg/L	Filterable iron mg/L	Fluoride mg/L	Magnesium mg/L	Nitrate as N mg/L	pH	Potassium mg/L	Sodium mg/L	Sulfate mg/L	Temperature °C	Total organic carbon mg/L	Total Phenolics mg/L	Total suspended solids mg/L
(Point 33)	27/07/2020	62	0.01	15	24	242	9.85	0.35	0.1	7	1.21	7.4	4	22	16	14.1	11	0	38
	28/07/2020	62	0.02	14	27	259	8.25	0.29	0.1	7	1.06	7.6	3	24	17	14.8	8	0	13
	29/07/2020	73	0.03	19	29	272	8.32	0.26	0.1	8	0.71	7.3	3	25	18	14.4	7	0	8
	30/07/2020	70	0.04	19	31	267	8.98	0.17	0.1	8	0.51	7.3	2	24	17	14.2	4	0	0
	31/07/2020	74	0.03	20	31	263	9.06	0.12	0.1	8	0.34	7.3	2	23	16	13.9	5	0	0
	03/08/2020	104	0.03	28	39	364	9.2	0.26	0.2	12	0.26	7.4	2	31	23	13.4	6	0	0
	04/08/2020	129	0.06	33	50	455	8.7	0.26	0.2	14	0.22	7.5	3	40	28	13.5	7	0	5
	05/08/2020	139	0.11	37	55	522	11.4	0.27	0.2	16	0.21	7.6	5	47	31	9.1	7	0	8
	06/08/2020	144	0.11	35	51	500	8.79	0.34	0.2	16	0.25	7.5	5	46	30	10.7	9	0	5
	07/08/2020	160	0.32	36	54	535	9.37	0.24	0.2	16	0.18	7.8	6	53	34	9.9	11	0	0
	08/08/2020	66	0.09	16	26	253	9.43	0.37	0.1	7	0.88	7.5	3	22	17	13.1	7	0	20
	09/08/2020	66	0.04	16	28	256	10.3	0.32	0.1	8	0.62	7.7	3	22	17	11.1	6	0	10
	10/08/2020	54	0.13	14	25	222	9.47	0.34	0	7	0.72	7.5	3	19	14	13.4	6	0	25
	11/08/2020	62	0.12	17	31	249	9.39	0.24	0.1	8	0.64	7.4	2	21	17	13	5	0	9
	12/08/2020	72	0.13	18	31	268	9.48	0.17	0.1	8	0.52	7.7	2	23	18	14.3	5	0	12
	13/08/2020	78	0.13	19	35	308	8.14	0.19	0.1	9	0.41	7.6	2	24	18	17	6	0	11
	24/08/2020	128	0.26	34	42	432	8.68	0.31	0.2	16	0.15	7.1	4	38	23	11.9	6	0	0
	31/10/2020	34	0	10	14	140	8.47	0.4	0.1	5	0.85	7.4	6	11	26	18	9	0	539
	01/11/2020	80	0.05	20	30	296	6.8	0.24	0	9	0.51	7.2	3	27	20	18.6	8	0	31
	02/11/2020	85	0.07	20	30	291	7	0.23	0	9	0.38	7.2	3	26	19	18.8	6	0	14
	03/11/2020	86	0.05	21	36	302	7.5	0.14	0.1	9	0.31	7.4	3	25	18	19.5	6	0	14
	05/11/2020	108	0.04	24	41	407	8.05	0.1	0.2	10	0.31	7.4	4	29	20	17.4	8	0	9
	06/11/2020	99	0.03	24	33	321	6.9	0.18	0.1	10	0.18	7.4	3	24	19	18.4	6	0	0
	07/11/2020	123	0.04	29	42	389	6.83	0.16	0.2	12	0.1	7.4	3	32	20	21.2	6	0	28
	08/11/2020	124	0.04	30	39	390	6.87	0.21	0.2	12	0.1	7.3	3	31	18	19	5	0	62
	09/11/2020	118	0.03	29	39	389	6.75	0.23	0.2	13	0.09	7.3	3	30	18	18.1	5	0	9
	10/11/2020	130	0.03	30	45	417	7.34	0.24	0.1	14	0.07	7.4	3	34	20	19.2	5	0	8
	11/11/2020	138	0.03	31	47	424	7.58	0.26	0.1	14	0.06	7.5	3	33	20	19.4	5	0	0
	08/01/2021	103	0	22	28	293	7.13	0.25	0.1	9	0.01	7.4	2	26	13	20.8	5	0	0
	12/01/2021	150	0.04	30	40	409	5.13	0.35	0.2	12	0.03	7.3	2	32	14	22.5	5	0	0
	22/01/2021	214	0.04	39	74	636	3.78	0.36	0.2	19	0	7.3	5	67	16	23.5	9	0	6
	25/01/2021	232	0.06	44	86	669	3.28	0.64	0.2	19	0.01	7.1	4	72	4	27.1	9	0	0
	04/02/2021	111	0.02	24	34	341	6.61	0.13	0.1	10	0.06	7.4	3	30	14	25.2	5	0	0
	15/02/2021	117	0.02	26	35	330	7.42	0.26	0.1	10	0.04	7.5	2	26	12	22.4	4	0	0
	22/03/2021	53	0.13	14	25	206	7.79	0.51	0.1	7	0.41	7.4	4	18	10	19.9	16	0	45
	23/03/2021	61	0.21	14	24	228	6.96	0.41	0	6	0.36	7.7	4	18	12	18.6	7	0	46
	24/03/2021	71	0.41	15	29	260	6.1	0.34	0.1	8	0.43	7.1	2	21	15	20	6	0	12
	25/03/2021	78	0.37	23	34	292	6.35	0.29	0.1	12	0.34	7.4	4	23	15	20.5	4	0	6
	26/03/2021	76	0.1	19	34	279	7.54	0.24	0.1	11	0.3	7.5	3	38	15	19.3	4	0	10
	27/03/2021	75	0.1	20	34	287	6.85	0.23	0.1	10	0.28	7.4	3	28	13	18.4	4	0	0
	28/03/2021	81	0.06	22	37	313	7.43	0.14	0.1	11	0.26	7.4	3	29	16	19.8	4	0	0
	29/03/2021	85	0.07	23	39	327	7.52	0.16	0.1	11	0.24	7.5	3	29	16	19.6	2	0	0
	30/03/2021	87	0.04	25	39	339	7.55	0.22	0.1	13	0.23	7.4	3	29	17	19.6	2	0	0
	31/03/2021	90	0.06	24	41	347	6.94	0.2	0.1	12	0.21	7.4	2	27	17	18.2	2	0	0
	03/05/2021	233	2.14	42	61	618	6.05	0.58	0.2	19	0.25	7.6	9	56	13	16.5	8	0	8
	07/05/2021	54	0.1	14	22	195	8.32	0.43	0	7	1.17	7.3	4	18	11	18.8	6	0	64
	08/05/2021	79	0.2	16	28	272	8.36	0.25	0.1	9	0.63	7.4	4	25	16	18.5	5	0	14
	09/05/2021	86	0.22	21	30	285	8.34	0.22	0.1	10	0.38	7.3	3	25	16	16.9	3	0	18
	10/05/2021	89	0.2	23	31	296	8.01	0.18	0.1	10	0.26	7.3	3	26	17	17.7	2	0	0
	11/05/2021	96	0.2	21	37	317	8.13	0.16	0.1	11	0.24	7.4	3	28	18	17.3	4	0	0
	13/05/2021	92	0.09	25	40	337	8.6	0.16	0.1	12	0.19	7.5	2	26	18	17.2	2	0	0

Site Name	Sample Date	Alkalinity (as calcium carbonate) mg/L	Ammonia mg/L	Calcium mg/L	Chloride mg/L	Conductivity µS/cm	Dissolved Oxygen mg/L	Filterable iron mg/L	Fluoride mg/L	Magnesium mg/L	Nitrate as N mg/L	pH	Potassium mg/L	Sodium mg/L	Sulfate mg/L	Temperature °C	Total organic carbon mg/L	Total Phenolics mg/L	Total suspended solids mg/L
(Point 34)	27/07/2020	58	0	16	26	256	9.57	0.39	0.1	8	1.59	7.5	3	21	18	13.9	12	0	23
	28/07/2020	62	0.02	15	29	265	9.09	0.31	0.1	7	1.15	7.5	2	22	18	14.8	7	0	12
	29/07/2020	88	0	26	36	344	8.99	0.22	0.1	12	0.82	7.5	2	28	22	14.6	6	0	0
	30/07/2020	98	0	26	43	353	9.3	0.11	0.1	12	0.62	7.4	2	28	24	14.6	3	0	0
	31/07/2020	107	0	32	45	382	9.37	0.06	0.1	14	0.42	7.3	3	30	24	14.6	4	0	0
	03/08/2020	131	0.02	37	42	437	9.31	0.05	0.1	16	0.24	7.5	3	33	29	13.5	4	0	0
	04/08/2020	146	0.05	40	44	445	9.2	0.06	0.1	16	0.15	7.4	3	33	30	13.2	3	0	0
	05/08/2020	149	0.02	41	45	470	11.3	0.07	0.1	18	0.14	7.8	3	33	30	7.8	4	0	0
	06/08/2020	147	0.01	43	43	457	9.17	0.1	0.1	19	0.16	7.5	3	36	32	10.2	4	0	0
	07/08/2020	154	0	40	43	486	9.09	0.08	0.1	17	0.1	7.7	3	33	31	10.8	4	0	0
	08/08/2020	63	0	17	28	258	10.7	0.23	0.1	9	0.94	7.9	2	21	18	11.8	6	0	16
	09/08/2020	70	0	18	31	274	10.7	0.28	0.1	9	0.62	7.7	2	22	20	11.5	5	0	8
	10/08/2020	50	0	14	27	219	10.9	0.34	0	7	0.64	7.7	3	18	15	13.4	6	0	20
	11/08/2020	66	0	19	33	271	10.6	0.14	0.1	9	0.55	7.5	2	21	18	12.7	4	0	7
	12/08/2020	174	2.37	32	38	304	10.2	0.25	0.2	14	0	7.6	8	45	24	14.8	35	0	111
	13/08/2020	88	0.02	24	43	359	9.34	0.1	0.1	12	0.3	7.5	2	25	22	17.5	4	0	0
	24/08/2020	140	0	37	47	465	9.64	0.06	0.1	17	0.05	7.4	3	31	30	13.9	2	0	0
	31/10/2020	53	0.02	14	20	204	9.94	0.45	0.1	7	1.11	7.4	5	16	17	17.6	9	0	98
	01/11/2020	86	0	22	33	323	8.9	0.23	0	10	0.48	7.4	3	28	24	17.8	6	0	12
	02/11/2020	103	0.02	26	34	353	7.34	0.22	0.2	12	0.34	7.1	3	28	27	18.8	5	0	0
	03/11/2020	116	0.01	30	46	392	7.64	0.11	0.1	14	0.21	7.5	3	28	27	19.4	5	0	0
	05/11/2020	123	0	28	44	363	6.87	0.05	0.1	12	0.12	7.3	3	28	29	18.1	7	0	8
	06/11/2020	116	0	30	41	383	7.87	0.11	0.1	13	0.14	7.4	3	28	26	17.8	4	0	0
	07/11/2020	146	0.01	36	46	458	8.58	0	0.2	15	0.06	7.4	3	32	28	21.1	3	0	12
	08/11/2020	145	0.04	37	41	450	8.53	0	0.2	15	0.05	7.5	3	32	28	19.4	1	0	12
	09/11/2020	127	0.03	37	41	450	8.28	0	0.2	16	0.05	7.5	3	30	28	19.4	2	0	0
	10/11/2020	143	0.01	38	46	472	9.23	0.06	0.1	16	0.04	7.4	3	33	29	18.8	3	0	0
	11/11/2020	156	0	38	49	472	8.53	0.06	0.1	16	0.03	7.5	3	33	29	19.2	4	0	0
	08/01/2021	128	0	29	37	384	8.19	0.18	0.2	13	0.08	7.6	3	31	21	21.9	5	0	0
	12/01/2021	165	0.04	39	44	477	6.29	0.14	0.2	18	0.05	7.4	3	32	26	20.6	2	0	0
	22/01/2021	198	0.09	46	50	547	6.03	0.16	0.2	21	0.02	7.4	3	41	27	25.3	0	0	0
	25/01/2021	200	0.11	47	55	574	4.87	0.18	0.1	20	0.04	7.3	4	41	24	27.5	1	0	0
	04/02/2021	129	0.01	32	41	419	8.55	0.09	0.1	15	0.17	7.6	3	30	24	24	4	0	5

15/02/2021	172	0.02	39	51	501	8.38	0.13	0.1	18	0.07	7.6	3	34	26	20.8	1	0	0
22/03/2021	47	0.02	14	27	204	9.43	0.48	0	7	0.48	7.2	3	17	11	19.2	10	0	59
23/03/2021	31	0.07	10	18	155	8.45	0.5	0	4	0.3	7.7	3	13	6	18.5	9	0	527
24/03/2021	59	0.08	16	30	259	8.24	0.21	0.1	8	0.36	7.1	3	21	16	18.7	6	0	26
25/03/2021	76	0.08	25	40	309	9.03	0.2	0.1	13	0.29	7.6	3	23	19	19.2	7	0	12
26/03/2021	88	0.07	24	42	334	9.34	0.15	0.1	12	0.24	7.7	3	33	20	18.3	4	0	11
27/03/2021	91	0.06	26	43	360	8.09	0.13	0.1	13	0.22	7.5	3	34	21	16.9	3	0	0
28/03/2021	100	0.04	28	45	379	9.39	0.08	0.1	14	0.2	7.7	3	33	23	17.4	3	0	0
29/03/2021	101	0.04	29	46	394	9.6	0.06	0.1	14	0.2	7.6	3	31	23	16.2	1	0	8
30/03/2021	109	0.02	31	45	412	9.06	0.08	0.1	16	0.21	7.6	3	33	25	17.7	4	0	0
31/03/2021	115	0	30	48	423	8.4	0.06	0.2	15	0.21	7.5	2	30	26	16.8	4	0	0
03/05/2021	168	0.02	47	62	564	8.27	0.09	0.1	21	0.1	7.5	3	38	37	18.9	0	0	8
07/05/2021	51	0.01	14	24	196	9.86	0.33	0	7	0.87	7.6	4	17	14	18.2	6	0	75
08/05/2021	71	0.01	18	31	279	9.75	0.1	0.1	10	0.57	7.6	3	25	19	16.9	4	0	15
09/05/2021	88	0.01	25	36	321	9.59	0.13	0.1	12	0.37	7.6	3	26	21	16	2	0	22
10/05/2021	100	0	29	40	354	9.49	0.09	0.1	14	0.27	7.5	3	28	24	17.7	1	0	7
11/05/2021	106	0	29	50	381	9.64	0.06	0.1	15	0.22	7.6	3	32	25	15.8	0	0	0
13/05/2021	84	0	33	52	411	9.53	0	0.2	16	0.18	7.7	2	31	26	17.5	0	0	0

Table 3: Trade Waste Results 2020/21 Reporting Period

Site Name	Sample Date	Ammonia mg/L	Biochemical Oxygen Demand mg/L	Electrical Conductivity @ 25°C µS/cm	Temperature °C	Total Dissolved Solids (Calc.) mg/L	Total suspended solids mg/L	Volume Discharged kL	Meter Reading (start) kL	Meter Reading (finish) kL	pH (start) pH	pH (finish) pH
11205 Comp - Composite	10/06/2020	0.8	7	8,620		5,600	31	60	356,818	356,878		
	30/06/2020	0	5	8,040		5,230	26	61	358,555	358,616		
	21/07/2020	0.6	5	8,640		5,620	28	77	360,142	360,219		
	12/08/2020	0	33	3,850		2,500	44	420	369,039	369,459		
	01/09/2020	46.8	30	4,420		2,870	33	420	377,859	378,279		
	22/09/2020	0	6	5,440		3,540	14	126	4,022.47	4,148.73		
	12/10/2020	0	13	9,730		6,320	18	85.8	9,306.65	9,392.4		
	03/11/2020	5.9	2	7,060		4,590	46	120	14,128.19	14,248.36		
	12/11/2020	23.8	2	1,380		897	13	22.4	46,669.6	46,692.02		
	24/11/2020	28.3	27	4,680		3,040	35	303	26,219.55	26,522.34		
	15/12/2020	2.6	11	7,100		4,620	33	81.8	27,166.89	27,248.66		
	05/01/2021	14.6	46	7,160		4,650	24	279	29,743.92	30,023.16		
	28/01/2021	0	39	5,800		3,770	52	90.9	35,813.26	35,904.18		
	16/02/2021	0	24	5,640		3,670	52	157	41,303.64	41,460.58		
	10/03/2021	0	7	6,340		4,120	40	76.3	46,027.76	46,104.06		
	30/03/2021	33.1	32	3,820		2,480	36	260	51,482.71	51,742.32		
	19/04/2021	32.9	16	4,410		2,870	21	297	57,510.9	57,807.68		
	12/05/2021	28	26	3,250		2,110	20	337	65,067.51	65,404.12		
11205 Dis - Discrete Start	09/06/2020										8.4	
	29/06/2020										7.9	
	20/07/2020										8	
	11/08/2020										8.5	
	31/08/2020										8.5	
	21/09/2020										7.9	
	13/10/2020										7.7	
	02/11/2020										8.1	
	11/11/2020										6.7	
	23/11/2020										7.6	
	14/12/2020										7.4	
	04/01/2021										7.8	
	27/01/2021										7.6	
	15/02/2021										7.6	
	09/03/2021										7.5	
	30/03/2021										7.8	
	20/04/2021										7.5	
	11/05/2021										7.7	
11205 Dis fin - Discrete Finish	10/06/2020				18							8.2
	30/06/2020				15							8.2
	21/07/2020				15							8
	12/08/2020				15							8.7
	01/09/2020				17							8.1
	22/09/2020				21.9							8.1
	13/10/2020				23							7.9
	03/11/2020				22							8.2
	12/11/2020				21							6.8
	24/11/2020				25							8.2
	15/12/2020				28							7.5
	05/01/2021				28							7.4
	28/01/2021				27							7.4
	16/02/2021				28							7.7
	10/03/2021				34							7.5
	30/03/2021				23							8.3
	20/04/2021				20							8
	12/05/2021				22							8.4
Composite	10/07/2020	17.9				754	13	82.8	37,008.08	37,090.86		
	01/09/2020	33.9				1,010	49	109	43,249.98	43,359.01		
	18/02/2021	0				663	5	0	47,532.27	47,532.27		
	09/03/2021	0				689	27	0.01	47,533.05	47,533.06		
	18/05/2021	17.2				774	23	0.14	51,447.9	51,448.04		
DISCRETE FINISH	10/07/2020				16							7.2
	01/09/2020				20							6.6
	18/02/2021				21							7.2
	09/03/2021				22							7.2
	18/05/2021				15							7.8
Discrete Start	09/07/2020										7.1	
	31/08/2020										6.7	
	17/02/2021										7.2	
	17/05/2021										7.7	

Table 4: Subsurface Gas Results 2020-2021 Reporting Period

Monitoring Point ID	Sample ID	Sample Date	Bal %	Baro hPa	CH4 %v/v	CH4 Peak %v/v	CO2 %v/v	CO2 Peak %v/v	Flow l/h	Relative Pressure	SWL m	Well Depth m
21	LFG MW1	9/06/2020	81.9	1029	0	0	4.1	4.1	0	0	3.7	10.2
		1/07/2020	81.5	1024	0	0	5.5	5.6	0.1	0.05	3.84	10.2
		12/08/2020	82.7	1012	0	0	6.5	9.1	0	0.1	3.3	10.2
		8/09/2020	77.9	1025	0	0	1.6	1.7	0	0.09	3.38	10.2
		19/10/2020	78.5	1015	0	0	1	1	0	0.03	3.44	10.2
		17/11/2020	79.5	1014	0	0	0.6	1	0.1	0.02	3.36	10.2
		10/12/2020	79.4	1014	0	0	0.3	0.4	0	0.02	3.2	10.2
		14/01/2021	81	1007	0	0	0.4	0.4	0	0.05	2.88	10.2
		17/02/2021	80.1	1025	0	0	0.1	0.1	0	0.09	2.63	10.2
		15/03/2021	79.8	1015	0	0	0.2	0.2	0	0.03	2.9	10.2
		22/04/2021	79.1	1009	0	0	0.1	0.1	0	0.05	2.71	10.2
		12/05/2021	78.9	1011	0	0	0.1	0.2	0.2	0.02	2.6	10.2
22	LFG MW2	9/06/2020	79.5	1026	0	0	0	0	0.1	0.05	DRY	10.36
		1/07/2020	80.6	1024	0	0	1.4	1.5	0.1	0.05	DRY	10.36
		12/08/2020	85	1010	0	0	6.4	6.4	0.5	0.02	9.32	10.36
		8/09/2020	84.3	1020	0	0	6.1	6.1	0	0	10.03	10.36
		19/10/2020	81.5	1014	0	0	2.1	2.3	0	0.07	DRY	10.36
		17/11/2020	81	1014	0	0	0.9	8.9	0	0.05	9.73	10.36
		10/12/2020	79.6	1014	0	0	0.1	0.1	0	0.05	DRY	10.36
		14/01/2021	86.6	1006	0	0	2.7	2.7	0.1	0.05	DRY	10.36
		17/02/2021	85.6	1023	0	0	3.9	3.9	0	0.03	DRY	10.36
		15/03/2021	85.2	1019	0	0	4.7	4.7	0	0.02	DRY	10.36
		22/04/2021	81.6	1009	0	0	1.6	1.6	0.1	0.03	10.11	10.36
		12/05/2021	83.7	1011	0	0	3.1	3.1	0	0.02	8.64	10.36

Monitoring Point ID	Sample ID	Sample Date	Bal %	Baro hPa	CH4 %v/v	CH4 Peak %v/v	CO2 %v/v	CO2 Peak %v/v	Flow l/h	Relative Pressure	SWL m	Well Depth m
23	LFG MW3	9/06/2020	80.1	1025	0	0	2.8	2.8	0	0.07	5.95	10.52
		1/07/2020	81.8	1018	0	0	5.1	5.1	0.1	-0.02	5.93	10.52
		12/08/2020	89.3	1006	0	0	1.3	1.6	0	-0.03	0.9	10.52
		8/09/2020	79.3	1020	0	0	3.7	3.7	0	0.02	5.25	10.52
		19/10/2020	79.6	1012	0	0	0.9	2	0	0.09	5.91	10.52
		17/11/2020	81.9	1014	0	0	8.3	8.4	0.1	0.1	5.72	10.52
		10/12/2020	80	1014	0	0	3.3	3.4	0	0.07	5.83	10.52
		14/01/2021	84.3	1002	0	0	6.1	6.1	0	0	5.61	10.52
		17/02/2021	84.6	1017	0	0	1.4	1.4	0	0.07	3.03	10.52
		15/03/2021	80	1021	0	0	2.4	2.4	0	0.09	5.62	10.52
		22/04/2021	79.9	1004	0	0	2	2	0	-0.09	6.03	10.52
		12/05/2021	84.3	1011	0	0	1	1	0.2	0	3.86	10.52
24	LFG MW4	9/06/2020	81.3	1024	0	0	4.9	4.9	0.1	0.05	DRY	9.27
		1/07/2020	81.5	1016	0	0	6.2	6.2	0	0.07	DRY	9.27
		12/08/2020	84	1005	0	0	11.9	11.9	1	0.09	DRY	9.27
		8/09/2020	79.9	1020	0	0	4.8	4.8	0	0.05	DRY	9.27
		19/10/2020	79.2	1010	0	0	0.2	0.9	0.1	0.05	DRY	9.27
		17/11/2020	79.5	1011	0	0	0	0	0	0.07	DRY	9.27
		10/12/2020	79.7	1013	0	0	0.3	0.3	0	0.07	DRY	9.27
		14/01/2021	82.5	1001	0	0	6.2	6.2	0	0	DRY	9.27
		17/02/2021	89.9	1017	0	0	0	0	0	0.03	DRY	9.27
		15/03/2021	80.5	1021	0	0	0.5	0.5	0.1	0.05	DRY	9.27
		22/04/2021	82.1	1003	0	0	8.2	8.2	0	0.03	DRY	9.27
		12/05/2021	81.3	1011	0	0	3.2	3.2	0.2	0.03	DRY	9.27

Monitoring Point ID	Sample ID	Sample Date	Bal %	Baro hPa	CH4 %v/v	CH4 Peak %v/v	CO2 %v/v	CO2 Peak %v/v	Flow l/h	Relative Pressure	SWL m	Well Depth m
25	LFG MW5	9/06/2020	85.1	1025	0	0	10	10.1	0	0.03	11.49	12.03
		1/07/2020	82.1	1016	0	0	7.4	8.7	0.1	0.09	11.65	12.03
		12/08/2020	86.3	1004	0	0	9.6	9.6	0	0.09	6.74	12.03
		8/09/2020	79.9	1018	0	0	6.1	6.1	0	0.02	10.7	12.03
		19/10/2020	79	1009	0	0	0.1	0.1	0	0.09	11.05	12.03
		17/11/2020	79.5	1012	0	0	0.1	0.1	0	0.02	10.1	12.03
		10/12/2020	79.9	1011	0	0	0.5	0.5	0	0.07	DRY	12.03
		14/01/2021	83.3	1001	0	0	8	8.1	0.1	0.02	10.88	12.03
		17/02/2021	81.5	1017	0	0	3.9	3.9	0.1	0.12	10.3	12.03
		15/03/2021	84.7	1021	0	0	8.9	8.9	0.1	0.02	9.3	12.03
		22/04/2021	83.4	1003	0	0	8.6	8.6	0.1	0.07	9.39	12.03
		12/05/2021	83.3	1011	0	0	7.3	7.3	0.1	0.03	8.04	12.03
26	LFG MW6	9/06/2020	79.6	1023	0	0	0.4	0.4	0.1	0.03	DRY	10.85
		1/07/2020	79.7	1016	0	0	0.9	0.9	0	0.03	DRY	10.85
		12/08/2020	80.6	1003	0	0	7.5	7.6	0.2	0.03	DRY	10.85
		8/09/2020	78.2	1019	0	0	0.5	0.5	0	0.05	DRY	10.85
		19/10/2020	79	1008	0	0	0	0	0	0	DRY	10.85
		17/11/2020	79.4	1011	0	0	0	0	0	0.05	DRY	10.85
		10/12/2020	79.9	1008	0	0	0	0	0	0.12	DRY	10.85
		14/01/2021	81.8	1001	0	0	6	6	0	0.09	DRY	10.85
		17/02/2021	80.3	1017	0	0	0	0	0	0.02	DRY	10.85
		15/03/2021	79.8	1021	0	0	0.2	0.2	0.1	0.05	DRY	10.85
		22/04/2021	79.7	1000	0	0	2.6	2.6	0	0.03	DRY	10.85
		12/05/2021	79.4	1011	0	0	2.6	2.6	0.2	0.07	DRY	10.85

Monitoring Point ID	Sample ID	Sample Date	Bal %	Baro hPa	CH4 %v/v	CH4 Peak %v/v	CO2 %v/v	CO2 Peak %v/v	Flow l/h	Relative Pressure	SWL m	Well Depth m
27	LFG MW7	9/06/2020	79.6	1024	0	0	0.8	2.2	0.1	0.03	8.3	12.33
		1/07/2020	79.5	1017	0	0	1	1.7	0	0.1	8.25	12.33
		12/08/2020	78.9	1004	0	0	3.5	5.7	0	-0.05	7.3	12.33
		8/09/2020	78.1	1018	0	0	1.1	1.6	0	0.14	7.65	12.33
		19/10/2020	79	1009	0	0	0.1	1.7	0	0.07	7.91	12.33
		17/11/2020	79.2	1012	0	0	0.6	0.9	0	-0.02	7.52	12.33
		10/12/2020	80.2	1011	0	0	0.6	0.6	0.1	0.07	7.65	12.33
		14/01/2021	80.7	1002	0	0	0.1	0.2	0.1	0.03	7.7	12.33
		17/02/2021	80.4	1018	0	0	1.2	2.4	0	0.02	7.68	12.33
		15/03/2021	79.3	1021	0	0	0	0	0	0.03	7.4	12.33
		22/04/2021	79.2	1004	0	0	0.6	1.5	0.2	0.03	7.21	12.33
		12/05/2021	80.6	1011	0	0	2.4	3.2	0.1	0.07	7.06	12.33
28	LFG MW8	9/06/2020	79.5	1024	0	0	0.8	1.1	0	0.05	8.84	10.37
		1/07/2020	79.2	1017	0	0	0.6	0.8	0	0.09	8.2	10.37
		12/08/2020	79.1	1004	0	0	0.1	0.3	0	0.07	6.79	10.37
		8/09/2020	77.8	1019	0	0	1.3	1.3	0	0	7.65	10.37
		19/10/2020	78.6	1010	0	0	0.3	0.5	0.5	0.07	7.75	10.37
		17/11/2020	78.7	1012	0	0	0.8	0.8	0	0.09	6.78	10.37
		10/12/2020	79.6	1012	0	0	0.6	0.6	0	0.1	7.75	10.37
		14/01/2021	79.8	1002	0	0	1.2	1.2	0	0.12	6.65	10.37
		17/02/2021	79.1	1018	0	0	1.7	1.7	0	0.03	6.64	10.37
		15/03/2021	79.4	1021	0	0	0.7	0.7	0	0.03	7.61	10.37
		22/04/2021	78.1	1004	0	0	0.7	0.7	0	0.02	7.42	10.37
		12/05/2021	78.8	1011	0	0	0.2	0.3	0	0.02	6.43	10.37

Monitoring Point ID	Sample ID	Sample Date	Bal %	Baro hPa	CH4 %v/v	CH4 Peak %v/v	CO2 %v/v	CO2 Peak %v/v	Flow l/h	Relative Pressure	SWL m	Well Depth m
29	LFG MW9	9/06/2020	78.6	1024	0	0	5.5	5.5	0	0.07	6.65	10.7
		1/07/2020	77.6	1017	0	0	5.2	5.2	0.1	-0.03	7.05	10.7
		12/08/2020	80.1	1004	0	0	0.7	1.6	0	0.05	0.9	10.7
		8/09/2020	77.7	1019	0	0	4.1	4.1	0	0.02	6.15	10.7
		19/10/2020	78.5	1010	0	0	2.3	2.4	0	0.07	6.58	10.7
		17/11/2020	81.5	1012	0	0	6.6	6.6	0.1	0.03	5.37	10.7
		10/12/2020	79.2	1012	0	0	3.1	3.1	0	0.07	6.36	10.7
		14/01/2021	84.1	1002	0	0	6.1	6.1	0.1	0.05	5.07	10.7
		17/02/2021	80.6	1018	0	0	1.7	1.7	0	0.02	2.43	10.7
		15/03/2021	79	1021	0	0	3.8	3.8	0.1	0.03	6.04	10.7
		22/04/2021	78.1	1004	0	0	1.9	1.9	0	0.03	5.83	10.7
		12/05/2021	79.6	1011	0	0	0.8	0.8	0	0.17	4.03	10.7
30	LFG MW10	9/06/2020	78.9	1025	0	0	1.7	1.7	0	0.07	10.32	12.38
		1/07/2020	78.5	1017	0	0	1.7	1.7	0.1	0.05	10.26	12.38
		12/08/2020	79.4	1005	0	0	0.4	0.6	0	0.1	7.6	12.38
		8/09/2020	78.3	1020	0	0	1.4	1.4	0	0.09	9.85	12.38
		19/10/2020	78.9	1010	0	0	1.4	2.1	0.1	0.09	10.13	12.38
		17/11/2020	80.3	1012	0	0	2.4	2.4	0.1	0.09	9.85	12.38
		10/12/2020	79.9	1012	0	0	3.7	3.7	0	0.07	10.34	12.38
		14/01/2021	83.3	1002	0	0	4	4	0.1	-0.02	9.73	12.38
		17/02/2021	80.9	1018	0	0	3.2	3.2	0.1	0	9.51	12.38
		15/03/2021	81.3	1021	0	0	3.5	3.5	0.1	0.05	9.6	12.38
		22/04/2021	80	1004	0	0	2.4	2.4	0	-0.02	9.83	12.38
		12/05/2021	79	1011	0	0	0.5	0.5	0	0.12	9.03	12.38
31	LFG MW11	9/06/2020	80.5	1025	0	0	4	4	0	0.05	5.42	9.36
		1/07/2020	81.8	1018	0	0	3.4	3.4	0.1	0.03	5.32	9.36
		12/08/2020	79.7	1005	0	0	0.5	0.5	0	0	1.14	9.36
		8/09/2020	78.1	1020	0	0	2.6	2.6	0	0.02	5.6	9.36
		19/10/2020	80.5	1010	0	0	4.5	4.5	0	-0.02	5.49	9.36
		17/11/2020	80.8	1012	0	0	3.8	3.8	0.1	0.03	5.01	9.36
		10/12/2020	81.8	1012	0	0	6.7	6.7	0	0.05	10.5	9.36
		14/01/2021	81.1	1002	0	0	6.5	6.5	0.1	0.03	4.4	9.36
		17/02/2021	80.9	1018	0	0	7.2	7.2	0	0.07	3.2	9.36
		15/03/2021	80.5	1015	0	0	4.2	4.2	0	0.03	5.16	9.36
		22/04/2021	79.7	1004	0	0	3.4	3.4	0	0.05	5.24	9.36
		12/05/2021	80.1	1011	0	0	1.1	1.1	0	0.05	3.16	9.36
32	LFG MW12	9/06/2020	81.2	1026	0	0	8.4	8.4	0	-0.05	4.91	10.46
		1/07/2020	80.6	1018	0	0	9.2	9.2	0.1	0.09	5.01	10.46
		12/08/2020	91.9	1005	0	0	4	4.4	0	0.05	3.05	10.46
		8/09/2020	86.4	1020	0	0	7.8	7.8	0	0.02	4.8	10.46
		19/10/2020	82.3	1011	0	0	9	9	0	0.07	5.14	10.46
		17/11/2020	89.1	1012	0	0	8.2	8.2	0	0.07	4.89	10.46
		10/12/2020	84.2	1012	0	0	9.4	9.4	0	0.02	4.82	10.46
		14/01/2021	86.2	1002	0	0	8.6	8.6	0	0.05	4.5	10.46
		17/02/2021	90.7	1018	0	0	8.4	8.4	0.1	0.03	4.02	10.46
		15/03/2021	85.5	1015	0	0	11.1	11.1	0	0.07	4.82	10.46
		22/04/2021	83.7	1004	0	0	7.7	7.7	0	0.03	4.94	10.46
		12/05/2021	90.5	1011	0	0	5.9	5.9	0	0.03	3.78	10.46

Table 5: Surface Gas Results 2020-2021 Reporting Period

Location	Sample Number	10/06/2020	1/07/2020	12/08/2020	14/08/2020	8/09/2020	19/10/2020	20/10/2020	17/11/2020	9/12/2020	10/12/2020	12/01/2021	14/01/2021	17/02/2021	18/02/2021	15/03/2021	22/04/2021	23/04/2021	12/05/2021
Transect 1	1				4.1				3.3										
	2				3														
	3				3														
Transect 2	1		2.7		3			2.3	2.9	4.2		2.4							
	2		2.7		3.1			2.4	3.1	5		2.5							
	3		2.8		3			2.4	2.5	4.8		2.5							
	4		2.8		3.1			2.4	2.7	9.1		2.5							
	5				3.1				2.3										
Transect 3	1		5.4		2.9				2.3										
	2		4.4		3.4				2.6										
	3		3.8		3.4				2.4										
	4		3.6		3.1				2.4										
	5		2.7		3.14				2.4										
Transect 4	1		40.2							8.2		2.8			2.5	2.2		2	
	2		16.7							13.2		3.1			2.1	2.3		2	
	3		3.4							8.5		2.9			2.3	2.1		2.1	
	4		48.3							11.5		4.4			2.3	2.4		14.2	
	5		3.8							5.4		2.5			2.5	2.4		3.8	
	6															2.9		5.6	
	7															6.1		4.5	
Transect 5	1		3.6		7.6			2.3	2.9										
	2		5		6.6			2.3	2.8										
	3		8.4		6.4			2.4	2.7										
	4		28.3		6.2				2.7										
	5		4.2						2.6										
	6																		

Location	Sample Number	10/06/2020	1/07/2020	12/08/2020	14/08/2020	8/09/2020	19/10/2020	20/10/2020	17/11/2020	9/12/2020	10/12/2020	12/01/2021	14/01/2021	17/02/2021	18/02/2021	15/03/2021	22/04/2021	23/04/2021	12/05/2021
Transect 6	1		23.7			2.5				5.4		2.4				2.7		5.1	
	2		3.9			3.1				6.2		5.3				2.4		2.6	
	3		7.8			3.7				6.6		4				2.4			
	4		8.3			27.5				6.9		4.1				2.3			
	5		5.7							4.2		5.4				2.4			
	6		32.7							4.9		4.1				2.4			
	7		45.7							6.4		5.4				2.5			
	8									4.7						6.8			
Transect 7	1		4.4		17.87	38.2		10.6	2.9						2.2	382.3		380	
	2		40.5		14.3	5.9		6.7	4.1						2.3	490.7		542.8	
	3		6.5		13.6	5.7		3.6	3.4						2.9	580.3		145.1	
	4		4.6		10	5.2		2.9	3.6						2.6	180.6		4.9	
	5		5.3		8.4	6.4		2.5	3.7						2	15.4		52	
	6				9				3.3							40.1		784	
	7															24.3			
	8															304.7			
Transect 8	1				14.8	15.2				7.8		450				24.3			
	2				8.5	150.3				6.2		3.6				304.7			
	3				7.7	18.8				11.5		450							
	4				12.1	2.8				9.5		480							
	5				11.8	23.2				10.3		490							
	6				12.1	2.5				190		121							
	7									50		60.1							
	8											21							
	9											92.6							

Location	Sample Number	10/06/2020	1/07/2020	12/08/2020	14/08/2020	8/09/2020	19/10/2020	20/10/2020	17/11/2020	9/12/2020	10/12/2020	12/01/2021	14/01/2021	17/02/2021	18/02/2021	15/03/2021	22/04/2021	23/04/2021	12/05/2021
Transect 9	1				11.8			6.5	5.1									33.1	
	2				5.1			25.2	14.1									37.8	
	3				3.9			13.4	31.2									130	
	4				4.8			43.2	5									70.1	
	5				3.9			43.2	6.3									22.8	
	6							27.2	6.3									6.6	
	7							10.9											
Transect 10	1	2.3	31.2		12	2.2		2.3	3.2	3.1		2.6			9	2.7		10.2	
	10	15.4	27.8		27.4	7.6		8.9	12.8	4.7		9.1			4.8	17.2		2.8	
	11	7.3	14.7		26	2.2		9.5	7.8	18.3		3.6			9.5	6.8		2.6	
	12	20.2	16.4		40.1	10.8			9.5	3.7		8.5			13.2	2.6		65.7	
	13	31.8	24.6		38.3	3.9			20.7	3.4		3.6			5.4	2.7		22.9	
	14	44.2	43		30.4	6.7			6.6	3.1		7.9				16.2		31.5	
	15	1.224484426	27.1		33.1				13.8			4.5				7		17.7	
	16				33.1				6.4			3.7				2.7			
	2	2.6	9.5		11.8	2.2		2.3	3.2	3.2		2.7			2.9	2.4		4.8	
	3	12.8	1		12	4.3		2.3	3.1	3		4.4			2.6	2.4		4.8	
	4	7	13.4		12.6	4.8		2.4	3.1	3		14.1			2.1	2.4		3.7	
	5	7.9	10.1		12	2.3		2.4	3.2	3.2		3.8			14.3	2.5		12.3	
	6	17.8	3.9		11	4.6		3.1	3.4	15.2		3.9			5.7	46.2		19.3	
	7	3.8	8.2		25	16.5		2.7	3.3	14.8		3.7			11.2	43.3		3.4	
	8	21.8	4.4		17.3	4.6		2.9	8.8	13		25.2			3.4	3.9		22	
	9	24.3	21.2		23	8		5.2	8.2	14		9			9.2	3.9		44.6	

Location	Sample Number	10/06/2020	1/07/2020	12/08/2020	14/08/2020	8/09/2020	19/10/2020	20/10/2020	17/11/2020	9/12/2020	10/12/2020	12/01/2021	14/01/2021	17/02/2021	18/02/2021	15/03/2021	22/04/2021	23/04/2021	12/05/2021
Transect 11	1		23.1		39	2.9		2.9		5		2.7			4.8	2.6		2.8	
	2		27.2		48.5	5.3		2.9		3.8		5.1			4.2	6.1		8.3	
	3		37.8		45.4	10.8		6.7		9.1		4.9			5.7	10.3		25.2	
	4		30.2		56.4			5.2		19.1		5			12.2	34.6		56.2	
	5		9.4		48.4			9.5		11.1		6.2			7.5	10.9		42.7	
	6		130		47			5.8				3.5				2.5		34.5	
	7		26.3		48.4			12.7				5.1				7.2		23.8	
	8		70.4		49			9.9								6		26.8	
	9		25.1																
Transect 12	1		12.1		25	936			8.7			13.6			24.6	61.9			
	2		30.6		31.3	61.2			16.3			13			60.1	130.5			
	3		26.1		34.7	45.1			81.4			14.1			21	36.6			
	4		4.1		35.7	50.2			43.5			19.9			13.8	58.8			
	5		13.1		33.4	257			22.6			35.2			9.1	18.8			
	6		8.6		48.3	17.4			14.9			8.4							
	7				43.4	36.9			13.6										
	8				49.4				33.8										
Transect A	1	20.1	9.4		4.1	2.3		2.2	2.3	2.1		2.7			10.8	5.2		2.1	
	2	12.9	9.3		3.6	2.3		2.3	2.3	2.1		2.6			7.7	5.7		2.1	
	3	4.6	8.5		3.5	2.2		2.3	2.2	2.1		2.6			5.6	6.4		2.1	
	4	5.3	8.2		3.6	2.2			2.2	2.1		2.6			5.6	4.5		2.1	
	5	4.8	5.8							2.1					5.7				
	6	2.8	6.5																
	7		5.9																
Transect B	1															3.1			
	2															4.2			

Location	Sample Number	10/06/2020	1/07/2020	12/08/2020	14/08/2020	8/09/2020	19/10/2020	20/10/2020	17/11/2020	9/12/2020	10/12/2020	12/01/2021	14/01/2021	17/02/2021	18/02/2021	15/03/2021	22/04/2021	23/04/2021	12/05/2021
Transect C	1	2.5	6.1		3.3	2.2		2.4	2.2	2.1		2.5			6	3.1		2.1	
	10	41.1	3.4		10														
	11		3.8		29														
	12		3.8																
	2	3	5.6		3.2	2.2		2.4	2.2	2.1		2.5			6.6	3.2		2.1	
	3	2.9	4.7		3.3	2.3		2.4	2.2	2.1		2.5			4.4	9.3		2.1	
	4	3.1	4.9		4.1	2.2		3.1	2.2	2.2		2.9			3.9	8.3		2	
	5	4.5	2.8		7.3	2.9		6.1	2.5	2.2		2.4			5.1	7		2.1	
	6	5.9	3		7.5	2.5		2.8	2.2	2.4		2.5			7.9	15.1		2.1	
	7	12.6	3.2		7.5	2.3		3.2	2.2	2.5		2.5			9.2	7.2		5.1	
	8	18.1	3.4		8.1	4.2		7.6	2.2	2.6		2.7			8.3	20		2.7	
	9	38	3.9		8.1							2.5							
Transect D	1	1.5	4.7		5.7	3.2		2.2	2.8	3.7		2.5			6.1	2.5		2.2	
	2	1.7	5.1		5.3	2.3		2.2	2.8	2.9		2.6			4.8	3.8		2.1	
	3	1.8	5.4		6.8	2.5		2.2	2.9	2.7		2.6			5	2.9		2.3	
	4	1.9	4.7		7	2.3		2.2	3.5	2.6		2.7			4.7	2.5		2.1	
	5	2	4.7		4.2	2.6		2.1	2.8	2.6		2.7			4.9	2.6			
	6				4.2			2.1	2.8	2.6					4.6				
	7				4.2				2.8										
	8								2.7										
Transect E	1	3.1	5		6.8	2.2		2.3	2.7	2.8		2.3			3.9	5.5		2.3	
	2	3.4	5.3		6.7	2.3		2.4	2.7	2.8		2.3			6.1	5.7		2.8	
	3	2.3	5		6.7	3.6		2.3	2.6	3		2.3			6.7	4.1		2.9	
	4	2	4.2		6.7	3.1		3.1	2.6	2.9		2.4			6.4	3.3		4.1	
	5	2.3	4.7		6.8	4		2.3	2.6	2.8		2.4			11.6	5.7		4.1	
	6	2	4.4		6.8			2.2	2.6	2.9		2.4						2.6	
	7	1.7			6.7				2.6			2.4						2.1	

Location	Sample Number	10/06/2020	1/07/2020	12/08/2020	14/08/2020	8/09/2020	19/10/2020	20/10/2020	17/11/2020	9/12/2020	10/12/2020	12/01/2021	14/01/2021	17/02/2021	18/02/2021	15/03/2021	22/04/2021	23/04/2021	12/05/2021
Transect F	1	5.7	23.1		6.1	2.5		2.2	2.3	3		2.4			6.8	3.1		2	
	2	6.1	2.3		6	2.3		2.2	2.3	3.1		2.5			4.7	3		2	
	3	6.1	2.3		6	2.3		2.2	2.3	3.3		2.4			3.6	3.9		2.1	
	4	5.7	4.2		5.8	2.2		2.2	2.3	3.3		2.4			4	6		2.1	
	5	8.2	3.6		5.3	2.3		2.2	2.3	3.3		2.4			3.3	3.1		2.1	
	6	16.3	11.2		5	2.3		2.3	2.4	3.2		2.4			4.3	2.5		2.1	
	7	8.8			5	2.2		2.4	2.6	3.2		2.4			3.5			2.1	
	8	6.5			6.1	2.2		2.4	2.5	2.8		2.4						2.2	
	9	4.2						2.3		2.8									
Transect G	1	9.1	2.4		7.3	2.2		2.3	2.3	3		2.8			5.7	5.1		2.1	
	2	8.4	4.3		7.2	2.5		2.3	2.3	3		2.7			5.3	6.2		2.1	
	3	7.4	3		7	2.4		2.3	2.5	3		2.7			5.2	3.8			
	4	6.7	3.1		6.8	2.2		2.3	2.5	3		2.6			3.8	7.6			
	5	16	2.9		6.9	2.2		2.3	2.5	2.8		2.6			6				
	6	15	2.2		6.9	2.3		2.3	2.5	2.7		2.6			6.6				
	7	6.8	2.1		6.8	2.4		2.5	2.5	2.7		2.6							
	8	8.4	2.2					2.4		2.7									
	9	11.6	2.5																
Transect H	1	5.7	2.3		11.4	2.5		2.8	2.2	3		2.7			4.4	2.7		12.6	
	2	3.7	2.3		9.3	2.3		2.8	2.3	3.1		2.5			4.2	2.8		2.7	
	3	3.6	9.4		10	2.5		2.6	2.3	3.3		2.6			4.6	2.6		678	
	4	2.5	4.7		9.5	2.3		2.6	2.3	3.3		2.8			4.9	2.6		2.2	
	5	2.7	2.2		9	2.3		2.4	2.3	3.3		2.7			7.6	2.9		2.2	
	6	2.9	2.9		8.5			2.3	2.3	3.3		2.8			4.4	2.9		2	
	7	3.8	15.1							3.2					4				
	8	3.1								3.1									

Location	Sample Number	10/06/2020	1/07/2020	12/08/2020	14/08/2020	8/09/2020	19/10/2020	20/10/2020	17/11/2020	9/12/2020	10/12/2020	12/01/2021	14/01/2021	17/02/2021	18/02/2021	15/03/2021	22/04/2021	23/04/2021	12/05/2021
Transect I	1	2.8	4.4		8.3	18.8		2.2	3.1	2.8		2.8			3.3	6.5		2	
	2	2.1	5.4		8.4	2.2		2.1	3.2	2.7		2.7			3.2	3		2	
	3	2.6	4.9		8.1	2.1		2.1	3.2	2.7		2.7			3.2	3.5		2	
	4	4	4.5		6.8	2.2		2.2	3.2	2.6		2.6			4.3	5.5		2	
	5	2.3	4.6		6.5	2.5		2.3	3.2	2.8		2.8			9.8	4.3		2	
	6	2.5	3.4		6.4			2.2	3.2	2.8		2.8			3.3	3.9		3.3	
	7	3.7	3.2							2.7									
Transect J	1	2.1	3.7		6.7	3.6		2.2	3.2	2.6		3.1			3.8	3.6		2.1	
	2	3.9	3.1		7.2	2.2		2.2	3.2	3		4.1			3.6	3.7		2.1	
	3	5.7	2.9		5.9	4.2		2.2	3.2	3		2.8			4.8	2.8		2.1	
	4	2.9	3		6.1	2.9		2.2	3.2	2.6		2.7			4.8	2.8		2.1	
	5	2.7	2.9		6.4	2.7		2.2	3.2	2.6		2.7			3.3	2.7		2.2	
	6	5.9			3.2	2.2		2.2	3.1			2.8				3.4		2.2	
Transect K	1	2.5	2.9		6	3.2		2.2	2.8	2.7		2.8			5.2	2.7		2.2	
	2	5.9	2.9		6.4	2.3		2.4	2.8	2.4		3.2			4.8	2.7		2.2	
	3	9.4	24.5		6.6	3		2.6	2.8	2.4		4.7			6.2	2.8		2.2	
	4	3.5	12.1		6.5	12.1		2.9	2.8	2.4		2.6			8.3	2.7		3.7	
	5	2.9	3.9		6.8	2.3		2.3	2.8	2.4		2.6			4	5		2.9	
	6	2	4.1		9.1				2.9	2.4		2.6			3.3	2.6		2.1	
Transect L	1	1.6	3		5.6	2.1		2.3	2.9	2.3		6.2				3		2.1	
	2	1.7	3.5		5.4	2.8		5.3	3	2.5		2.7				3.5		2.1	
	3	1.9	3		5.8	2.5		3	3.1	2.5		2.8				2.6		2.2	
	4		3.9		6.9	23		7	3.2	2.6		3				2.6		2.5	
	5				7.1	6.6		2.9	3	2.7		2.9				3.8		8.3	
	6				7.1	3.3		2.5	3.1	2.7		2.9							
	7																		
	8																		

Location	Sample Number	10/06/2020	1/07/2020	12/08/2020	14/08/2020	8/09/2020	19/10/2020	20/10/2020	17/11/2020	9/12/2020	10/12/2020	12/01/2021	14/01/2021	17/02/2021	18/02/2021	15/03/2021	22/04/2021	23/04/2021	12/05/2021
Transect M	1	1.5	3		7.1	2.2		2.4	3	2.5		2.5				3.2		2.2	
	2	1.7	3.4		7.1	2.2		4.1	3	2.4		2.5				5.7		4.2	
	3	1.7	6.1		6	2.1		4.5	3	2.4		2.5				6.1		11.8	
	4	4.8	4.7		5.4	2.2		2.4	4.5	2.6		4.1				3.8		2.9	
	5	1.5			5.3	2.2		2.4	3	2.6		7.2				4.3		2.4	
	6	1.3			5.2	3.5						2.7							
	7																		
Transect N	1	1.3	3.4		6.8	2.2			3.1	2.4		2.7				50.2		3.1	
	2	1.2	3.5		6.4	2.5			3.1	2.5		2.8				5.3		2.2	
	3	1.4	3.5		6.5	2.2			3.1	2.5		2.6				6.4		2.1	
	4	1.3	3.3		6.6	2.2				2.6		2.6				4.2		2.7	
	5	1.2			6.7	2.2				2.6		2.5						2.2	
	6				6.6	4.1				2.7									
181 Reddalls Rd, fenceline adjoining landfill	1	3.3	2.6			2.2		2.2	2.9	2.9		2.6				2.9		2.1	
	3	1.9	2.8			2.3		2.3	2.9	2.9		2.4				2.8		2.1	
	5	1.9	2.9			2.3		2	2.9	3		2.6				2.8		2.1	
	7	2	2.9			2.3		2.2	2.9	3		2.6				2.7		2.1	
	8	2.1	3.2			2.3		2	2.9	3		2.6				2.8		2.1	
181 Reddalls Rd, Immediate gardens max value	1		3.2							3		2.6						2.1	
	2	2	3.1			2.2		2.4	2.9	2.9		2.6				2.9		2.1	
	4	1.8	2.7			2.2		2.1	3	3		2.5				2.8		2.1	
	6	2.1	2.5			2.3		2.3	2.9	3		2.6				2.7		2.1	
Crib Room	Operations HUB Crib Room	2	3		3.1	2.1		2.4	3	3.2		2.8			3.1	2.4		2	

Location	Sample Number	10/06/2020	1/07/2020	12/08/2020	14/08/2020	8/09/2020	19/10/2020	20/10/2020	17/11/2020	9/12/2020	10/12/2020	12/01/2021	14/01/2021	17/02/2021	18/02/2021	15/03/2021	22/04/2021	23/04/2021	12/05/2021
	Room																		
Glengarry Cottage	Glengarry Front Office	2.1	3.1		4.3	2		2.4	3.3	4		3			3	2.8		2	
	Glengarry Hallway	2.4	3		4.5	2.1		2.4	3.7	3.8		3			3.1	2.6		2	
	Glengarry Kitchen	2.6	2.9		4.6	2.2		2.4	3.5	4		3			2.9	2.7		2	
	Glengarry Managers Office				4.3	1.9		2.3	4.5	3.8		3			2.7	2.9		2	
	Glengarry Meeting Room	2.1	2.9		4.9	1.8		2.4	4.2	3.8		3			2.6	2.6		2	
	Glengarry Operations HUB	2.8	2.9		4.6	2.1		2.3	3.4	4		3			2.8	2.7		2	
	Glengarry Store	2.5	3		4.7	4.7		2.4	8.8	4		3			3.2	2.6		2	
	Max reading gardens	2.8	3.7		3.4	3.4		2.4	4.1	3.6		2.8			3.2	2.4		2	
Lot 1 Farborough Rd, fenceline adjoining landfill	1								2.8	2.9						2.7		2.1	
	2								2.9	2.9						2.7		2.2	
	3								3.1	2.9						2.8		2.3	
	4								3	3						2.7		2.3	
	5								3	2.9						2.8			
	6								3	3						2.8			
	7															2.7			
	8															2.7			

Location	Sample Number	10/06/2020	1/07/2020	12/08/2020	14/08/2020	8/09/2020	19/10/2020	20/10/2020	17/11/2020	9/12/2020	10/12/2020	12/01/2021	14/01/2021	17/02/2021	18/02/2021	15/03/2021	22/04/2021	23/04/2021	12/05/2021
Methane Blank (Post testing)	1	1.8	1.8		3.2	3.2		1.2	1.2	2.4		2.3			3.1	2.4		2.4	
Methane Blank (Pre testing)	1	1.6	1.6		3.2	3.2		1.2	1.2	2.4		2.3			2.8	2.4		2.4	
Ops Office	Ops HUB	2.1	3		3.2	2		2.4	3	3		2.7			3.2	2.5		2	
Recycle Centre	Recycle Shop Eastern Area	2.3	3.8		6	2.3		2.8	3.1	3					2.1	2.4		2	
	Recycle Shop Western Area	2.1	2.7		6.1	2.4		2.8	3.1	3					1.9	2.4		2	
SWERF	SWERF									3		2.8			2.1	2.4		2	
Weighbridge	Weighbridge	2.1	2.4		6.4	5.4		2.4	2.8	2.8		5.1			2.1	2.4		2	

Table 6: Respirable Dust Results 2020-2021 Reporting Period

Sample Date	Chemical Name	Units	Glengarry Cottage PM10	Glengarry Cottage TSP	Landfill PM10	Landfill TSP
09/06/2020	PM10	µg/m³	9.6			
	PM10 (mass per filter)	mg/filter	14.9			
	Total Suspended Particulates	µg/m³		25.5		
	Total Suspended Particulates (mass per filter)	mg/filter		40.2		
11/06/2020	PM10	µg/m³			10.2	
	PM10 (mass per filter)	mg/filter			15.5	
	Total Suspended Particulates	µg/m³				14
	Total Suspended Particulates (mass per filter)	mg/filter				21.7
13/07/2020	PM10	µg/m³	3.2			
	PM10 (mass per filter)	mg/filter	4.9			
	Total Suspended Particulates	µg/m³		9.4		
	Total Suspended Particulates (mass per filter)	mg/filter		14.7		
14/07/2020	PM10	µg/m³			2.9	
	PM10 (mass per filter)	mg/filter			4.5	
	Total Suspended Particulates	µg/m³				6.6
	Total Suspended Particulates (mass per filter)	mg/filter				10.2
10/08/2020	PM10	µg/m³	3.6			
	PM10 (mass per filter)	mg/filter	5.6			
	Total Suspended Particulates	µg/m³		7.4		
	Total Suspended Particulates (mass per filter)	mg/filter		11.4		
11/08/2020	PM10	µg/m³			7.2	
	PM10 (mass per filter)	mg/filter			11	
	Total Suspended Particulates	µg/m³				13.2
	Total Suspended Particulates (mass per filter)	mg/filter				20.2
08/09/2020	PM10	µg/m³	29.8			
	PM10 (mass per filter)	mg/filter	45.1			
	Total Suspended Particulates	µg/m³		64.2		
	Total Suspended Particulates (mass per filter)	mg/filter		98.1		
09/09/2020	PM10	µg/m³			8.8	
	PM10 (mass per filter)	mg/filter			13.3	
	Total Suspended Particulates	µg/m³				15.9
	Total Suspended Particulates (mass per filter)	mg/filter				24
19/10/2020	PM10	µg/m³	15.7			
	PM10 (mass per filter)	mg/filter	23.8			
	Total Suspended Particulates	µg/m³		36.9		
	Total Suspended Particulates (mass per filter)	mg/filter		56.3		

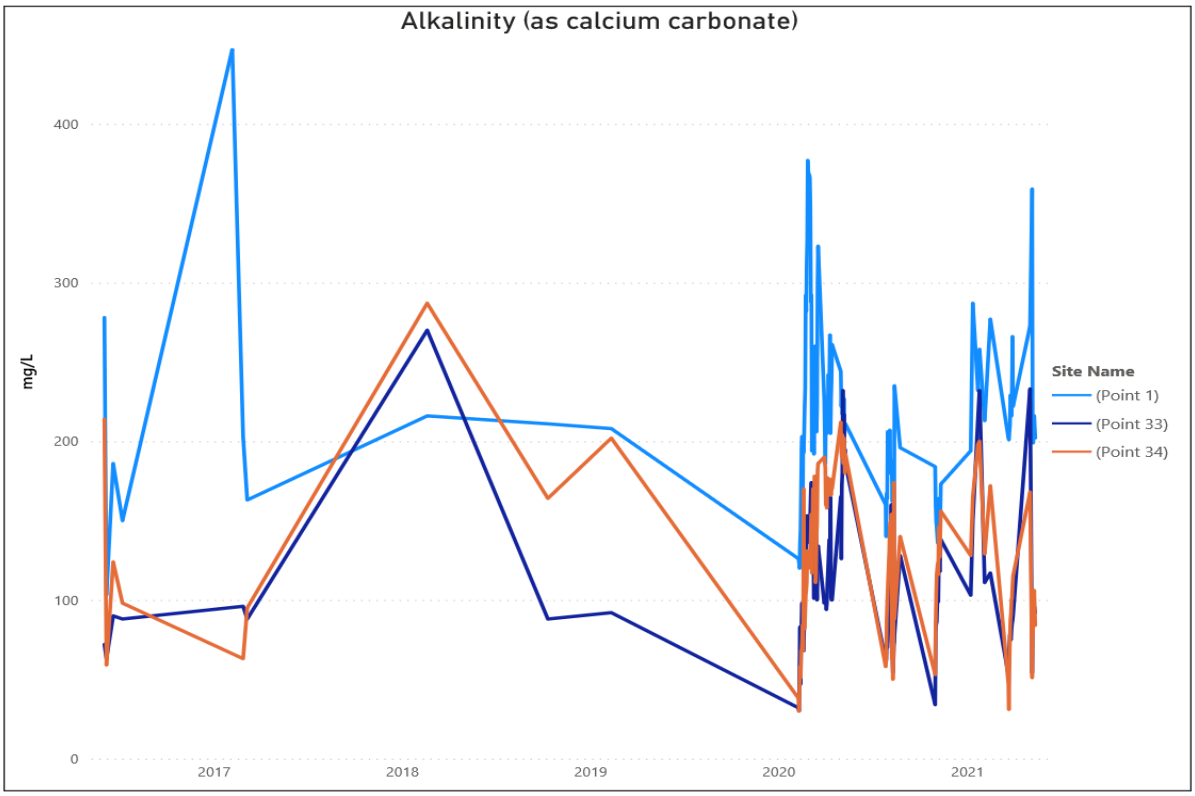
Sample Date	Chemical Name	Units	Glengarry Cottage PM10	Glengarry Cottage TSP	Landfill PM10	Landfill TSP
20/10/2020	PM10	µg/m³			9.4	
	PM10 (mass per filter)	mg/filter			14	
	Total Suspended Particulates	µg/m³				14.9
	Total Suspended Particulates (mass per filter)	mg/filter				22.4
16/11/2020	PM10	µg/m³	42.8			
	PM10 (mass per filter)	mg/filter	61.1			
	Total Suspended Particulates	µg/m³		75.7		
	Total Suspended Particulates (mass per filter)	mg/filter		110		
17/11/2020	PM10	µg/m³			21.1	
	PM10 (mass per filter)	mg/filter			31.9	
	Total Suspended Particulates	µg/m³				59.7
	Total Suspended Particulates (mass per filter)	mg/filter				90.3
04/12/2020	PM10	µg/m³	46.9			
	PM10 (mass per filter)	mg/filter	69			
	Total Suspended Particulates	µg/m³		116		
	Total Suspended Particulates (mass per filter)	mg/filter		172		
07/12/2020	PM10	µg/m³			12.3	
	PM10 (mass per filter)	mg/filter			18	
	Total Suspended Particulates	µg/m³				19.7
	Total Suspended Particulates (mass per filter)	mg/filter				29.1
11/01/2021	PM10	µg/m³	20			
	PM10 (mass per filter)	mg/filter	29.5			
	Total Suspended Particulates	µg/m³		36.1		
	Total Suspended Particulates (mass per filter)	mg/filter		53.7		
12/01/2021	PM10	µg/m³			22.6	
	PM10 (mass per filter)	mg/filter			32.9	
	Total Suspended Particulates	µg/m³				38.2
	Total Suspended Particulates (mass per filter)	mg/filter				56.2
15/02/2021	PM10	µg/m³	8.5			
	PM10 (mass per filter)	mg/filter	12.8			
	Total Suspended Particulates	µg/m³		14.3		
	Total Suspended Particulates (mass per filter)	mg/filter		21.7		
16/02/2021	PM10	µg/m³			13.3	
	PM10 (mass per filter)	mg/filter			19.8	
	Total Suspended Particulates	µg/m³				23.7
	Total Suspended Particulates (mass per filter)	mg/filter				35.6
08/03/2021	PM10	µg/m³	34.3			
	PM10 (mass per filter)	mg/filter	50			
	Total Suspended Particulates	µg/m³		64.7		
	Total Suspended Particulates (mass per filter)	mg/filter		95.4		
09/03/2021	PM10	µg/m³			16.2	
	PM10 (mass per filter)	mg/filter			24	
	Total Suspended Particulates	µg/m³				33.5
	Total Suspended Particulates (mass per filter)	mg/filter				49.9
20/04/2021	PM10	µg/m³	40.3			
	PM10 (mass per filter)	mg/filter	60			
	Total Suspended Particulates	µg/m³		88		
	Total Suspended Particulates (mass per filter)	mg/filter		132		
21/04/2021	PM10	µg/m³			13.1	
	PM10 (mass per filter)	mg/filter			19.7	
	Total Suspended Particulates	µg/m³				24.7
	Total Suspended Particulates (mass per filter)	mg/filter				37.5
10/05/2021	PM10	µg/m³	19.5			
	PM10 (mass per filter)	mg/filter	29			
	Total Suspended Particulates	µg/m³		45.1		
	Total Suspended Particulates (mass per filter)	mg/filter		68		
11/05/2021	PM10	µg/m³			6.1	
	PM10 (mass per filter)	mg/filter			9.2	
	Total Suspended Particulates	µg/m³				9.9
	Total Suspended Particulates (mass per filter)	mg/filter				15.1

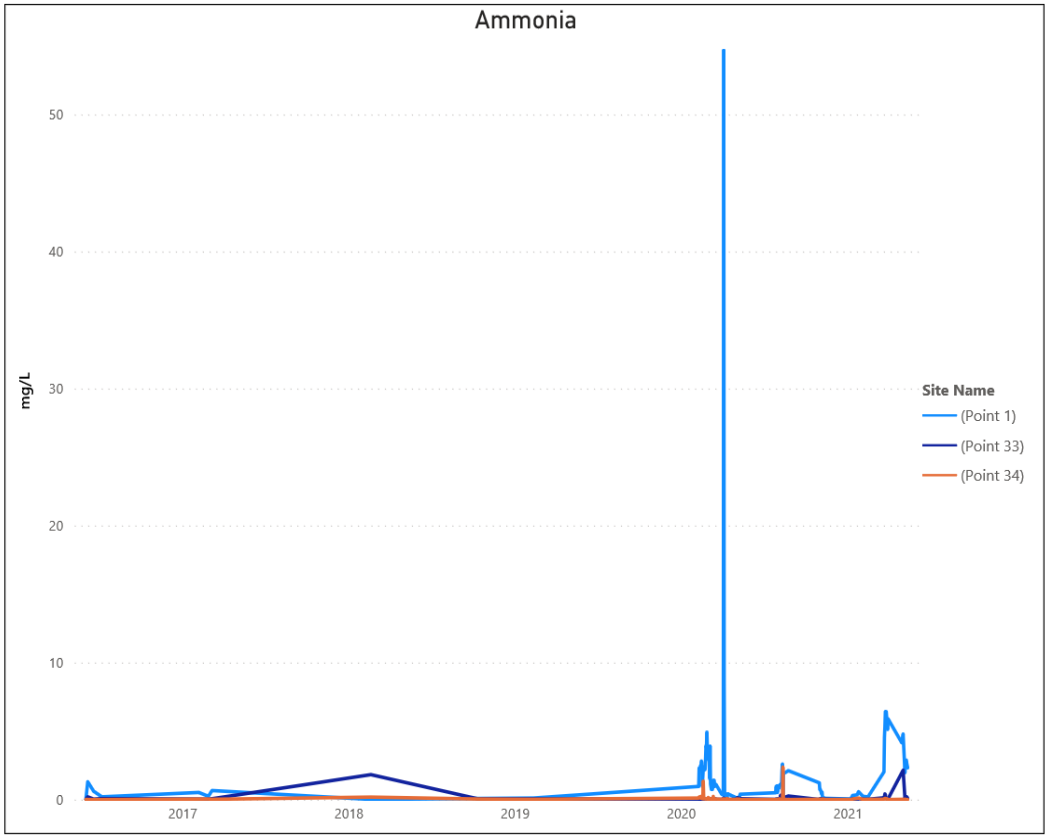
Table 7: Dust Deposition Results 2020-2021 Reporting Period

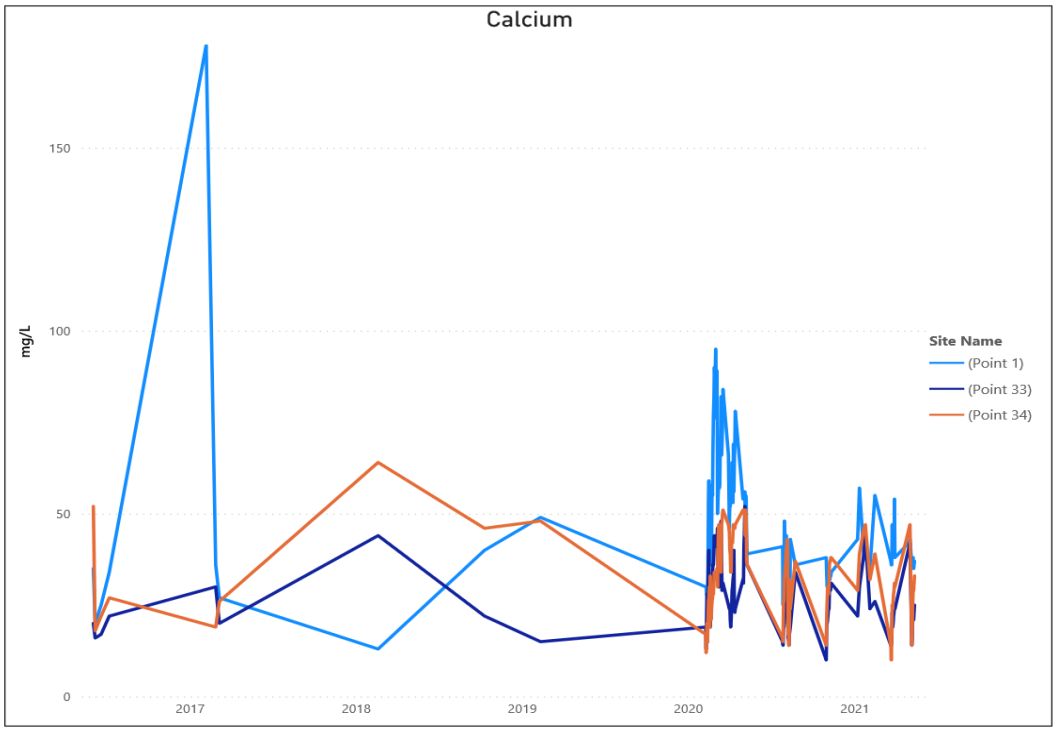
Sample Date	Chemical Name	Units	DDG 1	DDG 2	DDG 3	DDG 4	DDG 5
01/06/2020	Ash Content	g/m².month	0.3	0.7	0.4	0.9	0.4
	Ash Content (mg)	mg	6	13	7	16	7
	Combustible Matter	g/m².month	0.4	0.2	0.4	1.2	0.1
	Combustible Matter (mg)	mg	6	3	8	21	2
	Total Insoluble Matter	g/m².month	0.7	0.9	0.8	2.1	0.5
	Total Insoluble Matter (mg)	mg	12	16	15	37	9
03/07/2020	Ash Content	g/m².month	0.2	0.5	0.4	0.2	0.2
	Ash Content (mg)	mg	3	9	8	3	3
	Combustible Matter	g/m².month	0.1	0.1	0.2	0.1	0
	Combustible Matter (mg)	mg	3	2	4	2	1
	Total Insoluble Matter	g/m².month	0.3	0.6	0.6	0.3	0.2
	Total Insoluble Matter (mg)	mg	6	11	12	5	4
03/08/2020	Ash Content	g/m².month	0.1	0.4	0.3	4.6	0.2
	Ash Content (mg)	mg	2	8	6	83	3
	Combustible Matter	g/m².month	0.1	0.1	0	1	0
	Combustible Matter (mg)	mg	2	2	0	17	0
	Total Insoluble Matter	g/m².month	0.2	0.5	0.3	5.6	0.2
	Total Insoluble Matter (mg)	mg	4	10	6	100	3
01/09/2020	Ash Content	g/m².month	0.2	0.4	0.3	0.8	0.1
	Ash Content (mg)	mg	3	7	6	13	2
	Combustible Matter	g/m².month	0.1	0.4	0.2	0.9	0.2
	Combustible Matter (mg)	mg	3	6	2	15	3
	Total Insoluble Matter	g/m².month	0.3	0.8	0.5	1.7	0.3
	Total Insoluble Matter (mg)	mg	6	13	8	28	5
02/10/2020	Ash Content	g/m².month	0.4	1.1	0.5	1.4	0.3
	Ash Content (mg)	mg	8	20	9	26	6
	Combustible Matter	g/m².month	0.5	0.4	0.7	1.3	0.3
	Combustible Matter (mg)	mg	8	8	14	23	5
	Total Insoluble Matter	g/m².month	0.9	1.5	1.2	2.7	0.6
	Total Insoluble Matter (mg)	mg	16	28	23	49	11
02/11/2020	Ash Content	g/m².month	0.5	1.2	0.5	0.7	0.4
	Ash Content (mg)	mg	9	23	9	13	8
	Combustible Matter	g/m².month	0.3	0.3	0.3	3.6	0.4
	Combustible Matter (mg)	mg	5	5	6	65	7
	Total Insoluble Matter	g/m².month	0.8	1.5	0.8	4.3	0.8
	Total Insoluble Matter (mg)	mg	14	28	15	78	15

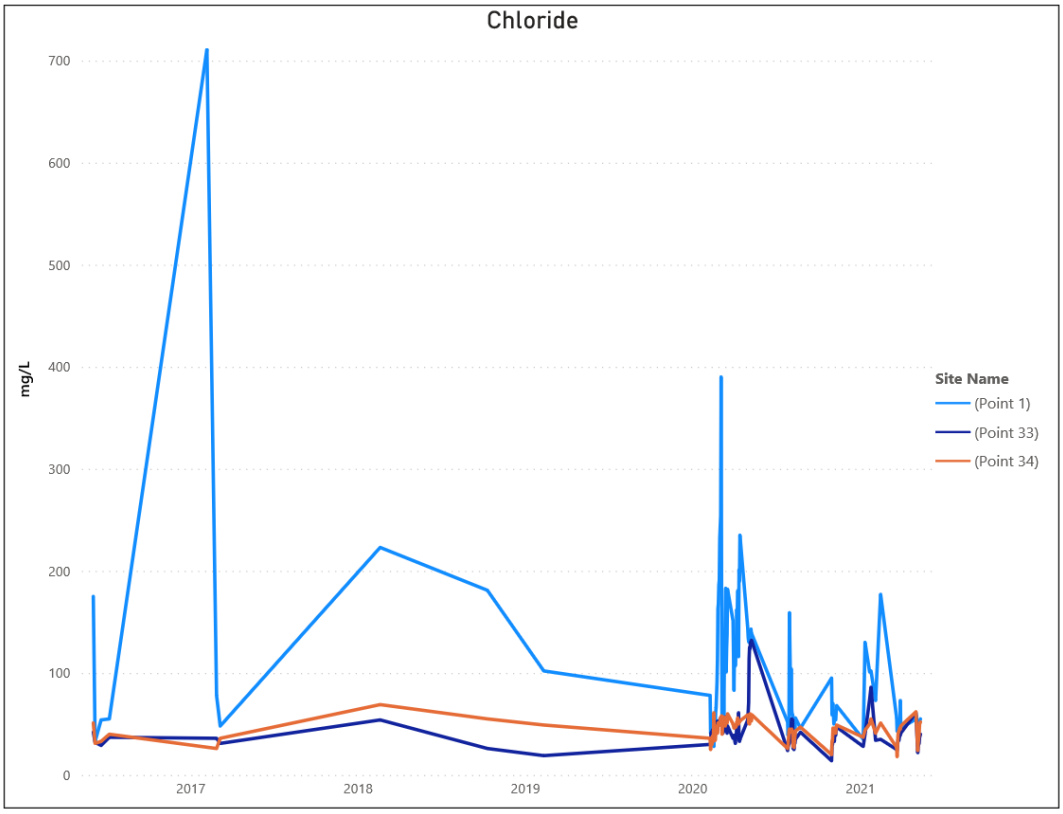
02/12/2020	Ash Content	g/m².month	0.4	1	0.6	0.9	0.5
	Ash Content (mg)	mg	8	18	11	16	9
	Combustible Matter	g/m².month	0.5	0.3	0.5	1	0.6
	Combustible Matter (mg)	mg	8	5	9	17	10
	Total Insoluble Matter	g/m².month	0.9	1.3	1.1	1.9	1.1
	Total Insoluble Matter (mg)	mg	16	23	20	33	19
04/01/2021	Ash Content	g/m².month	0.3	0.9	0.5	0.9	0.3
	Ash Content (mg)	mg	6	17	9	17	5
	Combustible Matter	g/m².month	0.2	0.2	0.4	2.5	0.3
	Combustible Matter (mg)	mg	4	5	9	49	6
	Total Insoluble Matter	g/m².month	0.5	1.1	0.9	3.4	0.6
	Total Insoluble Matter (mg)	mg	10	22	18	66	11
02/02/2021	Ash Content	g/m².month	0.4	1.2	0.6	0.9	0.2
	Ash Content (mg)	mg	7	21	10	16	4
	Combustible Matter	g/m².month	0.5	1.3	0.3	1.3	0.2
	Combustible Matter (mg)	mg	8	23	5	21	3
	Total Insoluble Matter	g/m².month	0.9	2.5	0.9	2.2	0.4
	Total Insoluble Matter (mg)	mg	15	44	15	37	7
01/03/2021	Ash Content	g/m².month	1.3	0.2	0.1	0.5	0.1
	Ash Content (mg)	mg	44	8	4	17	2
	Combustible Matter	g/m².month	0.4	0.1	0.1	0.5	0.1
	Combustible Matter (mg)	mg	16	2	2	16	5
	Total Insoluble Matter	g/m².month	1.7	0.3	0.2	1	0.2
	Total Insoluble Matter (mg)	mg	60	10	6	33	7
01/04/2021	Ash Content	g/m².month	19.2	0.8	0.2	0.5	0.2
	Ash Content (mg)	mg	350	15	4	9	4
	Combustible Matter	g/m².month	2.2	0.2	0.3	0.4	0.4
	Combustible Matter (mg)	mg	40	3	6	8	7
	Total Insoluble Matter	g/m².month	21.4	1	0.5	0.9	0.6
	Total Insoluble Matter (mg)	mg	390	18	10	17	11
03/05/2021	Ash Content	g/m².month	1.1	0.7	0.4	0.3	0.2
	Ash Content (mg)	mg	20	13	8	5	4
	Combustible Matter	g/m².month	0.3	0.1	0.3	0.2	0.3
	Combustible Matter (mg)	mg	7	3	6	4	5
	Total Insoluble Matter	g/m².month	1.4	0.8	0.7	0.5	0.5
	Total Insoluble Matter (mg)	mg	27	16	14	9	9

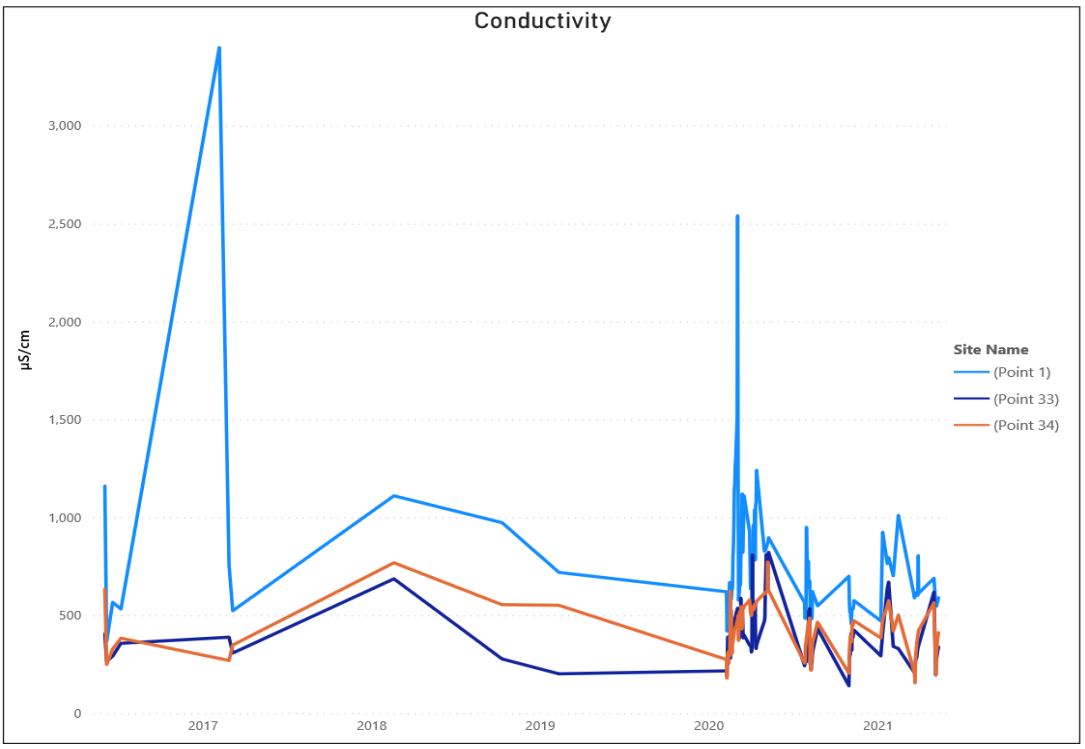
Appendix C
Surface Water Results

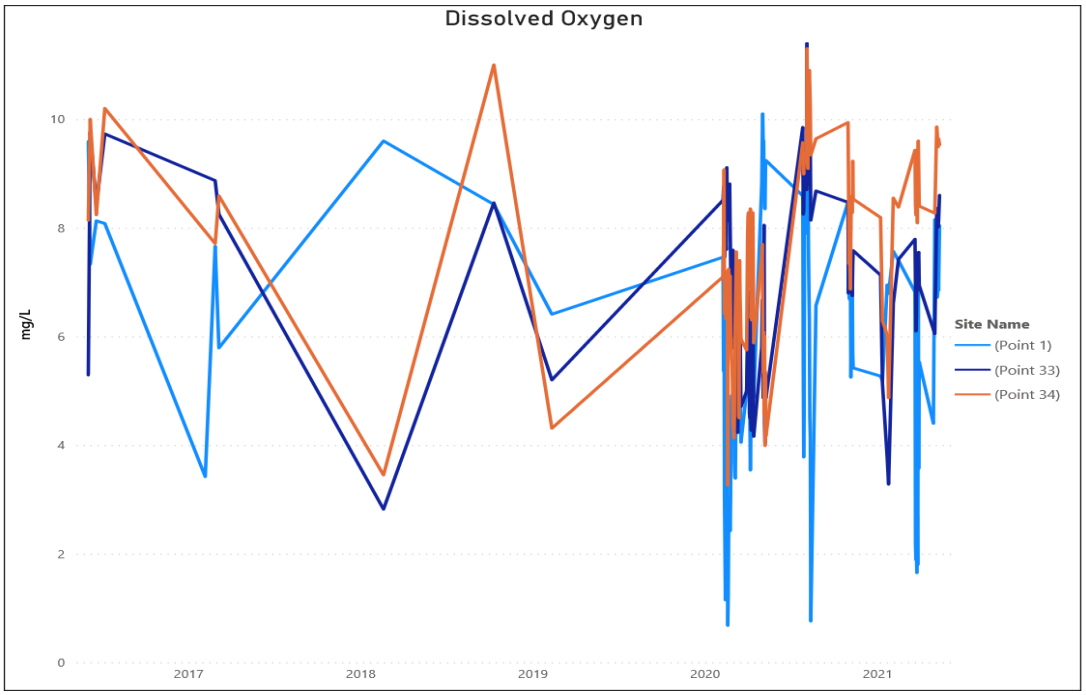


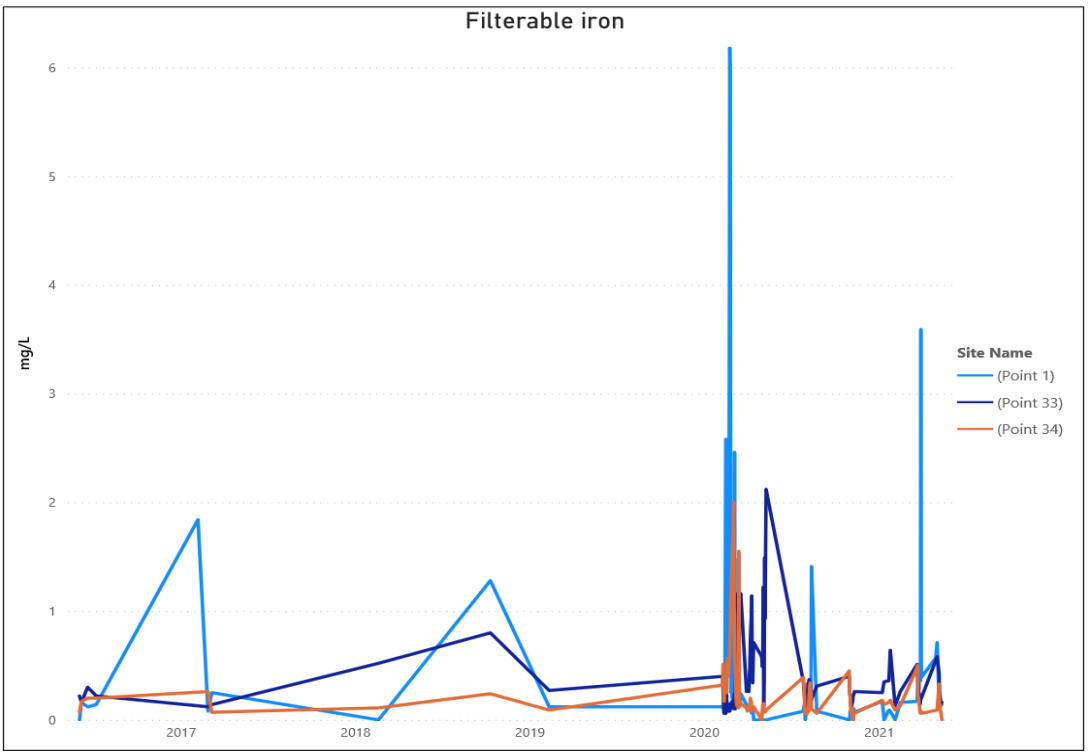


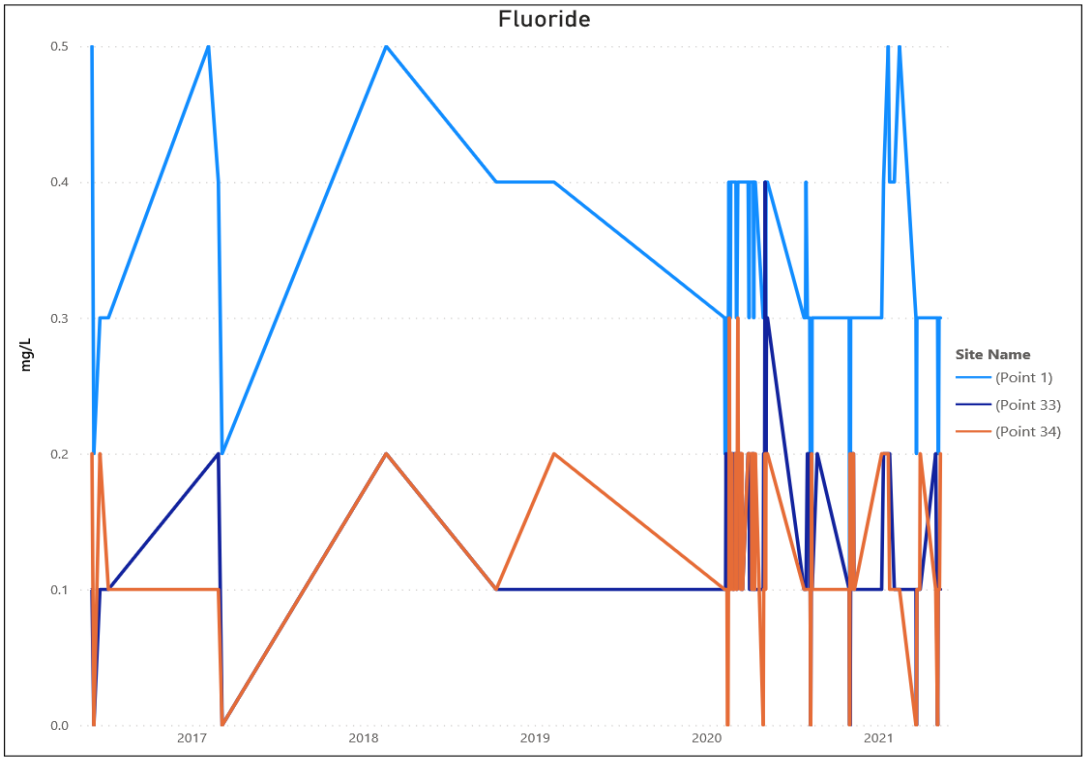

Calcium
150
100
50
0
mg/L
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

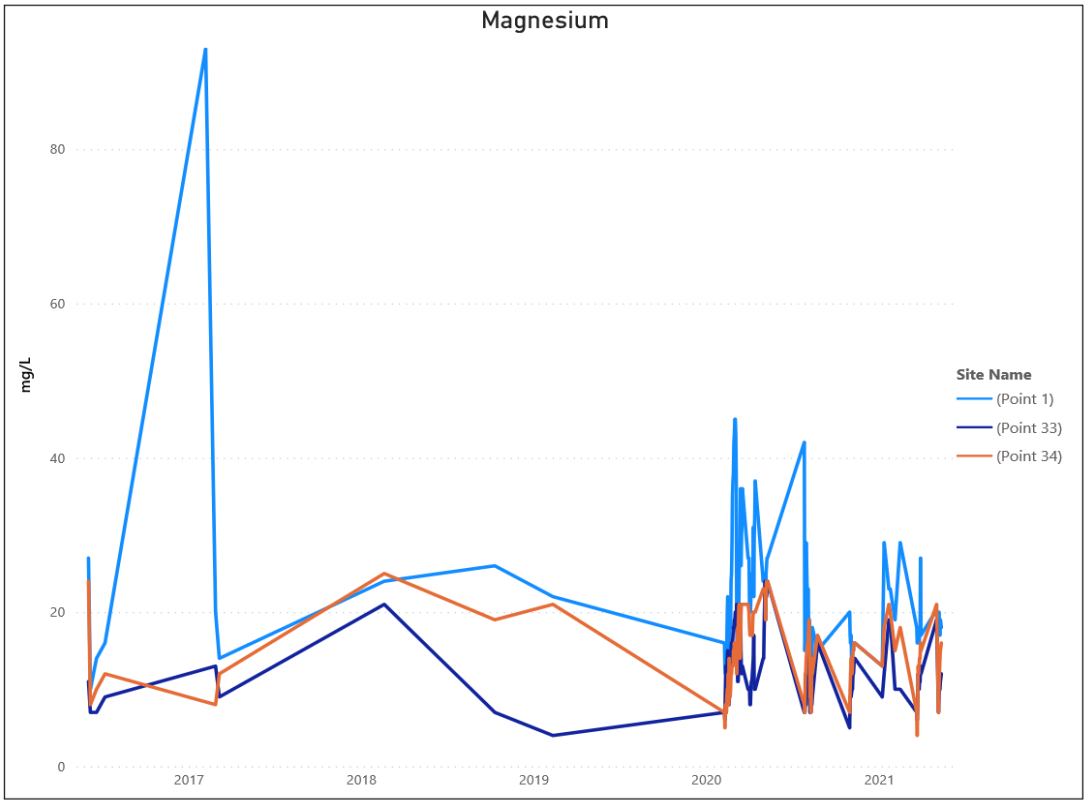

Chloride
700
600
500
400
300
200
100
0
mg/L
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

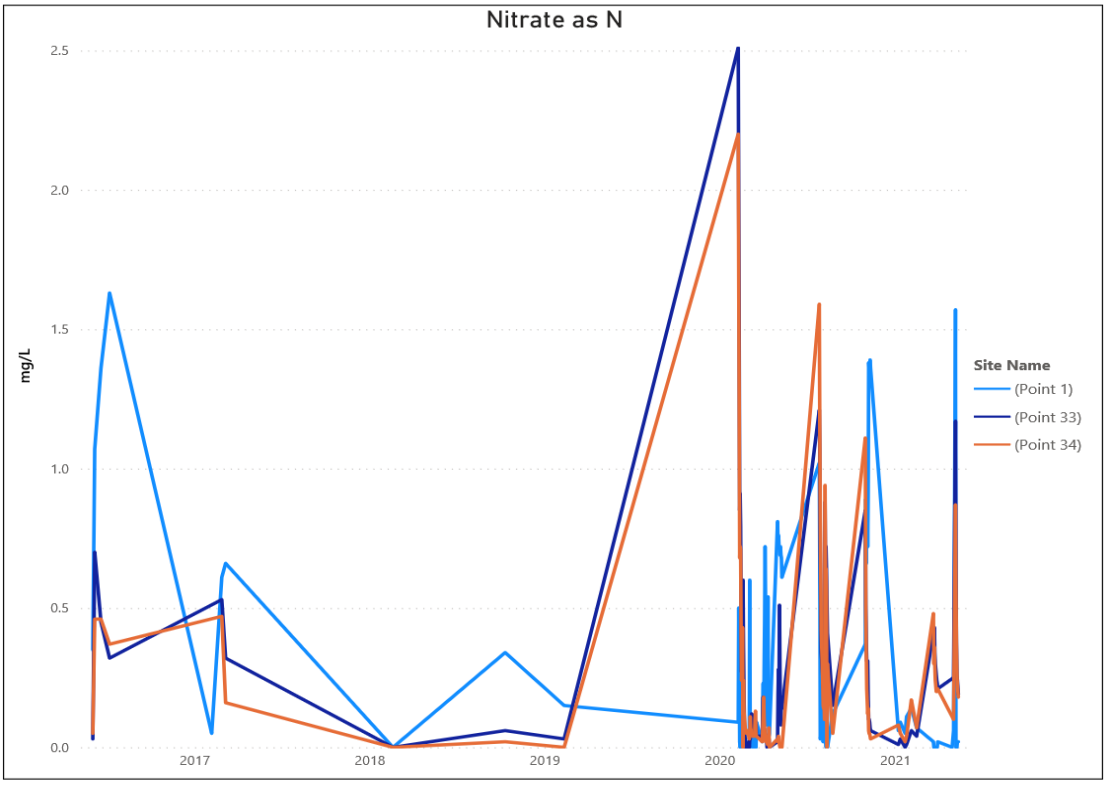

Conductivity
µS/cm
3,000
2,500
2,000
1,500
1,000
500
0
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

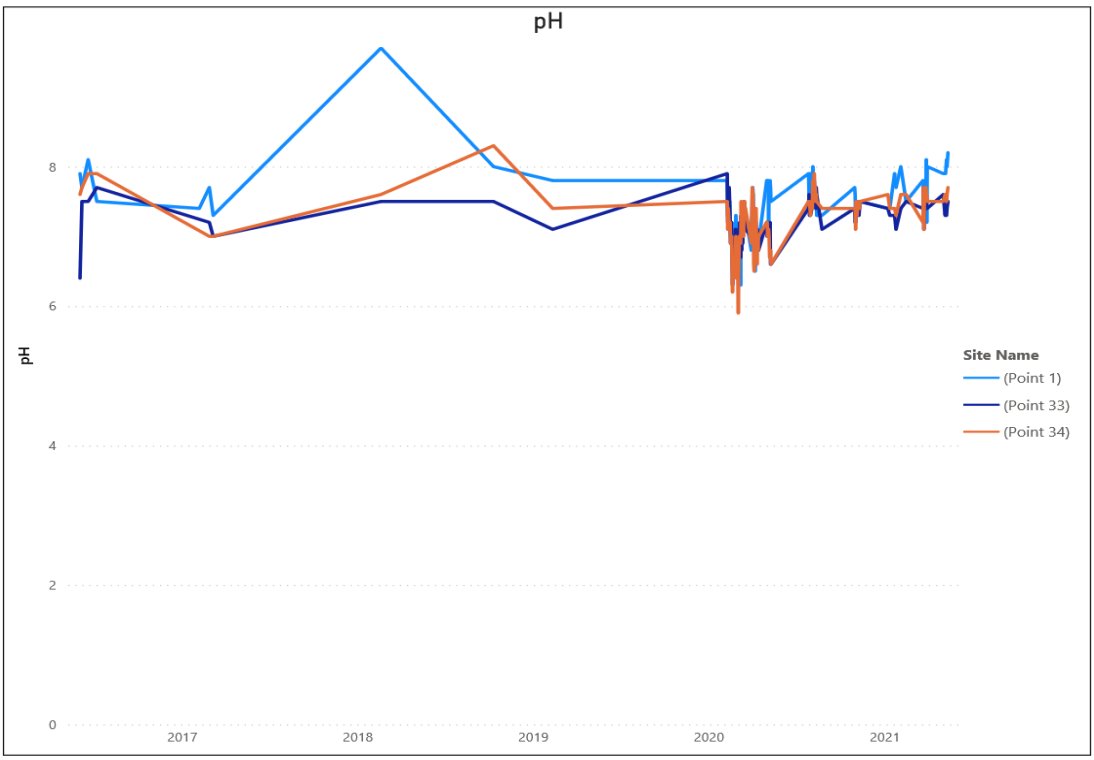

Dissolved Oxygen
mg/L
10
8
6
4
2
0
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

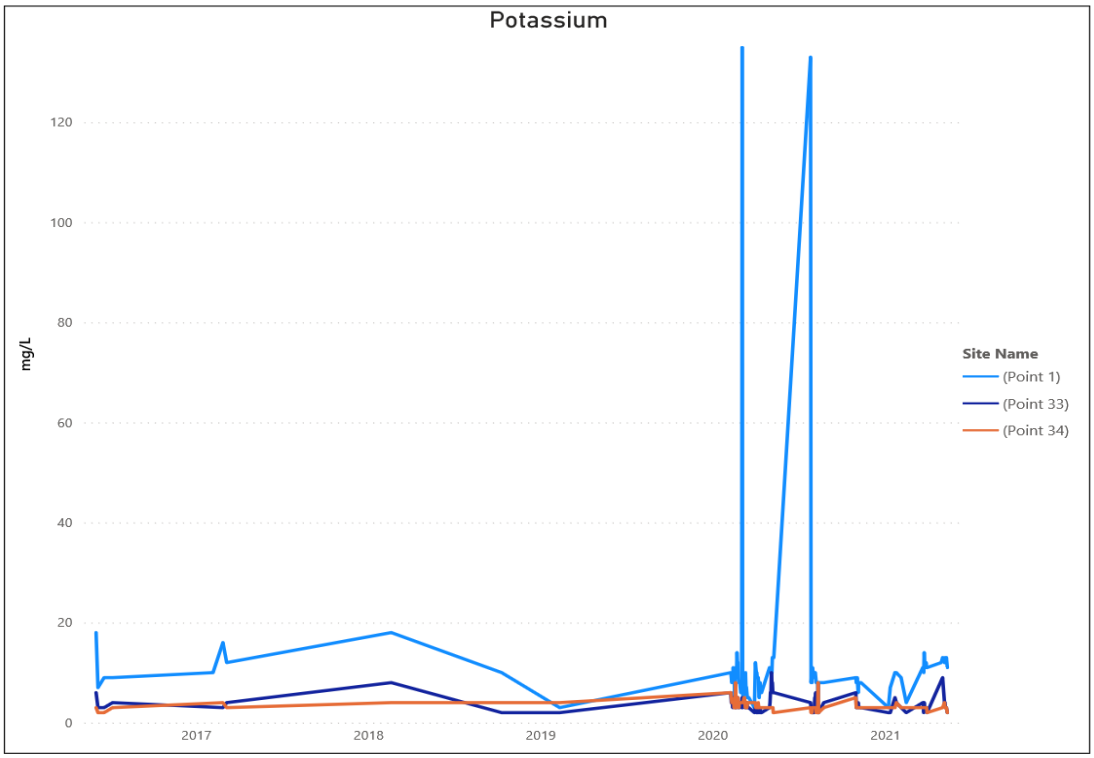

Filterable iron
mg/L
6
5
4
3
2
1
0
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

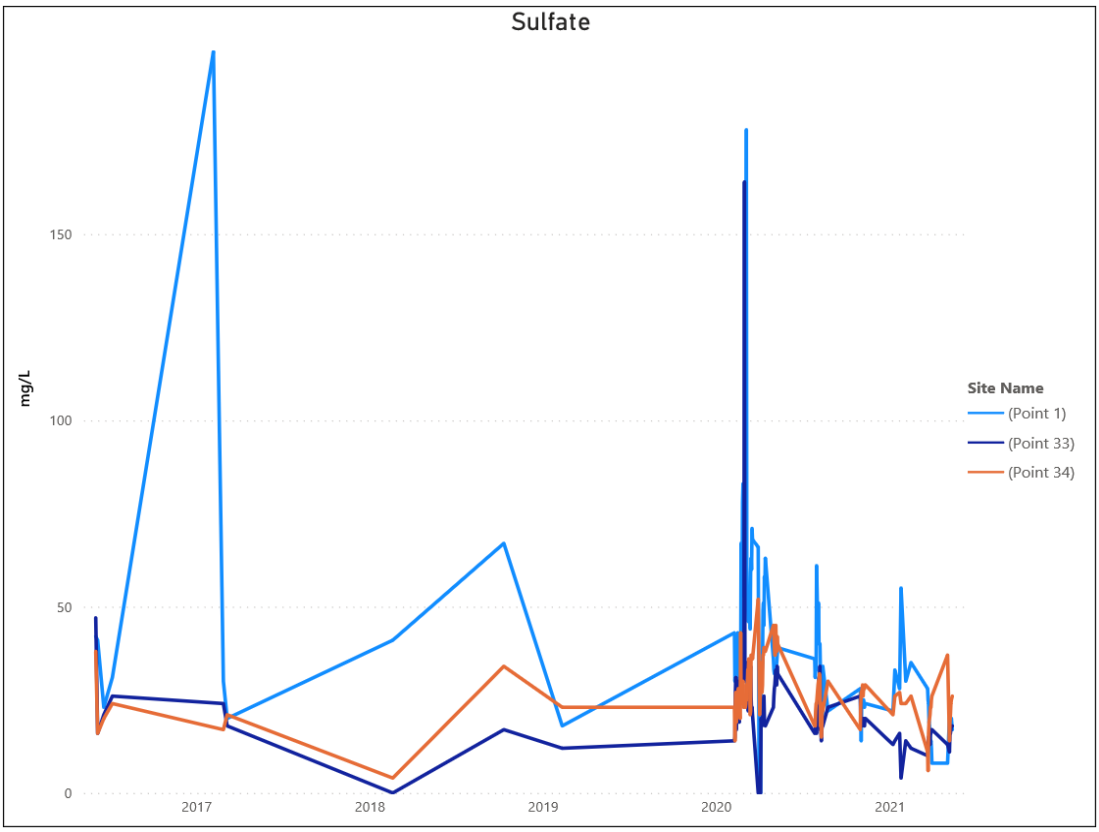

Fluoride
mg/L
0.5
0.4
0.3
0.2
0.1
0.0
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

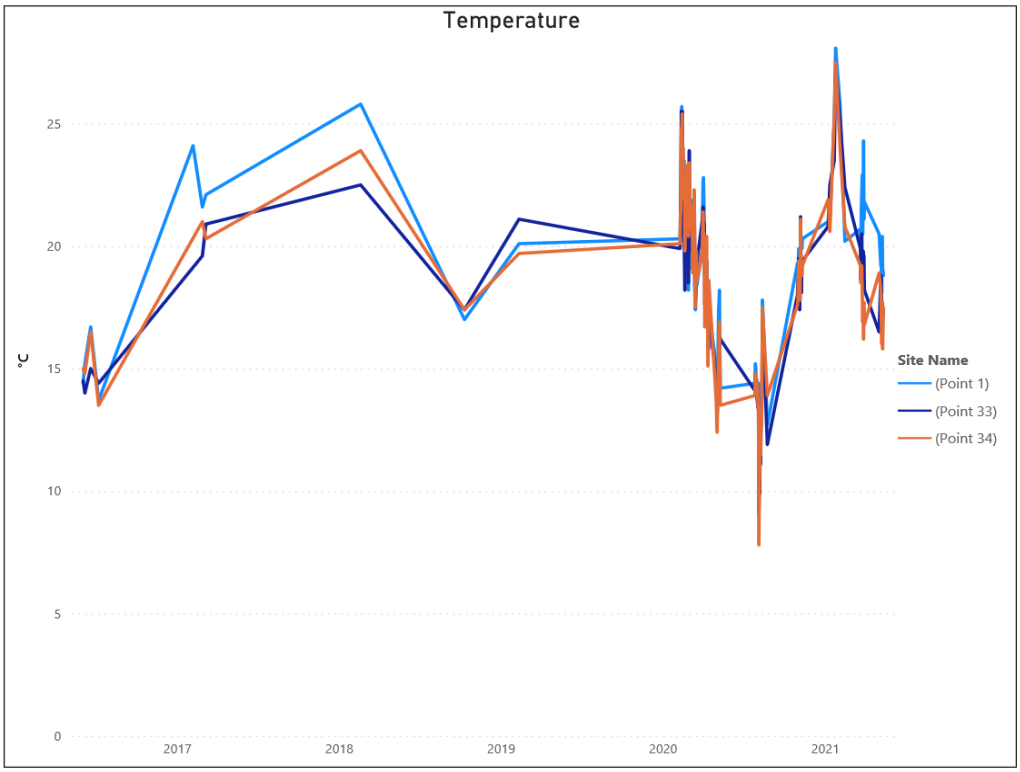

Magnesium
mg/L
80
60
40
20
0
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

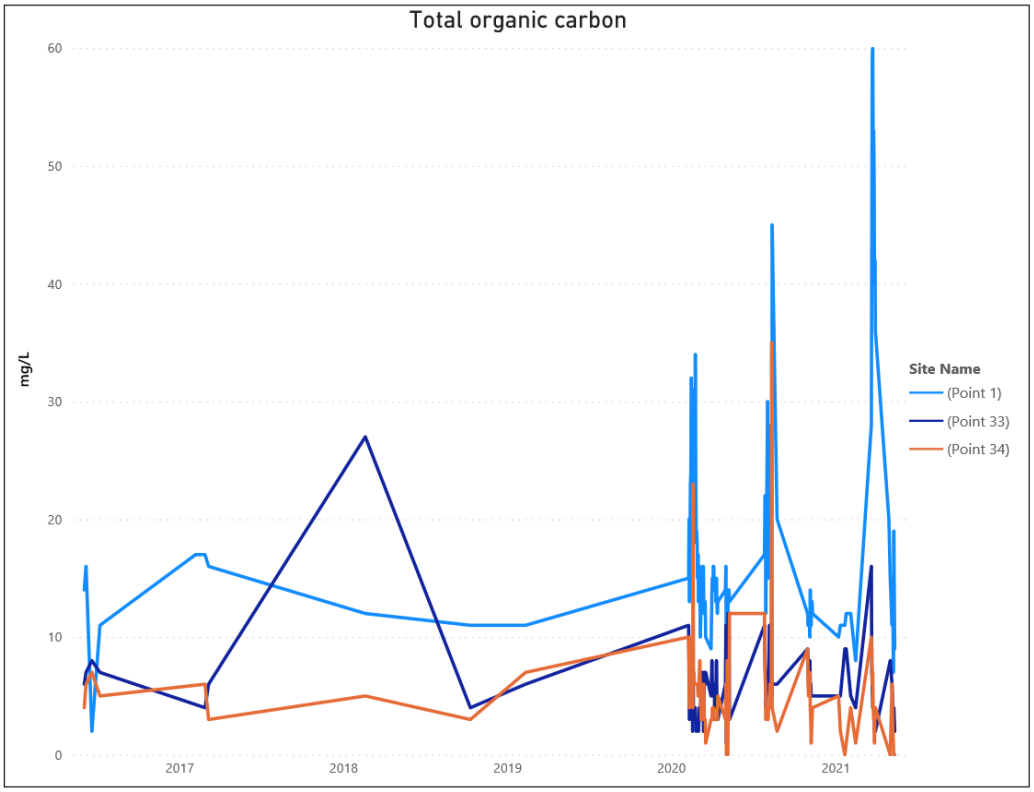

Nitrate as N
mg/L
2.5
2.0
1.5
1.0
0.5
0.0
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

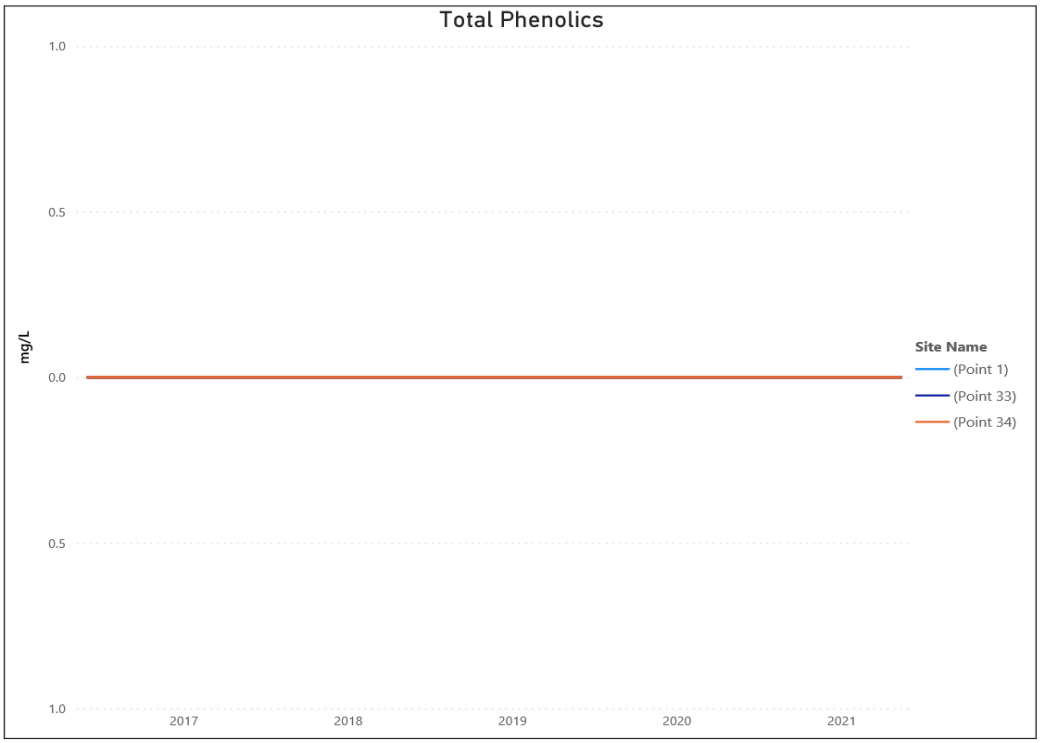

pH
8
6
4
2
0
pH
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

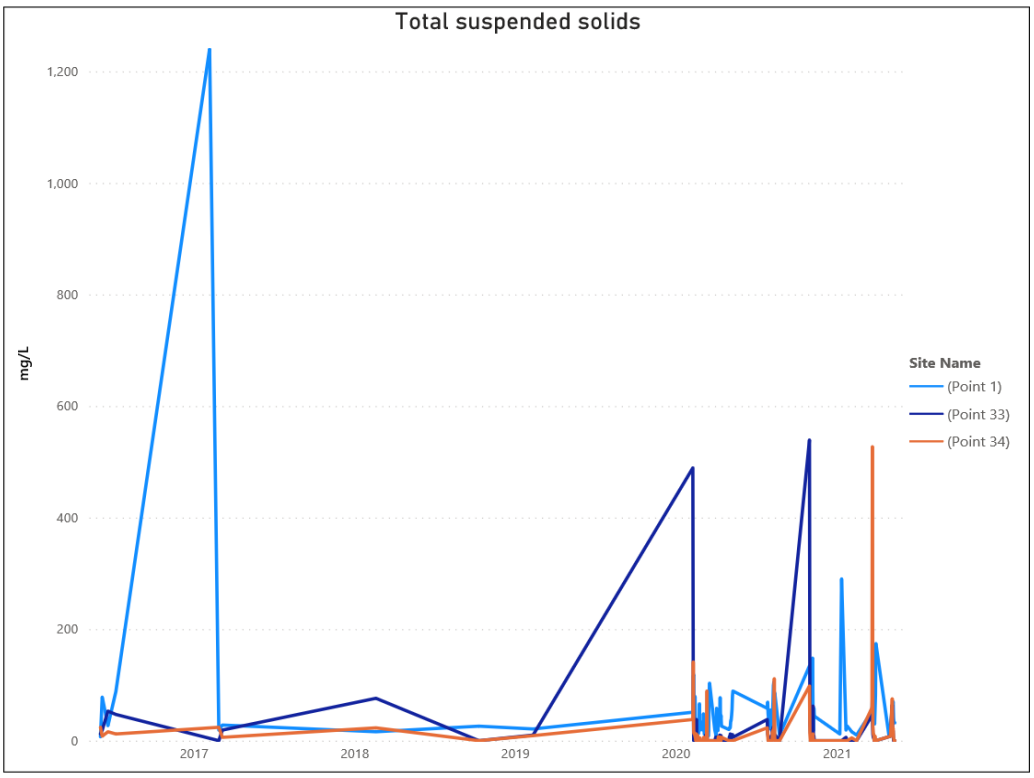

Potassium
120
100
80
60
40
20
0
mg/L
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)


Sulfate
mg/L
150
100
50
0
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

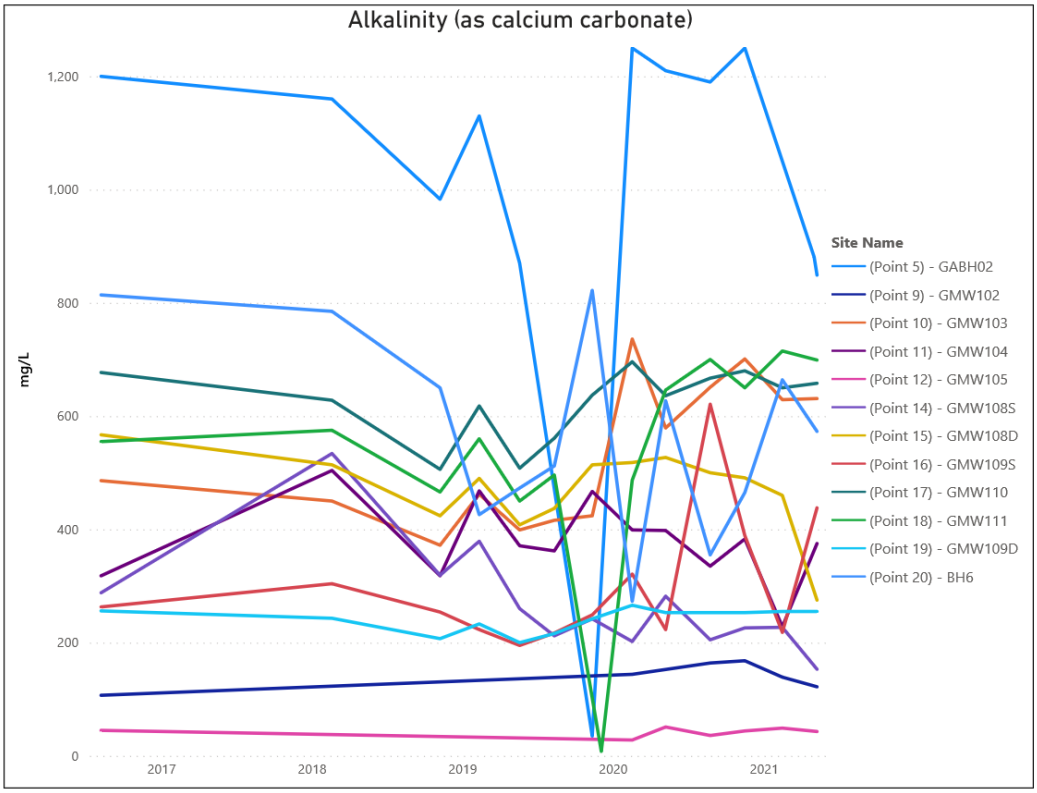

Temperature
°C
25
20
15
10
5
0
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

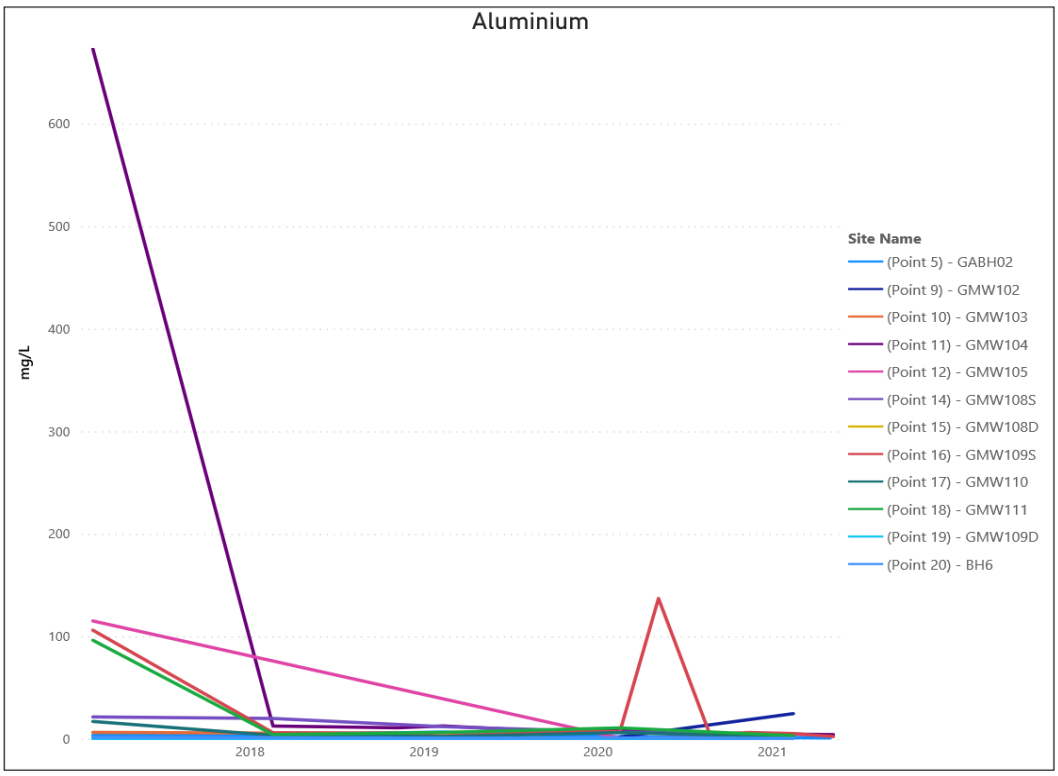

Total organic carbon
60
50
40
30
20
10
0
mg/L
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

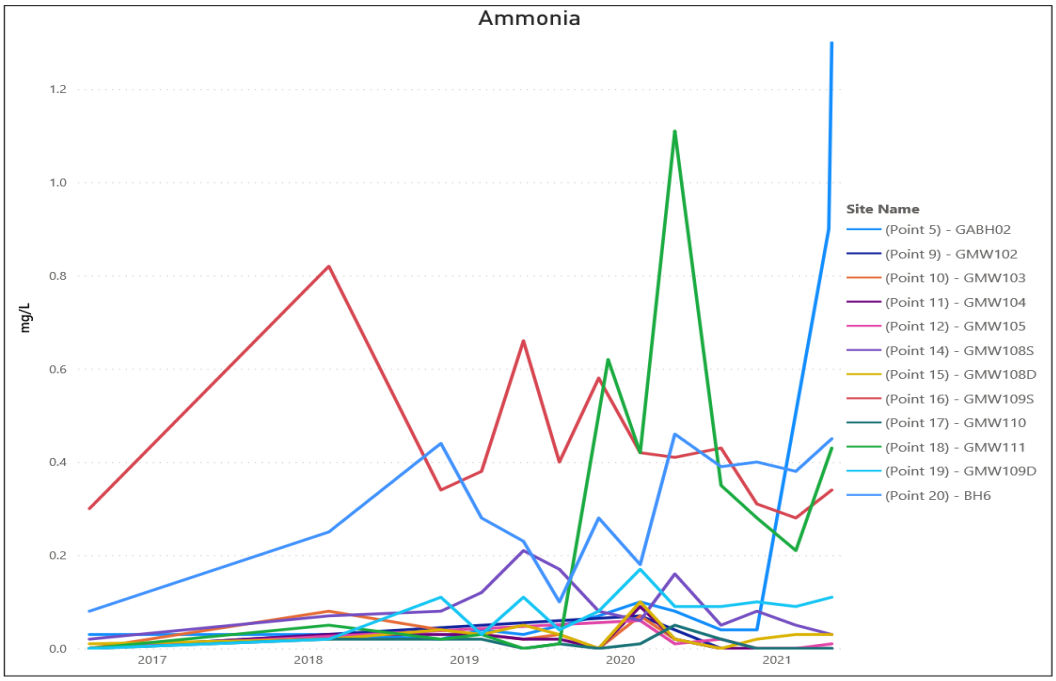

Total Phenolics
1.0
0.5
0.0
0.5
1.0
mg/L
2017
2018
2019
2020
2021
Site Name
(Point 1)
(Point 33)
(Point 34)

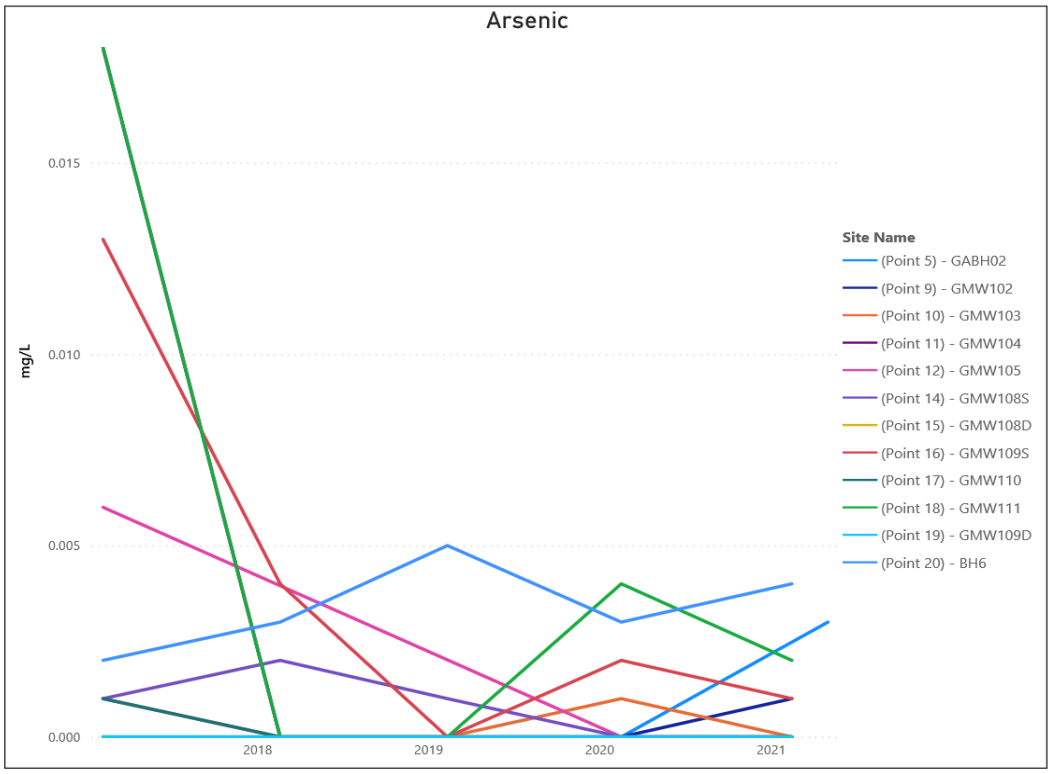


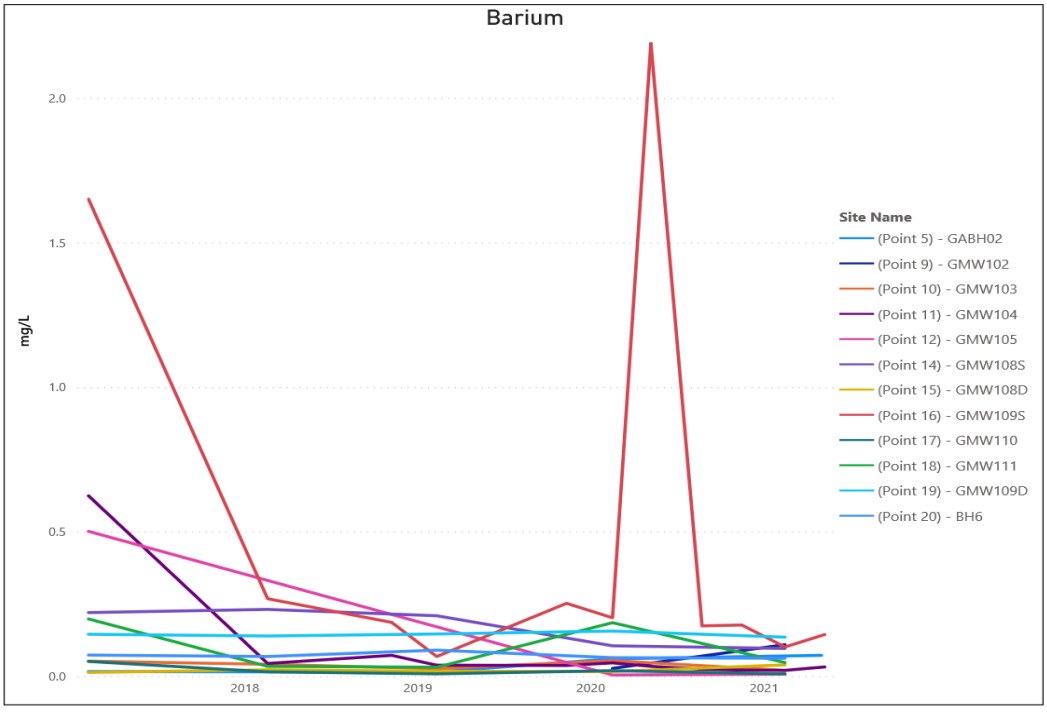
Groundwater Results

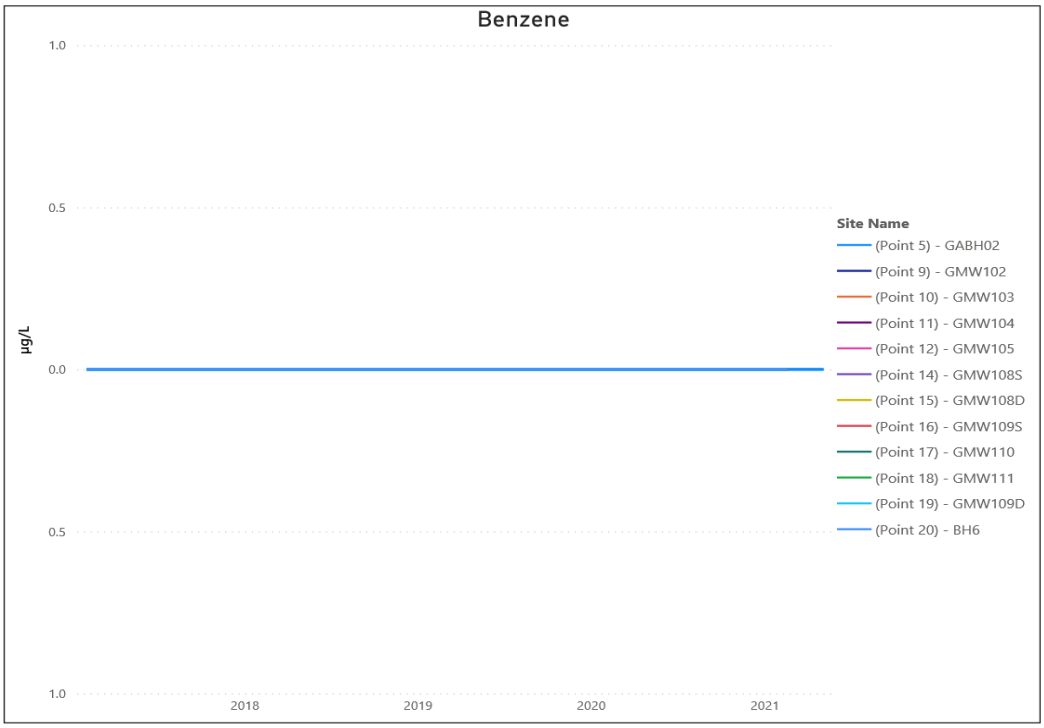


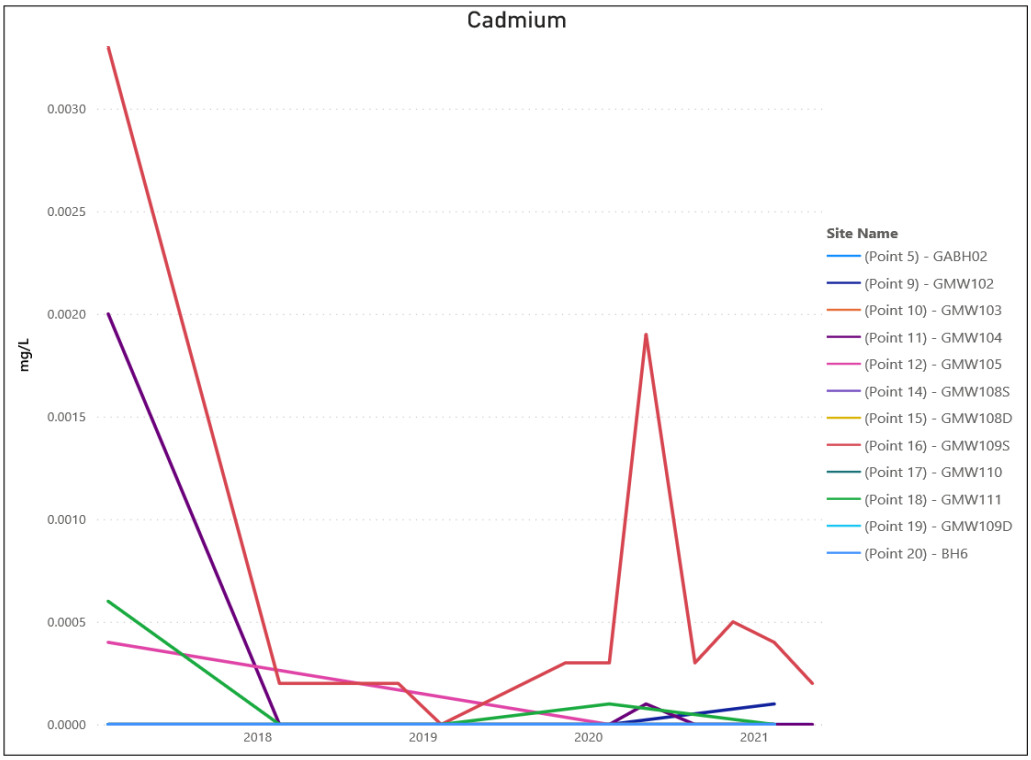

Aluminium
mg/L
600
500
400
300
200
100
0
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

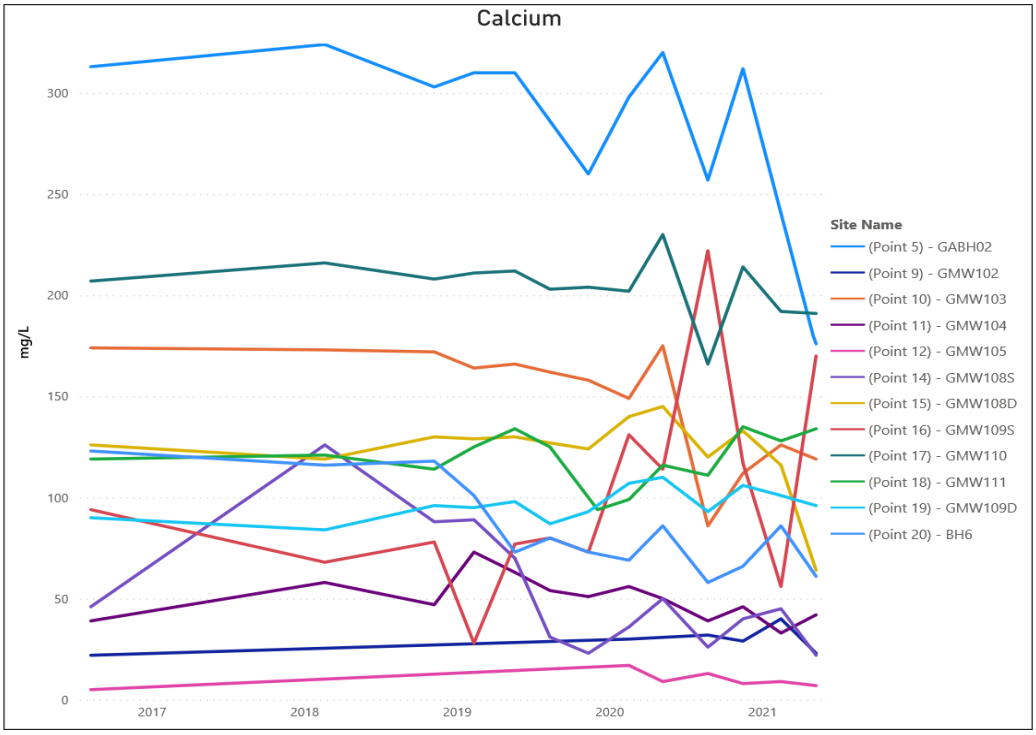

Ammonia
mg/L
1.2
1.0
0.8
0.6
0.4
0.2
0.0
2017
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

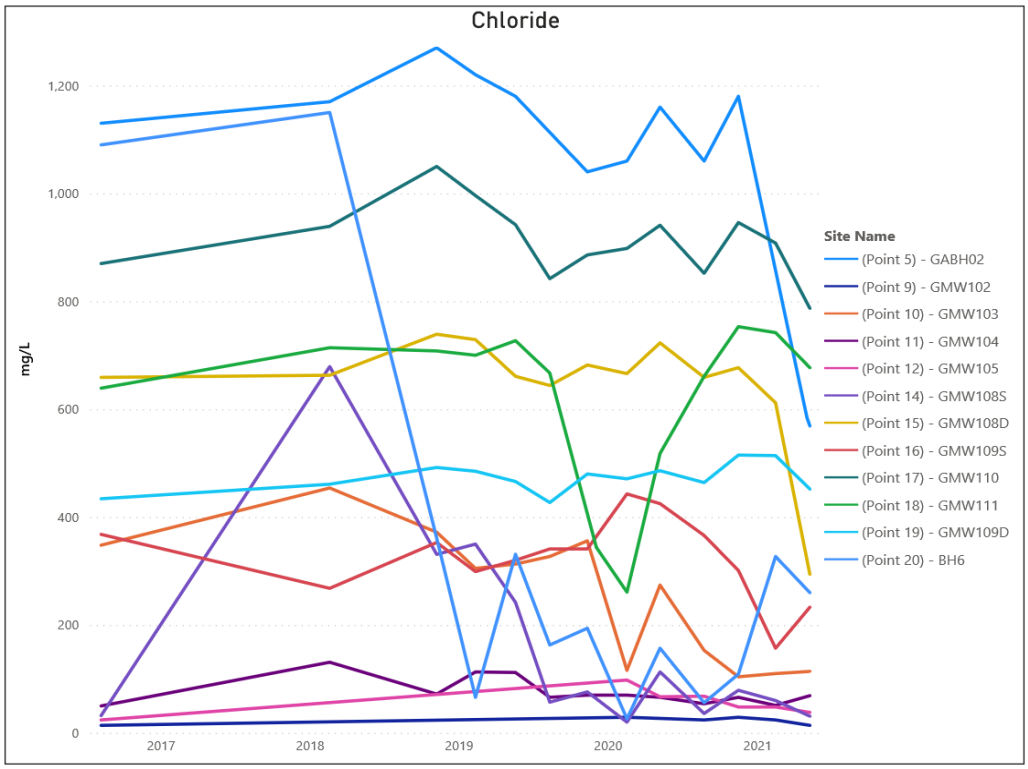

Arsenic
0.015
0.010
0.005
0.000
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

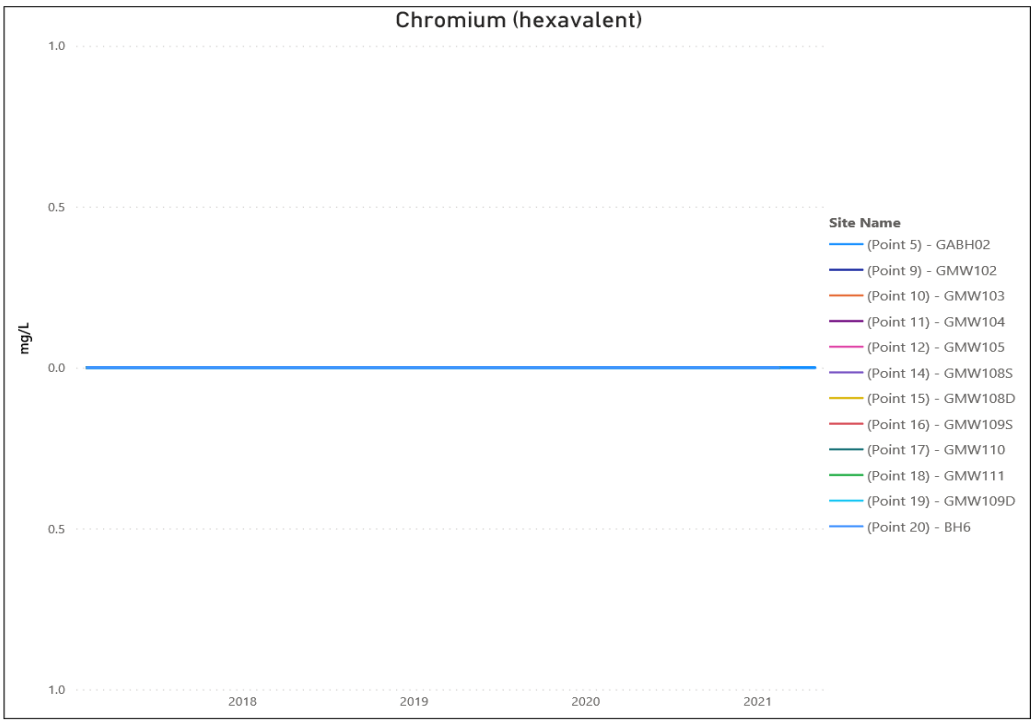

Barium
2.0
1.5
1.0
0.5
0.0
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

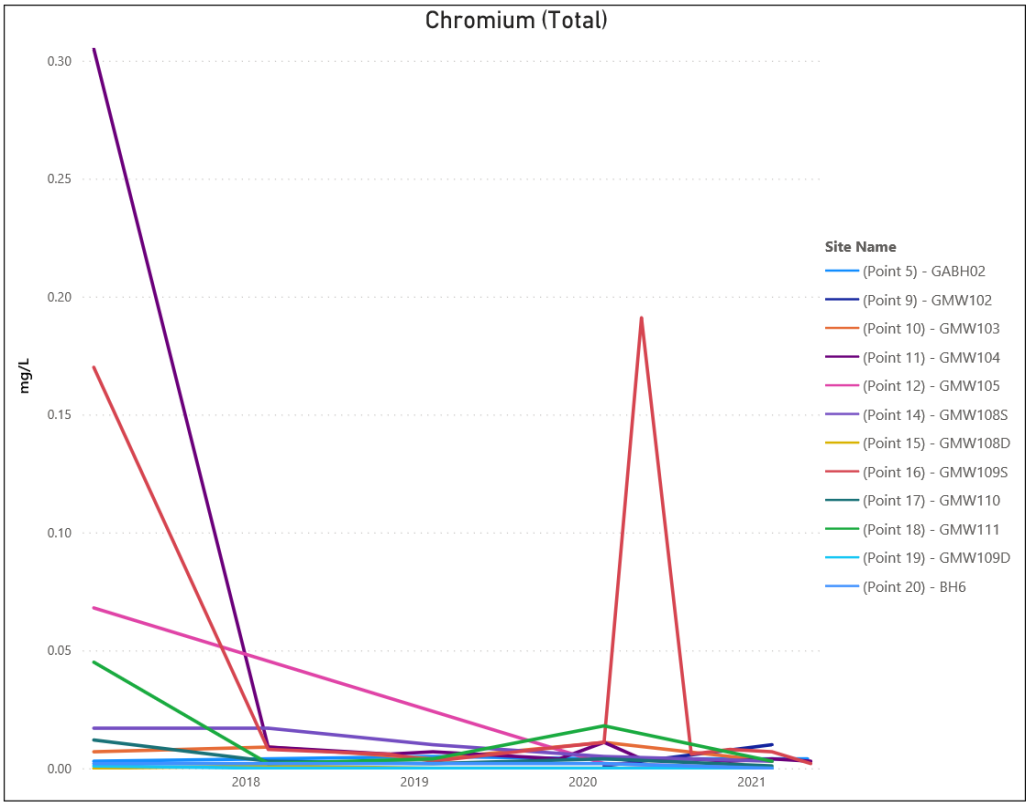

Benzene
1.0
0.5
0.0
0.5
1.0
µg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

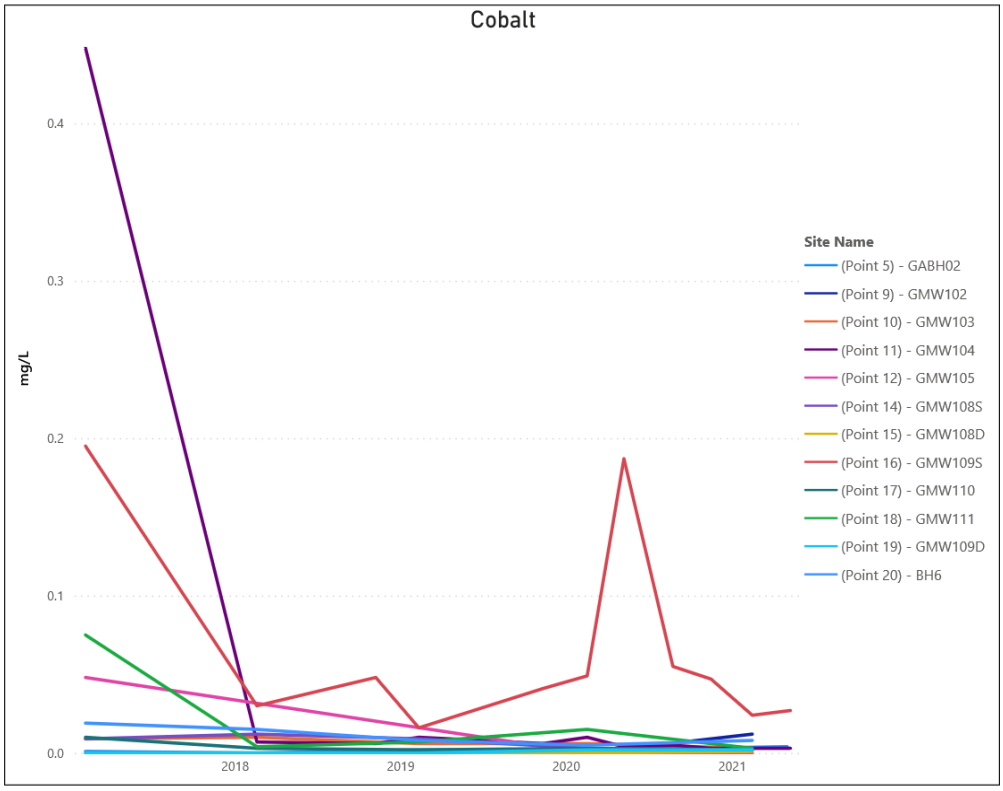

Cadmium
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

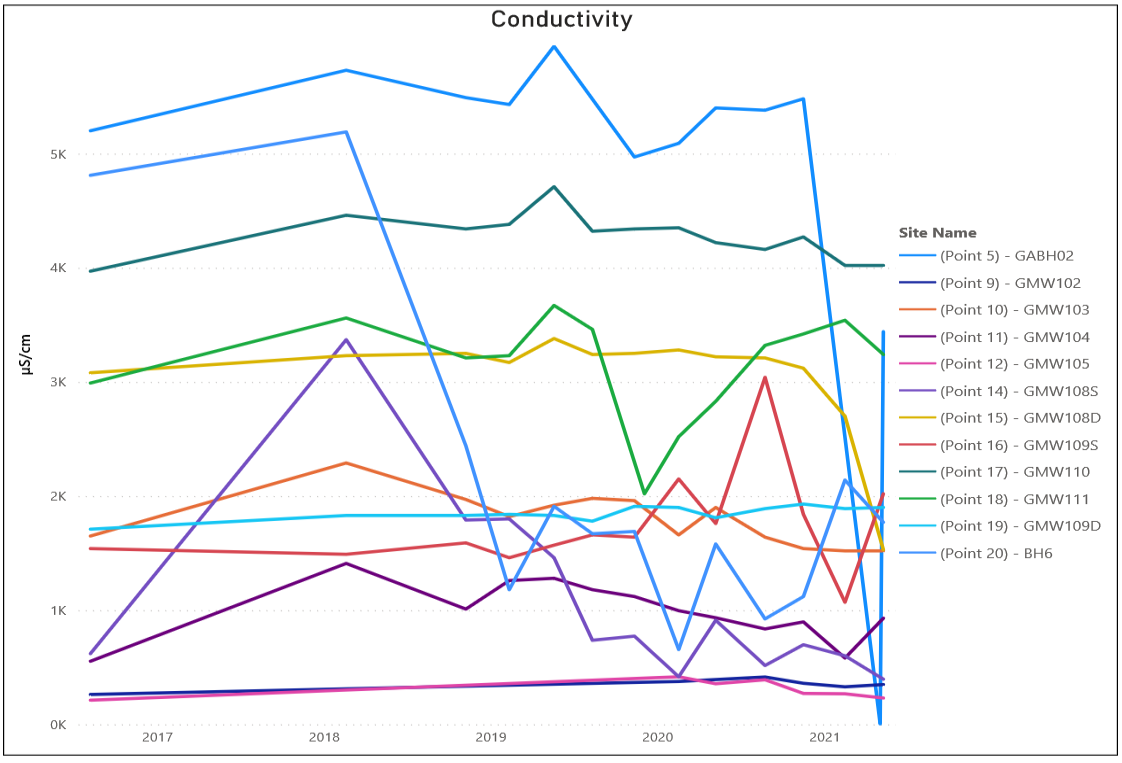

Calcium
mg/L
300
250
200
150
100
50
0
2017
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

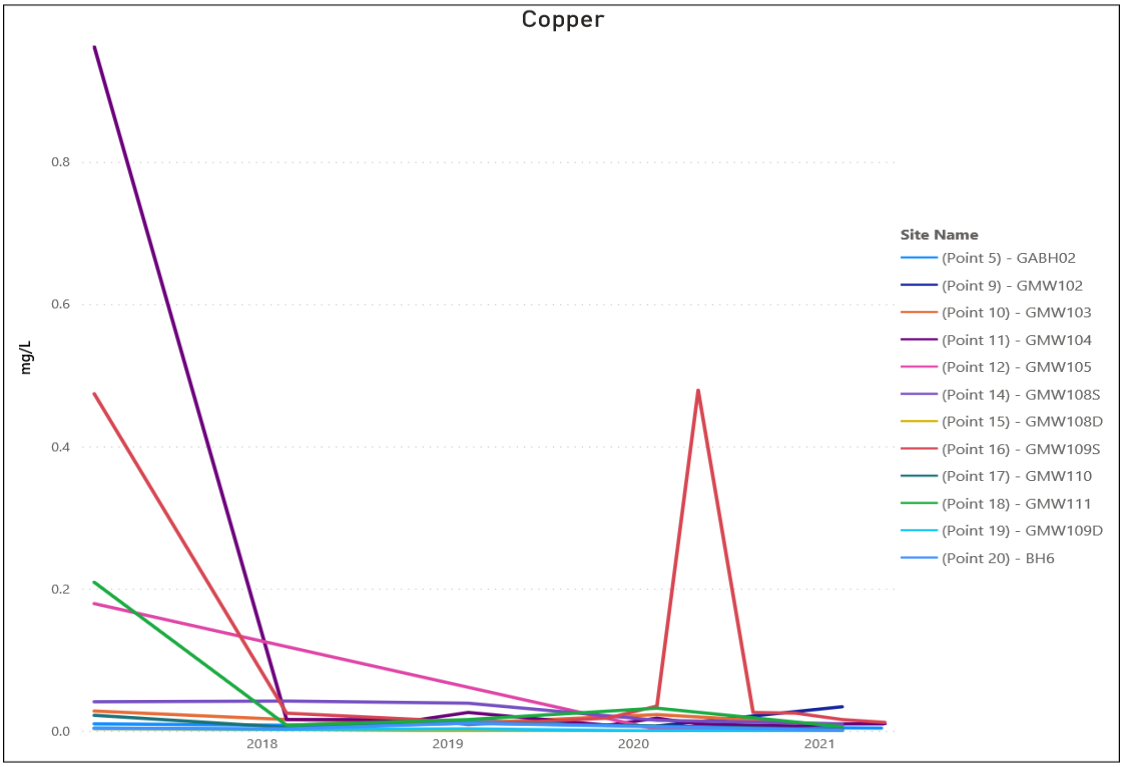

Chloride
mg/L
1,200
1,000
800
600
400
200
0
2017
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

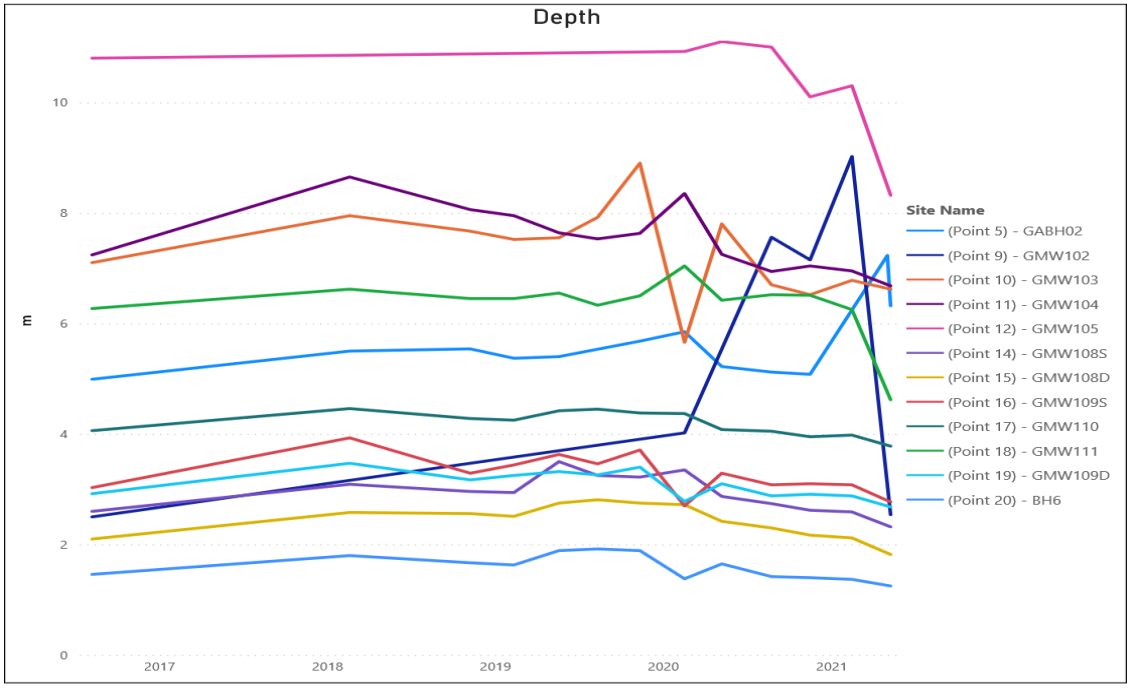

Chromium (hexavalent)
1.0
0.5
0.0
0.5
1.0
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

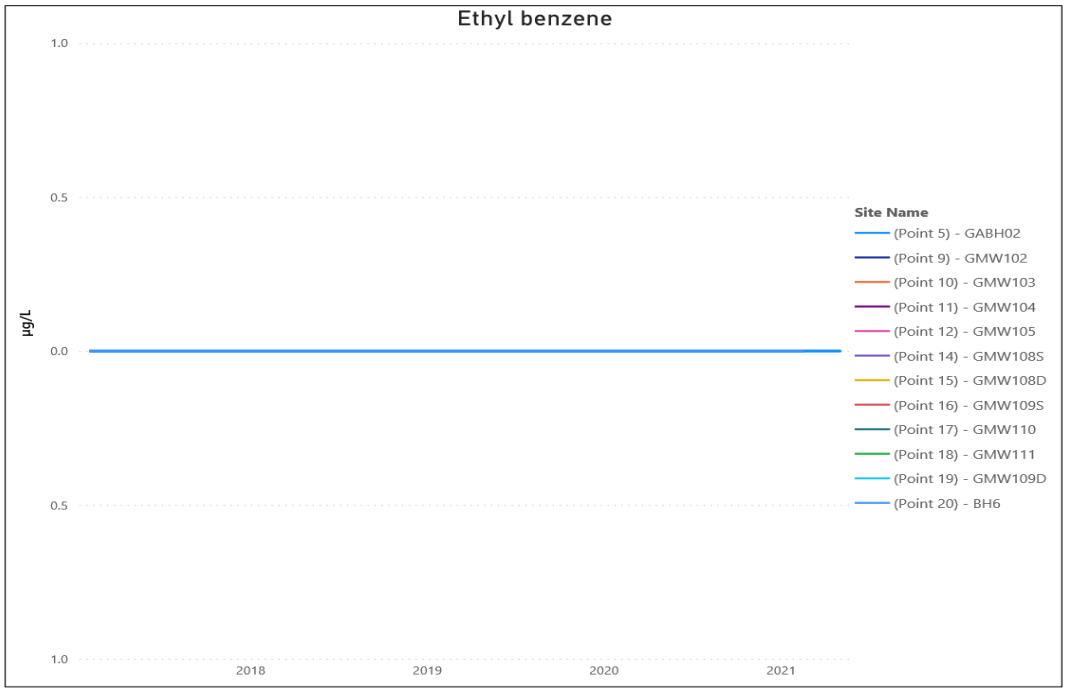

Chromium (Total)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

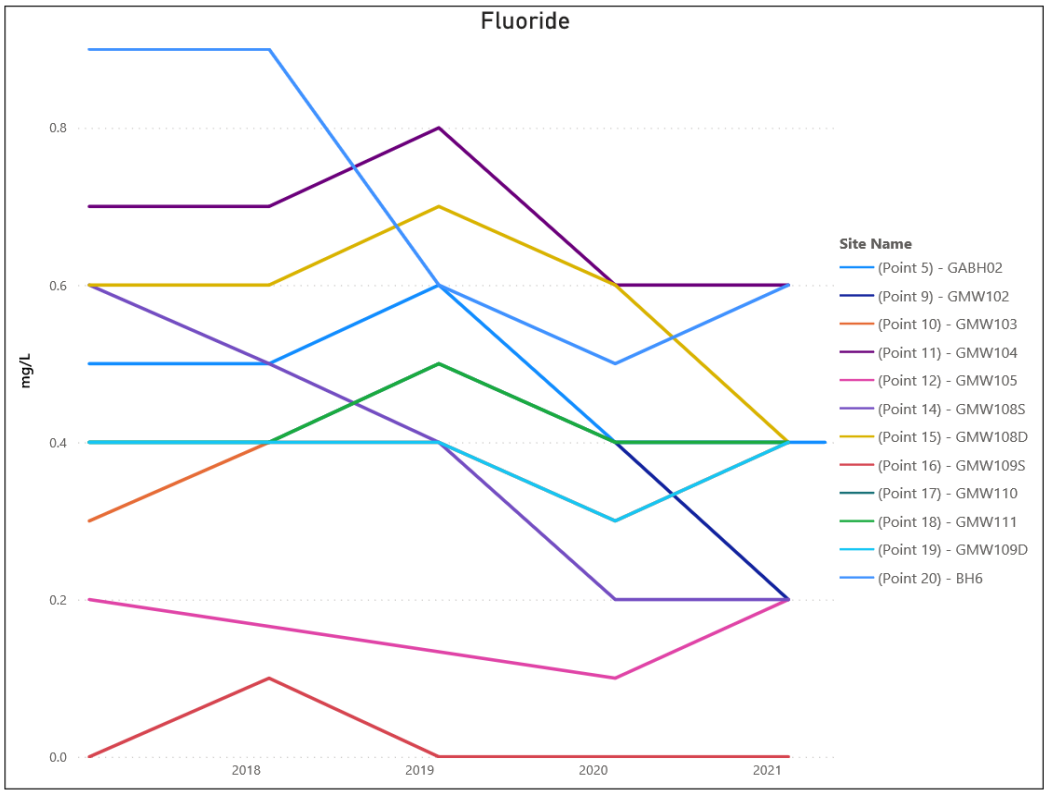

Cobalt
mg/L
0.4
0.3
0.2
0.1
0.0
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

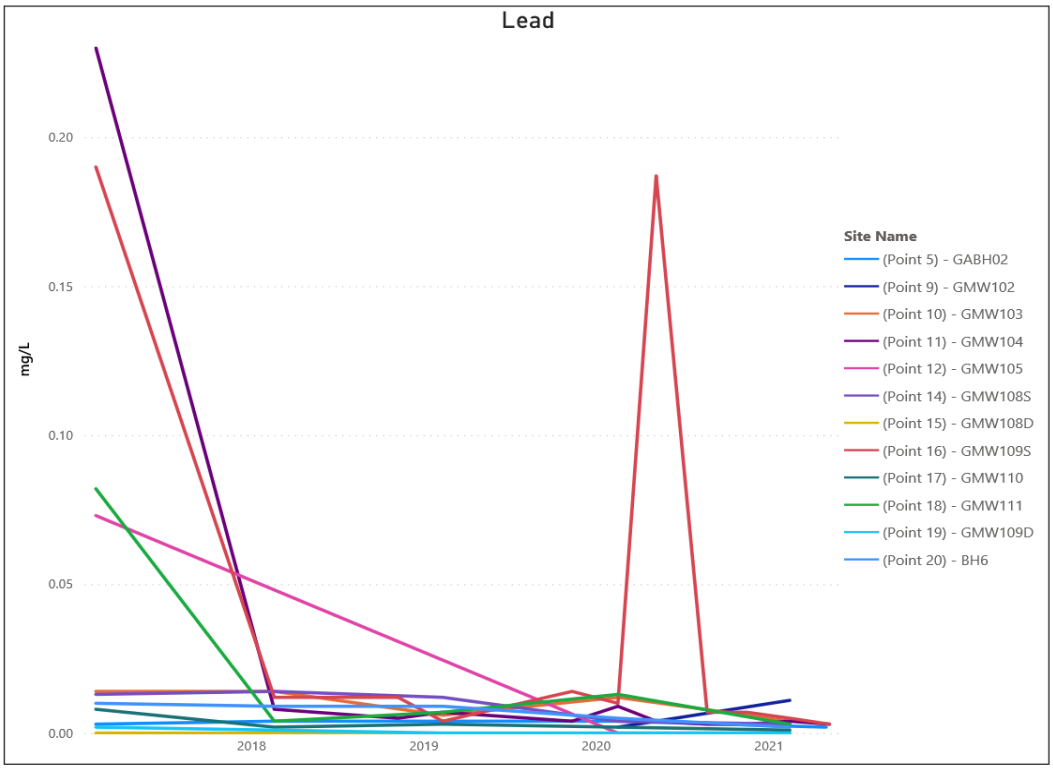

Conductivity
µS/cm
5K
4K
3K
2K
1K
0K
2017
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

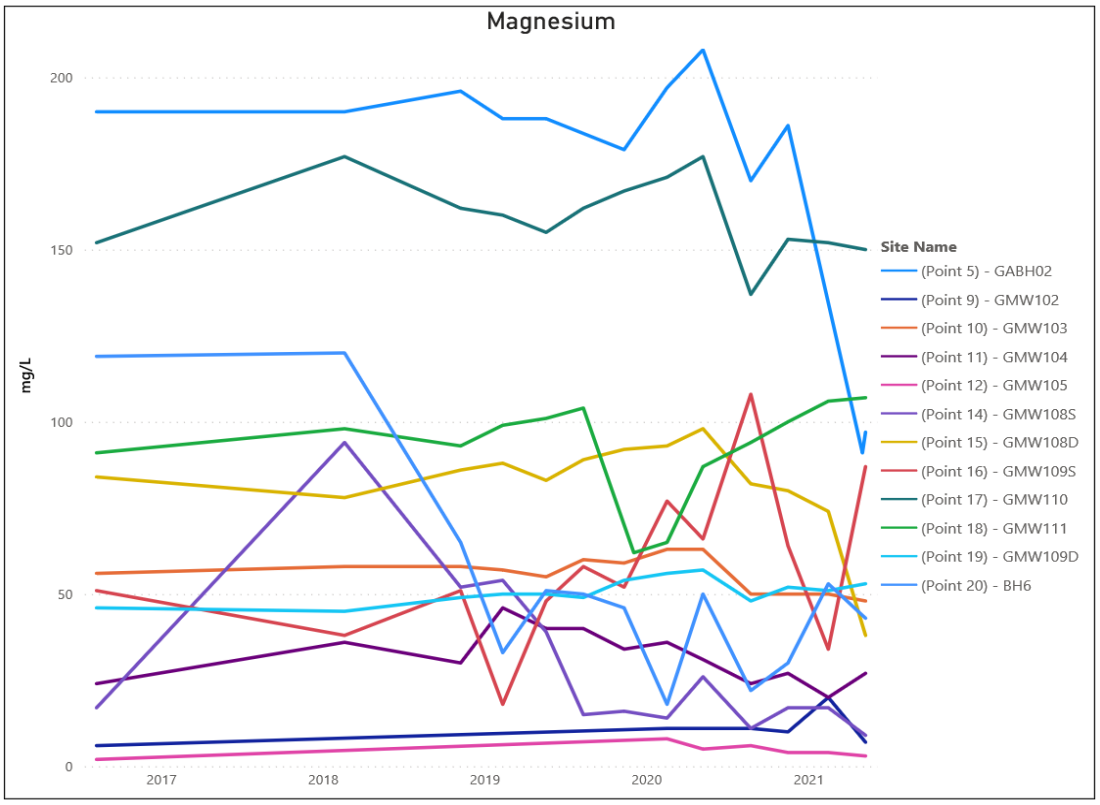

Copper
mg/L
0.8
0.6
0.4
0.2
0.0
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

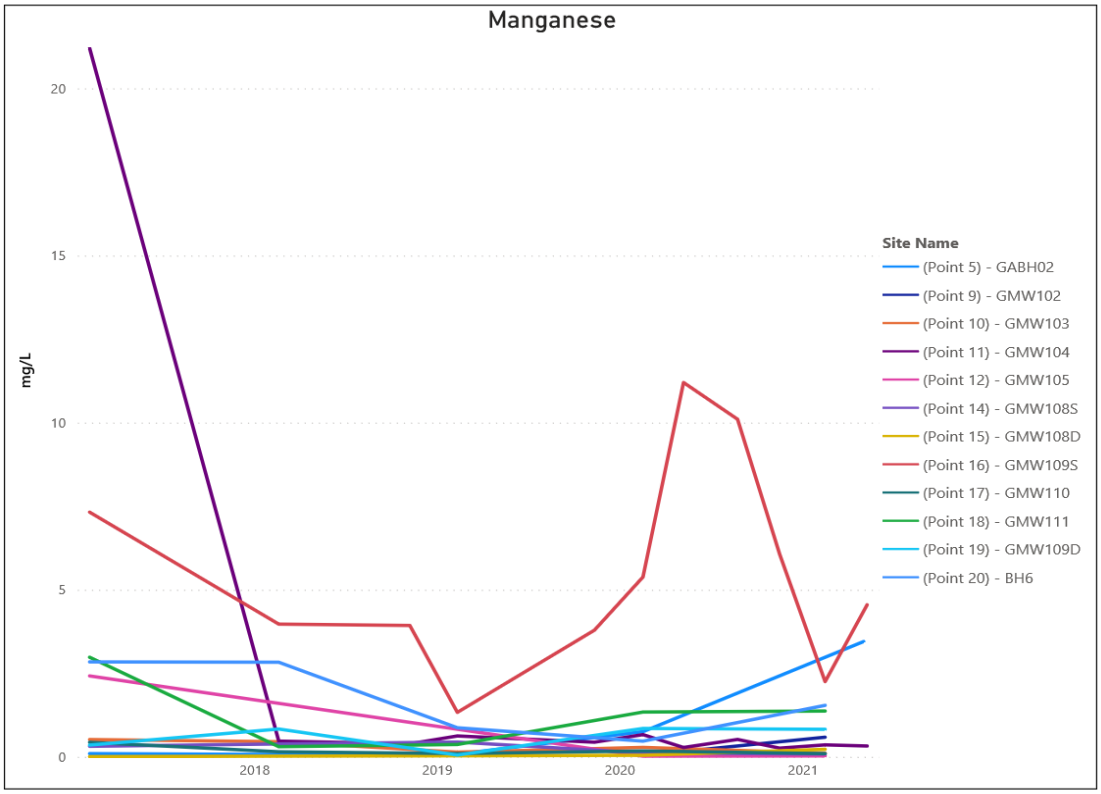

Depth
m
10
8
6
4
2
0
2017
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

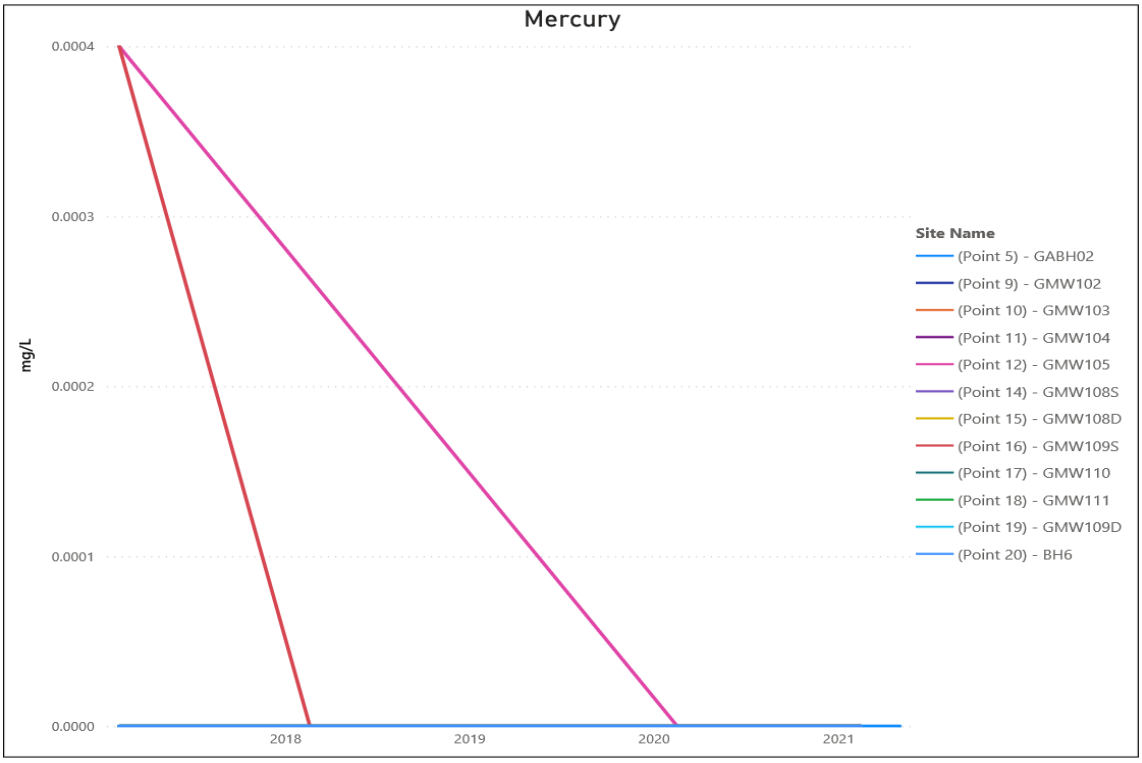

Ethyl benzene
1.0
0.5
0.0
0.5
1.0
µg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

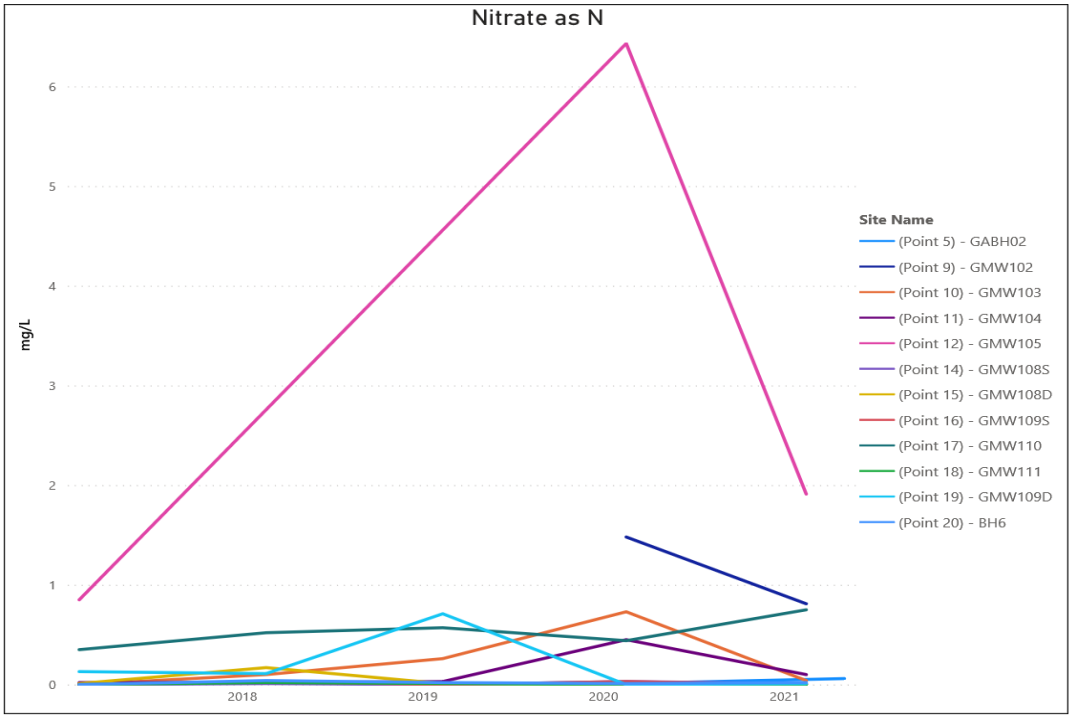

Fluoride
0.8
0.6
0.4
0.2
0.0
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

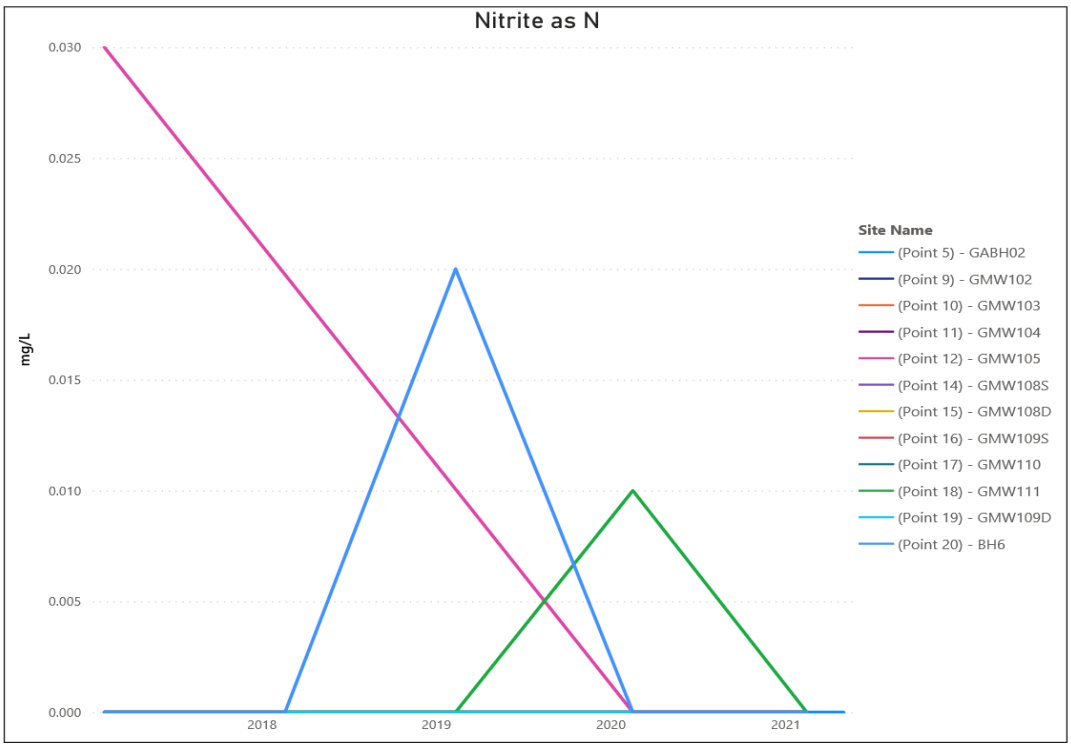

Lead
0.20
0.15
0.10
0.05
0.00
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

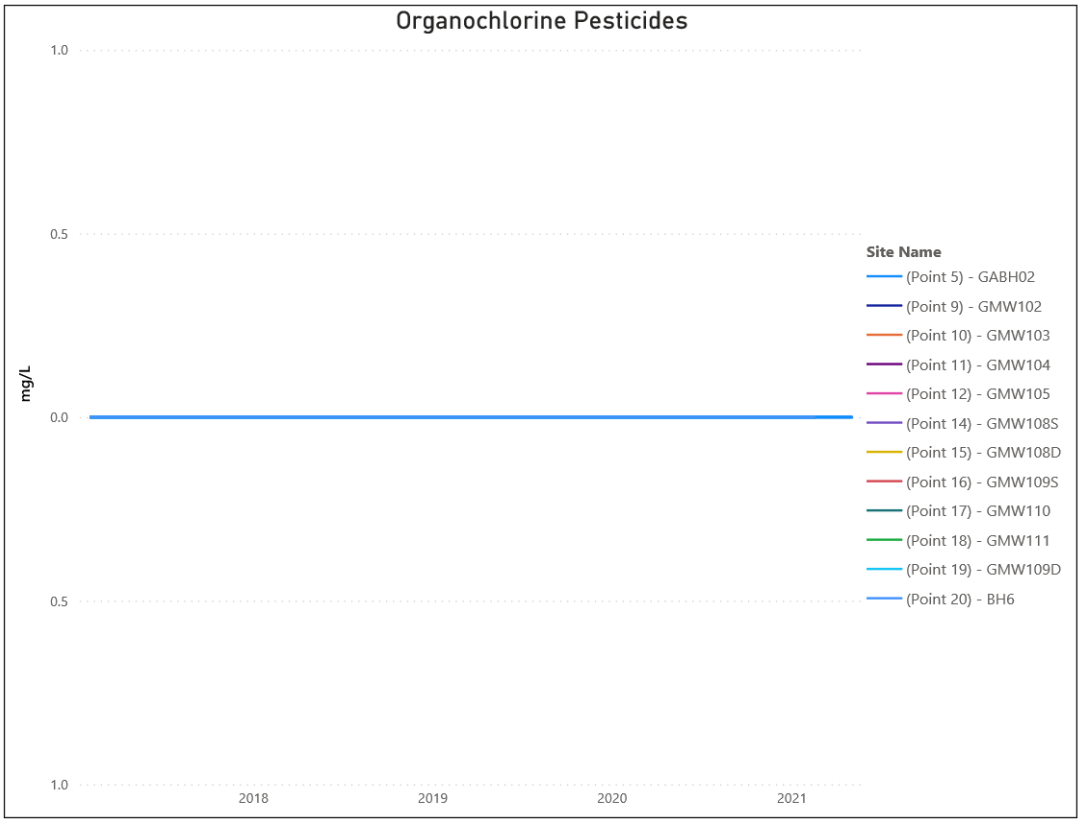

Magnesium
200
150
100
50
0
mg/L
2017
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

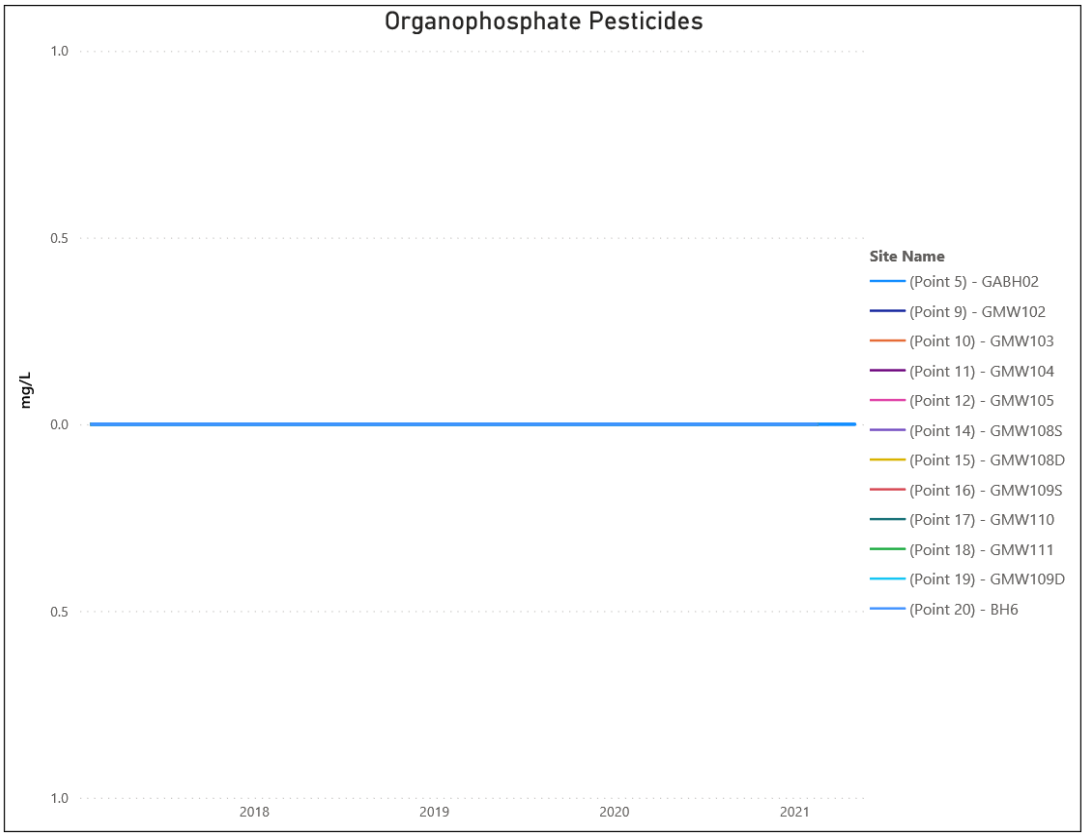

Manganese
20
15
10
5
0
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

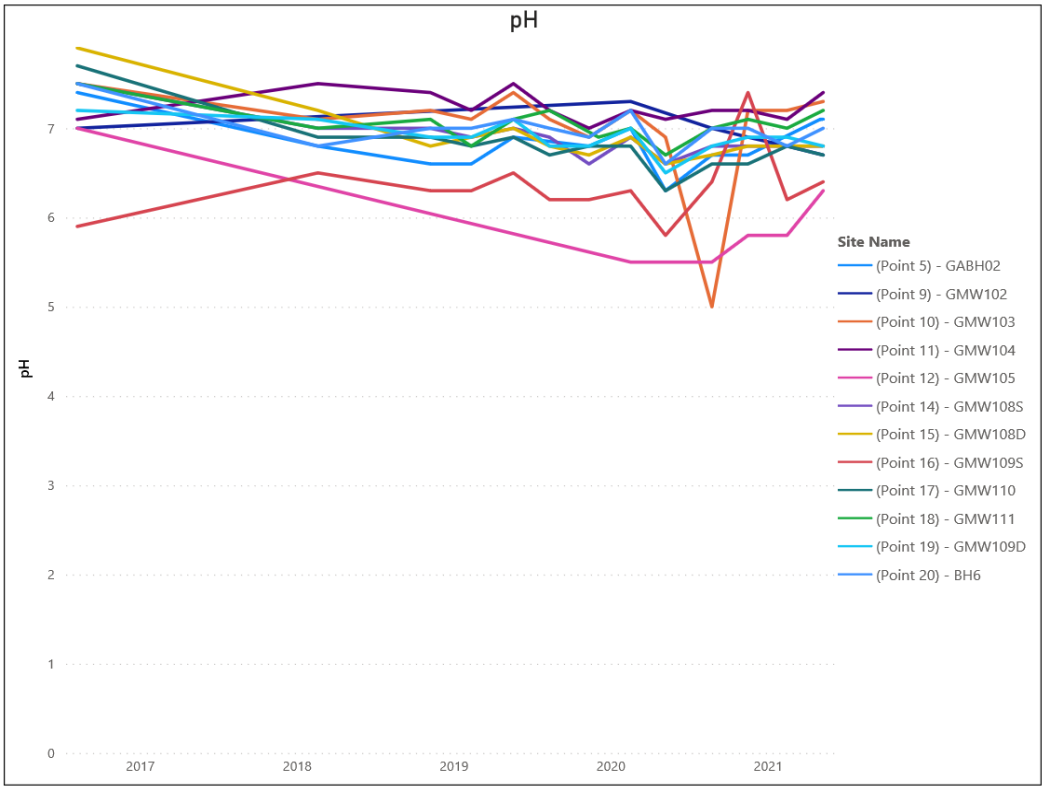

Mercury
0.0004
0.0003
0.0002
0.0001
0.0000
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

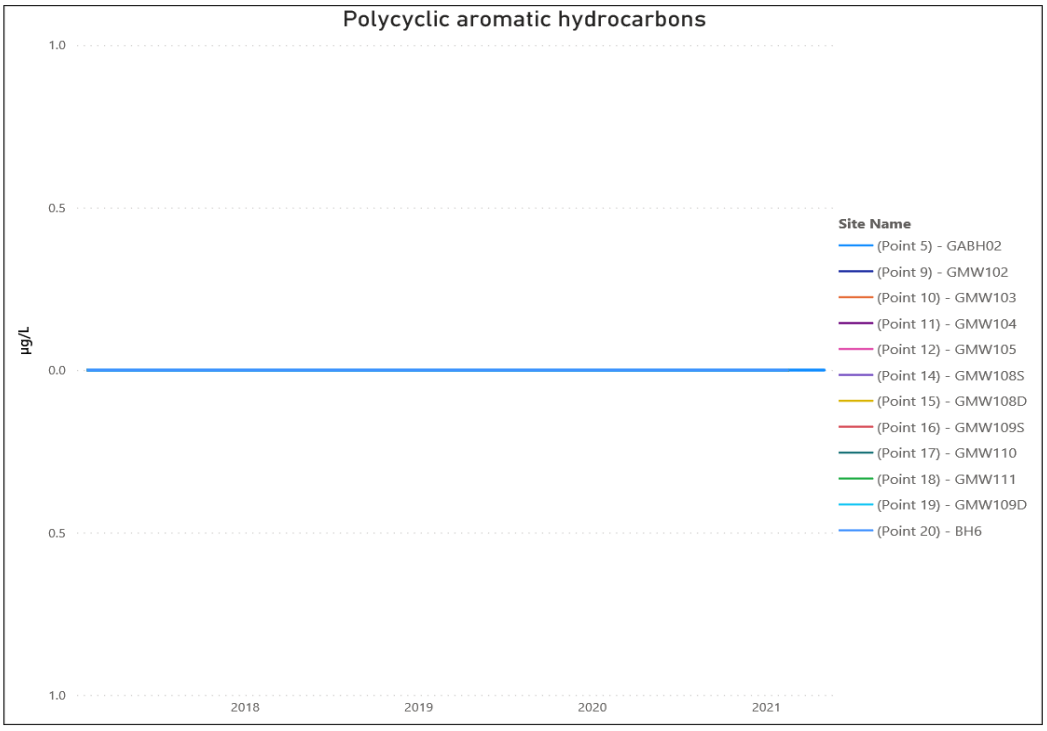

Nitrate as N
mg/L
6
5
4
3
2
1
0
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

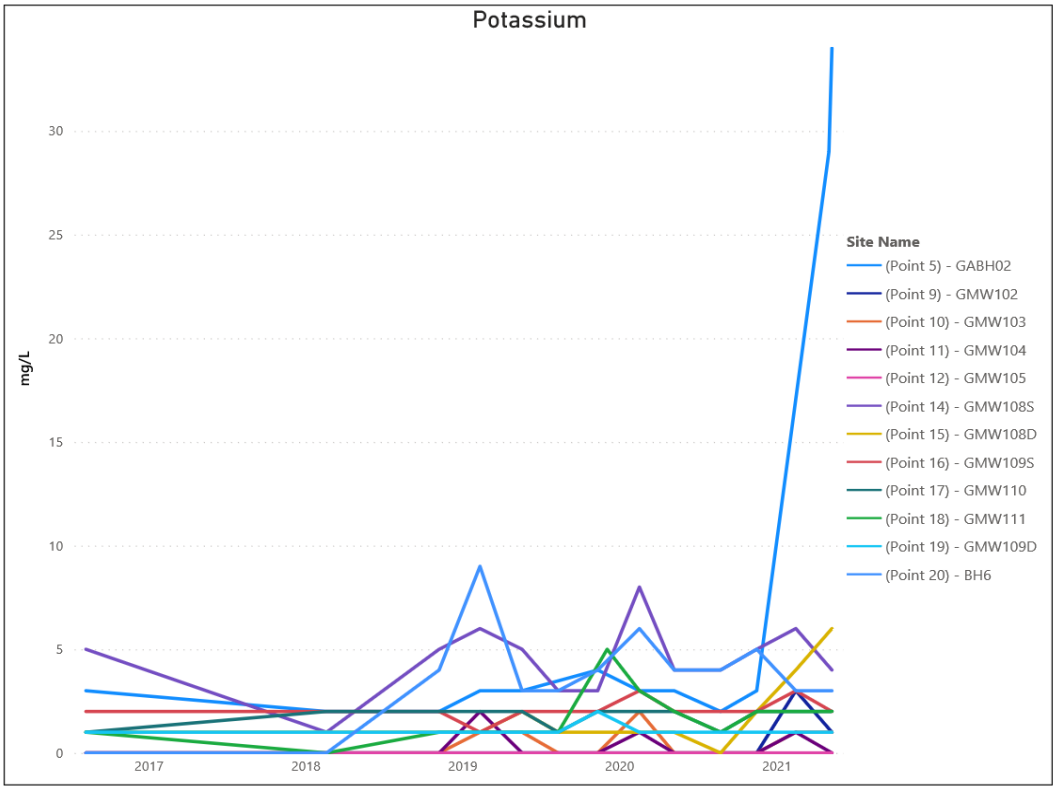

Nitrite as N
mg/L
0.030
0.025
0.020
0.015
0.010
0.005
0.000
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

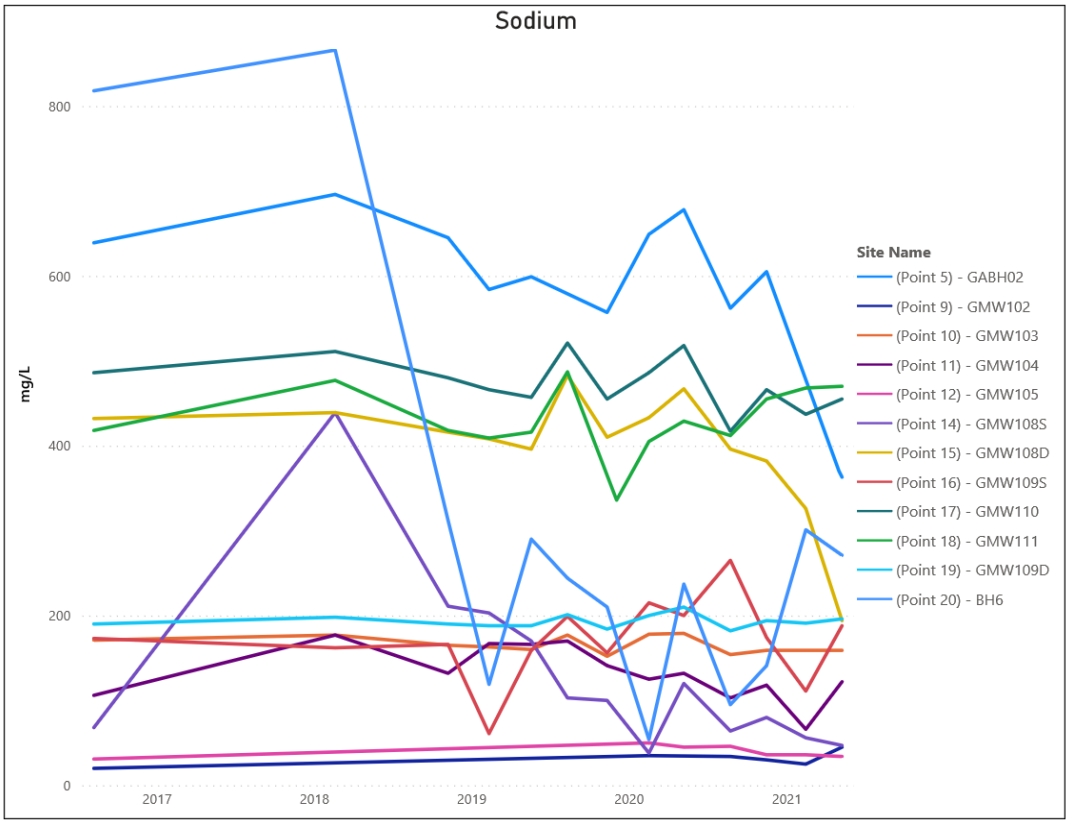

Organochlorine Pesticides
1.0
0.5
0.0
0.5
1.0
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

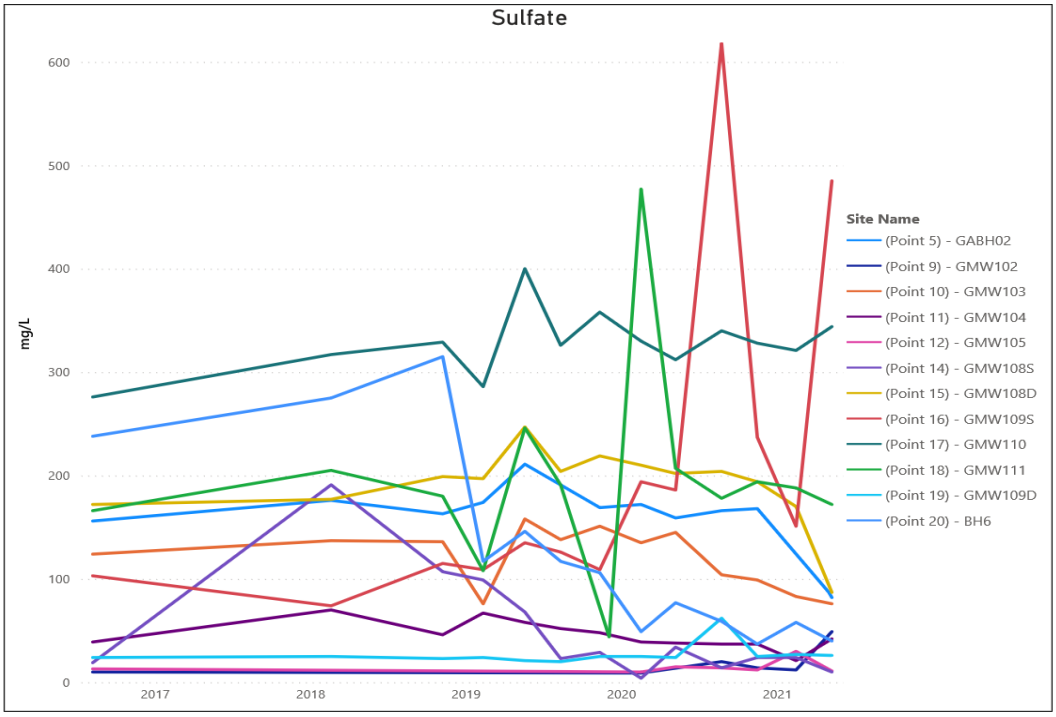

Organophosphate Pesticides
1.0
0.5
0.0
0.5
1.0
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

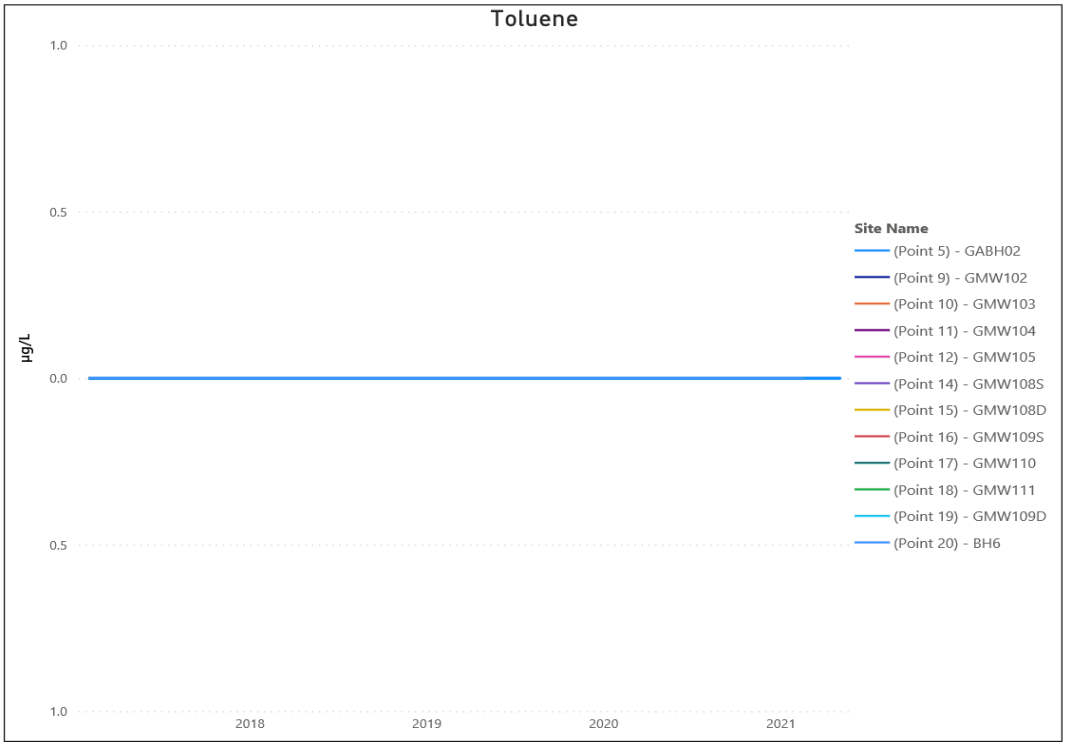

pH
pH
7
6
5
4
3
2
1
0
2017
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

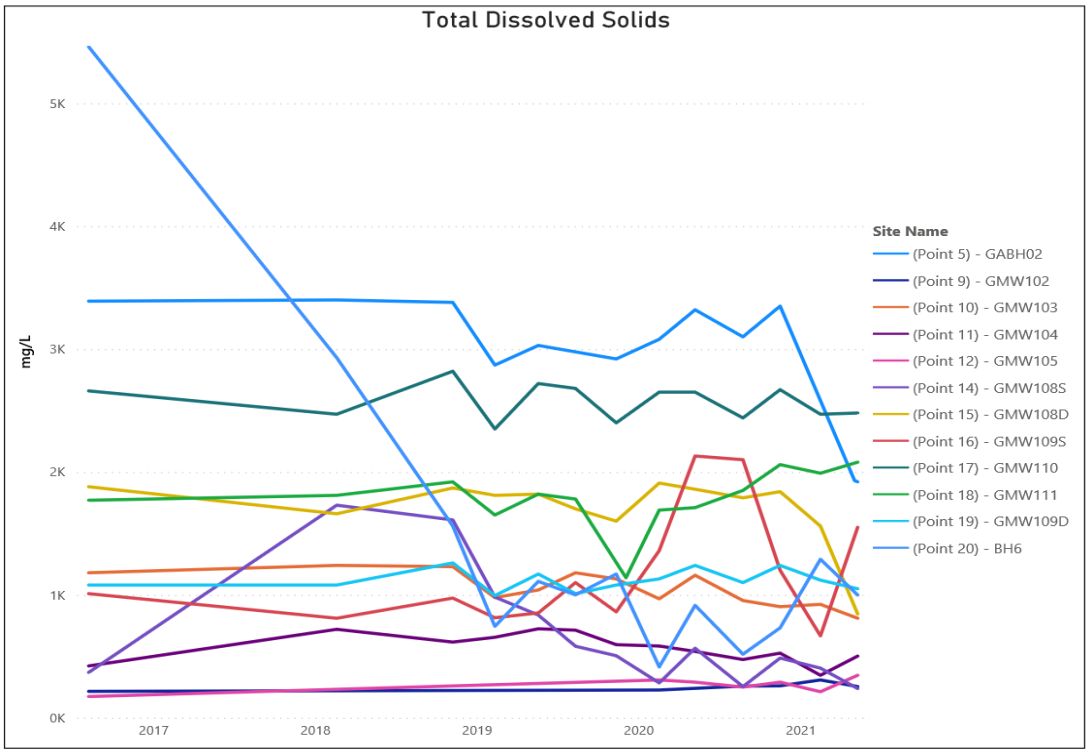

Polycyclic aromatic hydrocarbons
µg/L
1.0
0.5
0.0
0.5
1.0
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

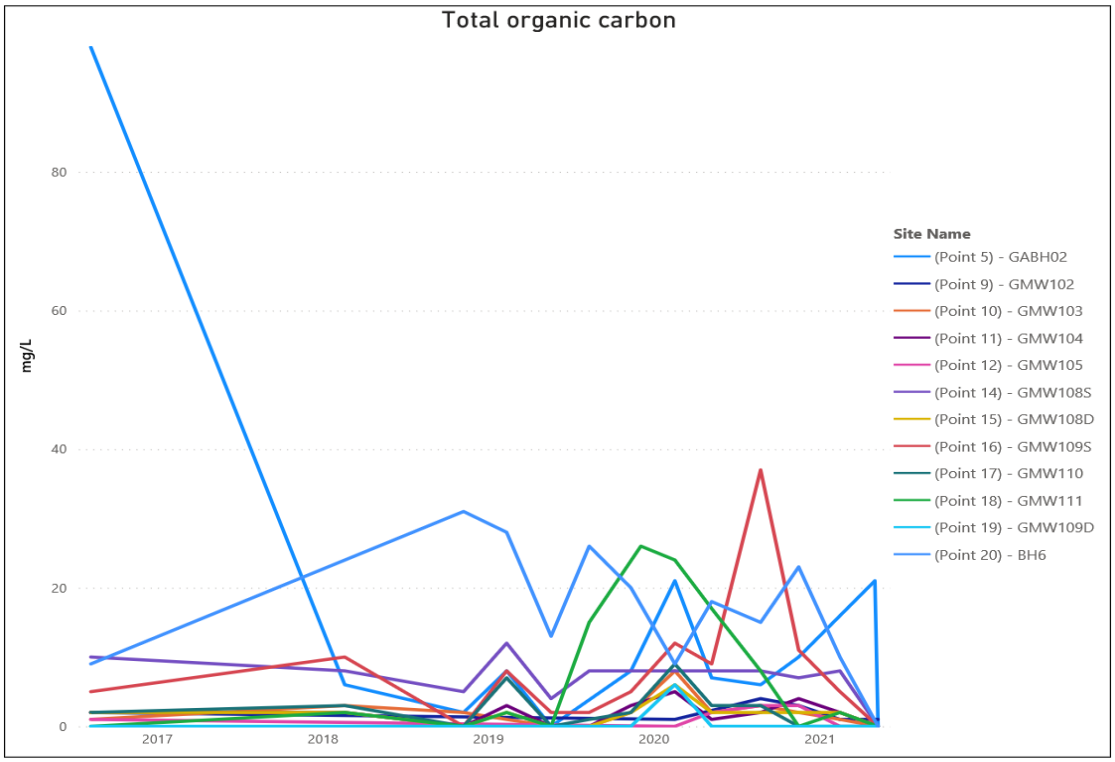

Potassium
mg/L
30
25
20
15
10
5
0
2017
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

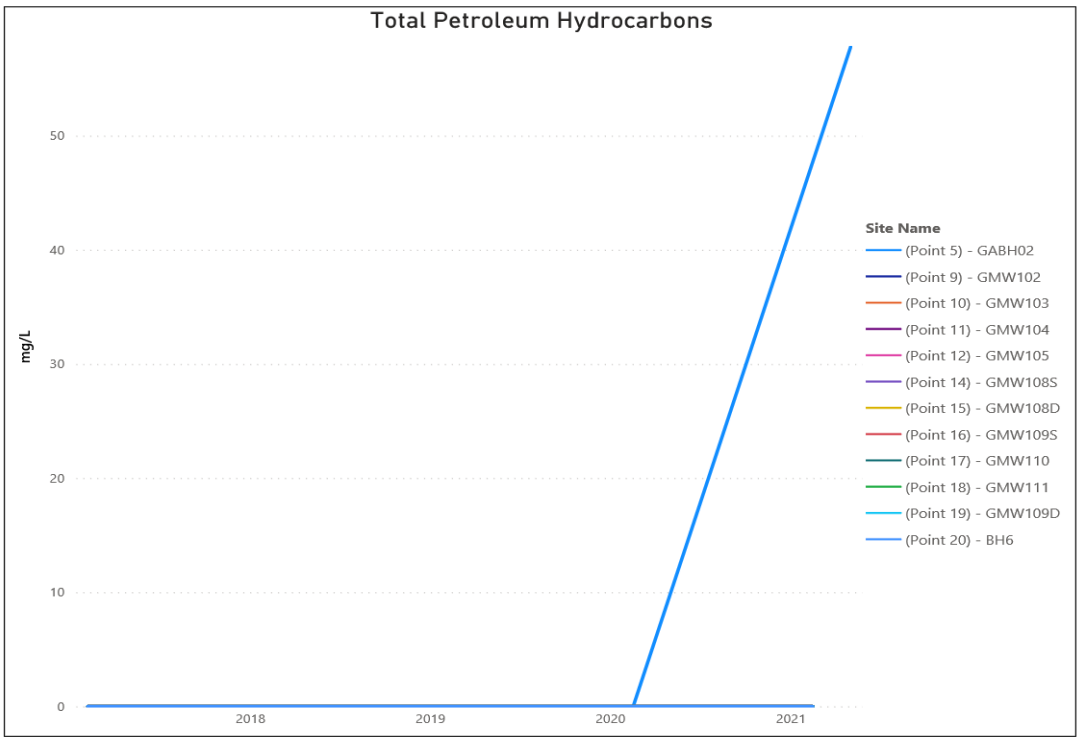

Sodium
mg/L
800
600
400
200
0
2017
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

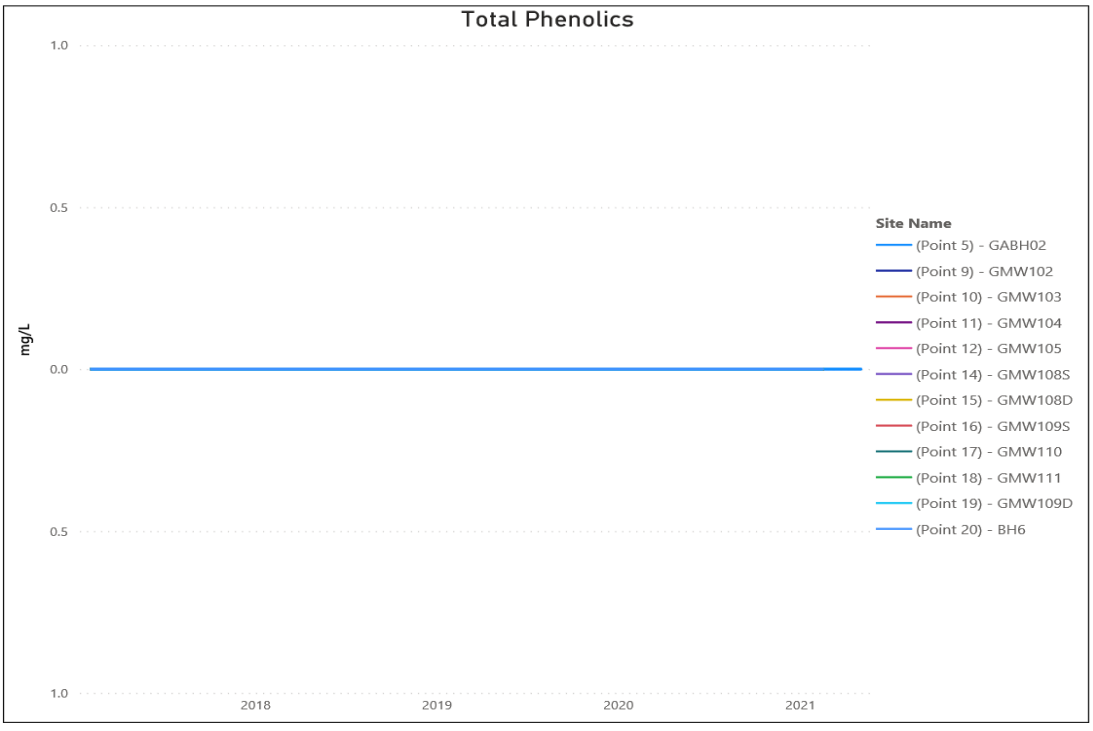

Sulfate
600
500
400
300
200
100
0
mg/L
2017
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

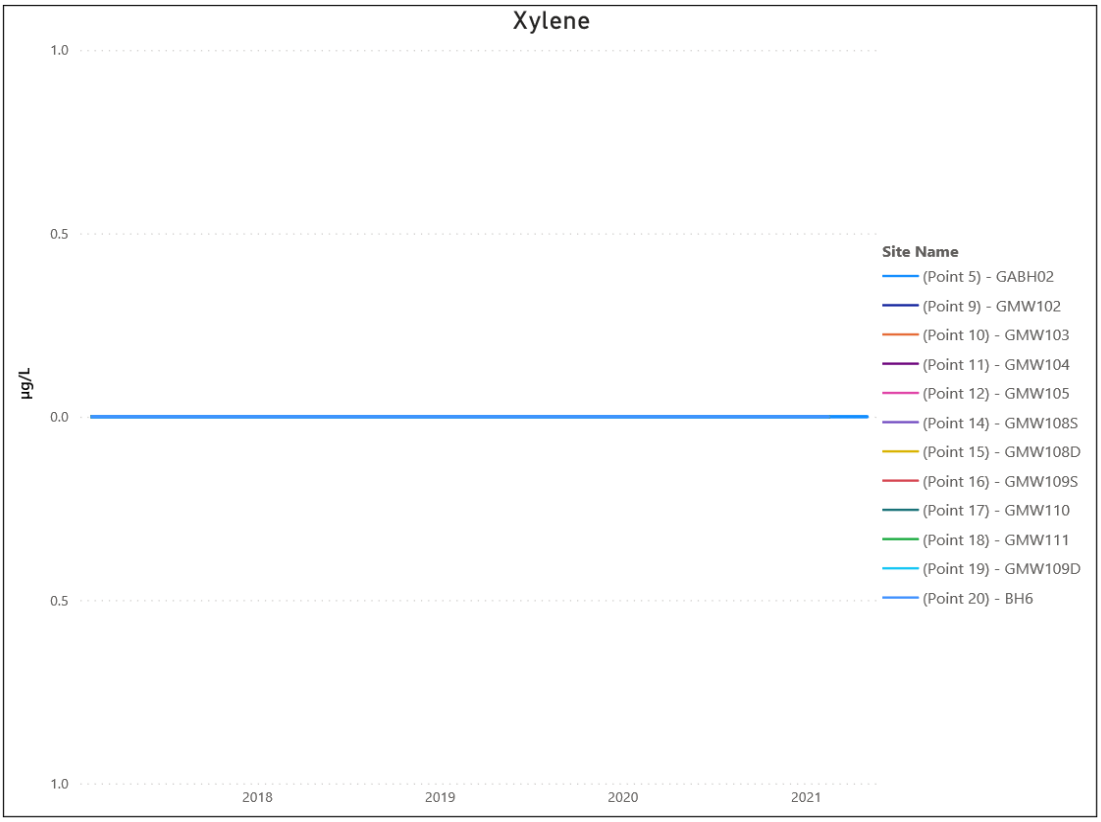

Toluene
1.0
0.5
0.0
0.5
1.0
µg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

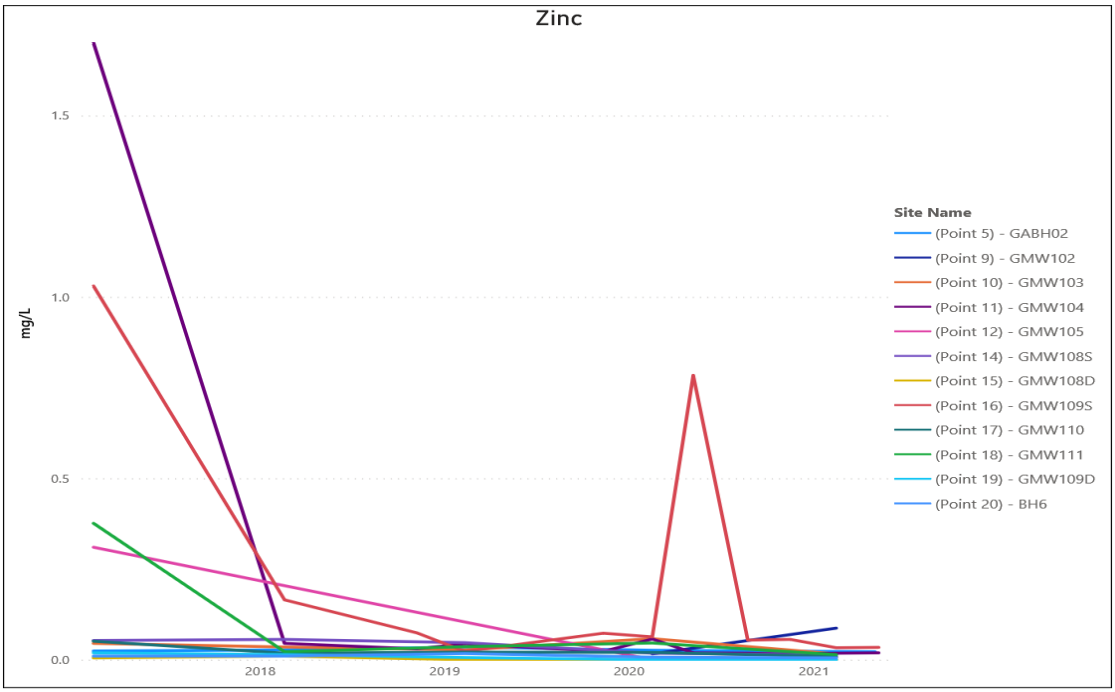

Total Dissolved Solids
mg/L
5K
4K
3K
2K
1K
0K
2017
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6


Total organic carbon
mg/L
80
60
40
20
0
2017
2018
2019
2020
2021
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

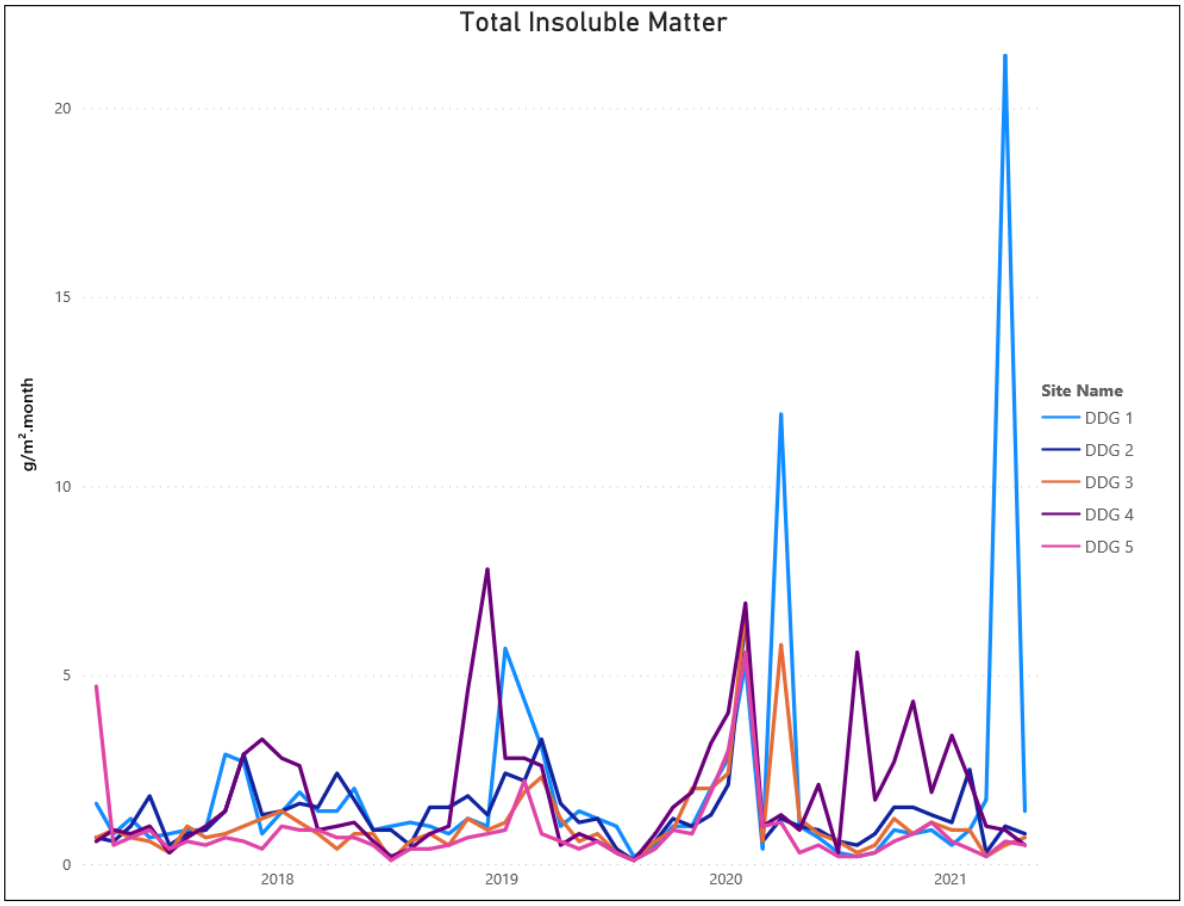

Total Petroleum Hydrocarbons
mg/L
50
40
30
20
10
0
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

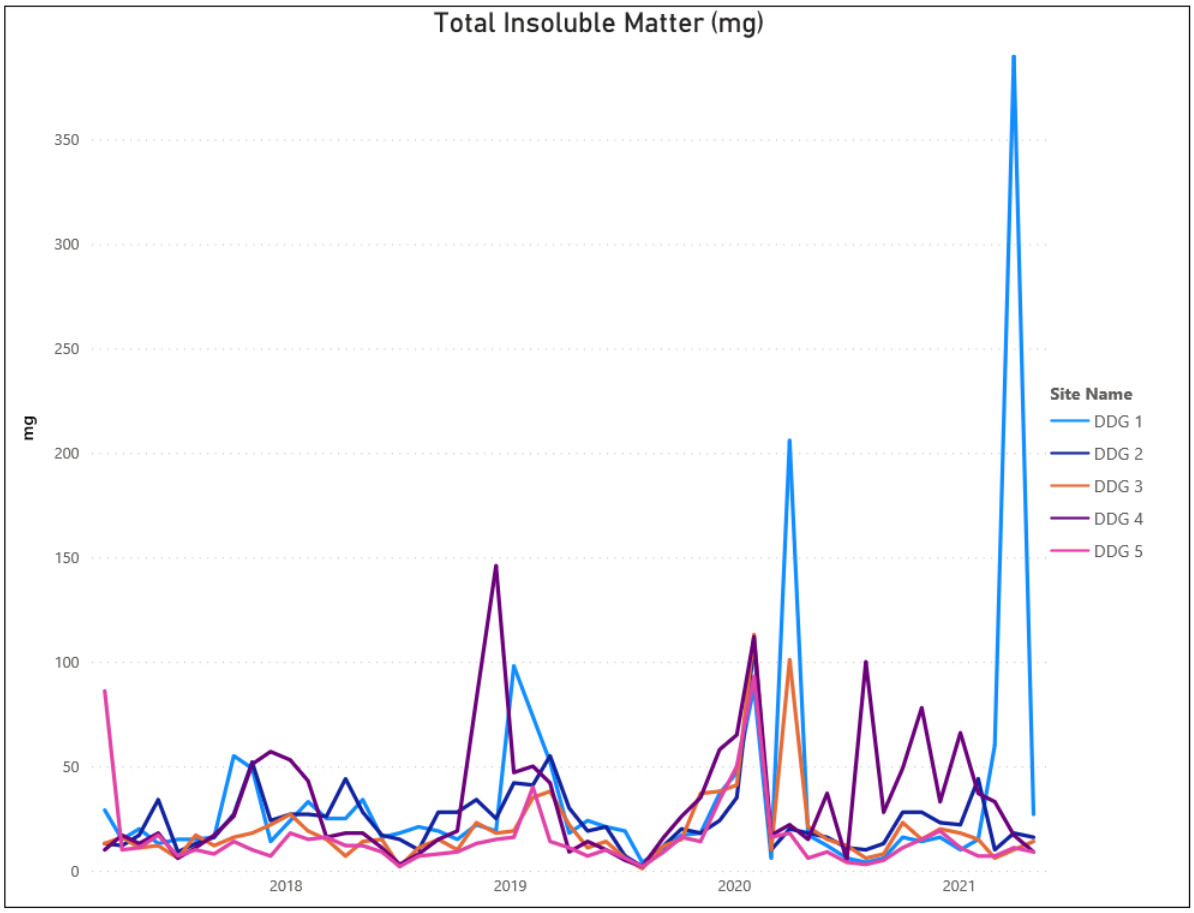

Total Phenolics
mg/L
1.0
0.5
0.0
0.5
1.0
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

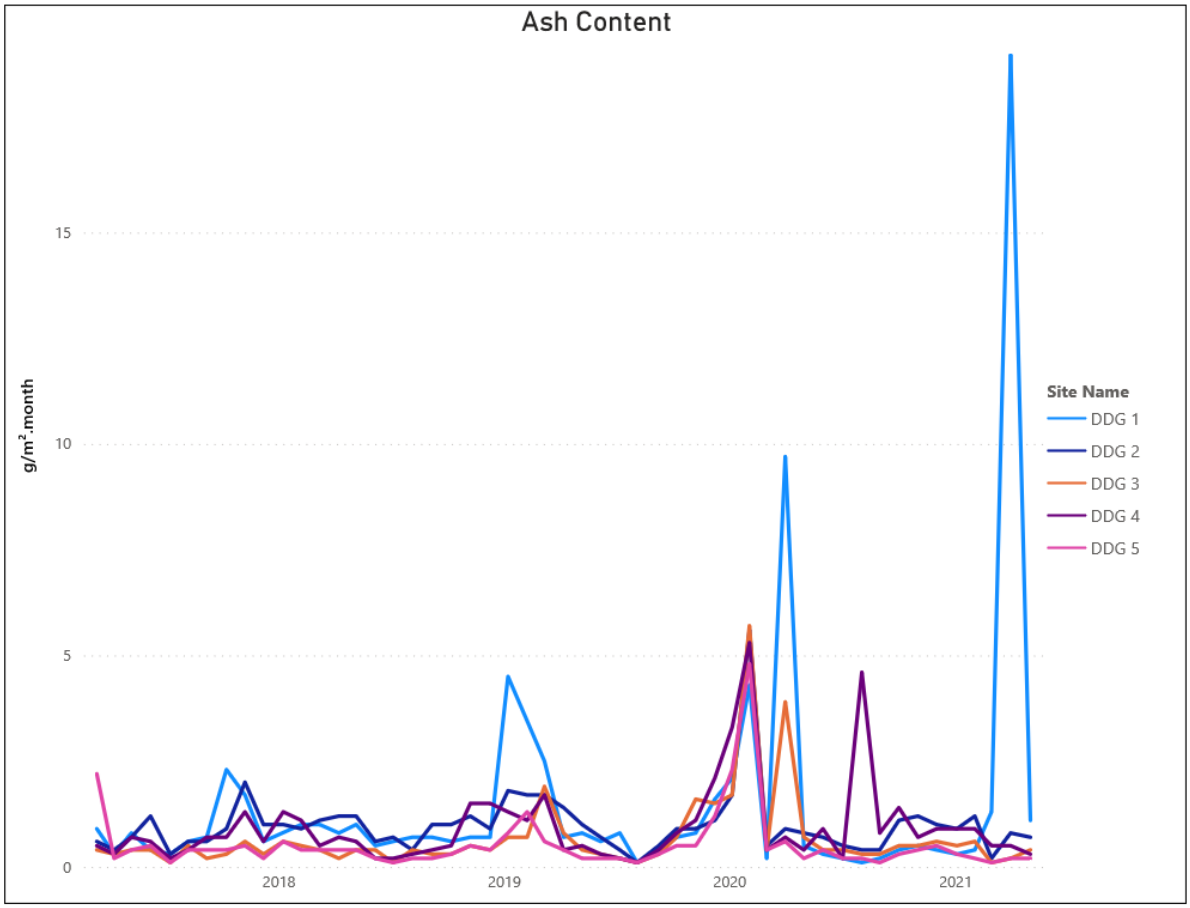

Xylene
1.0
0.5
0.0
0.5
1.0
µg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

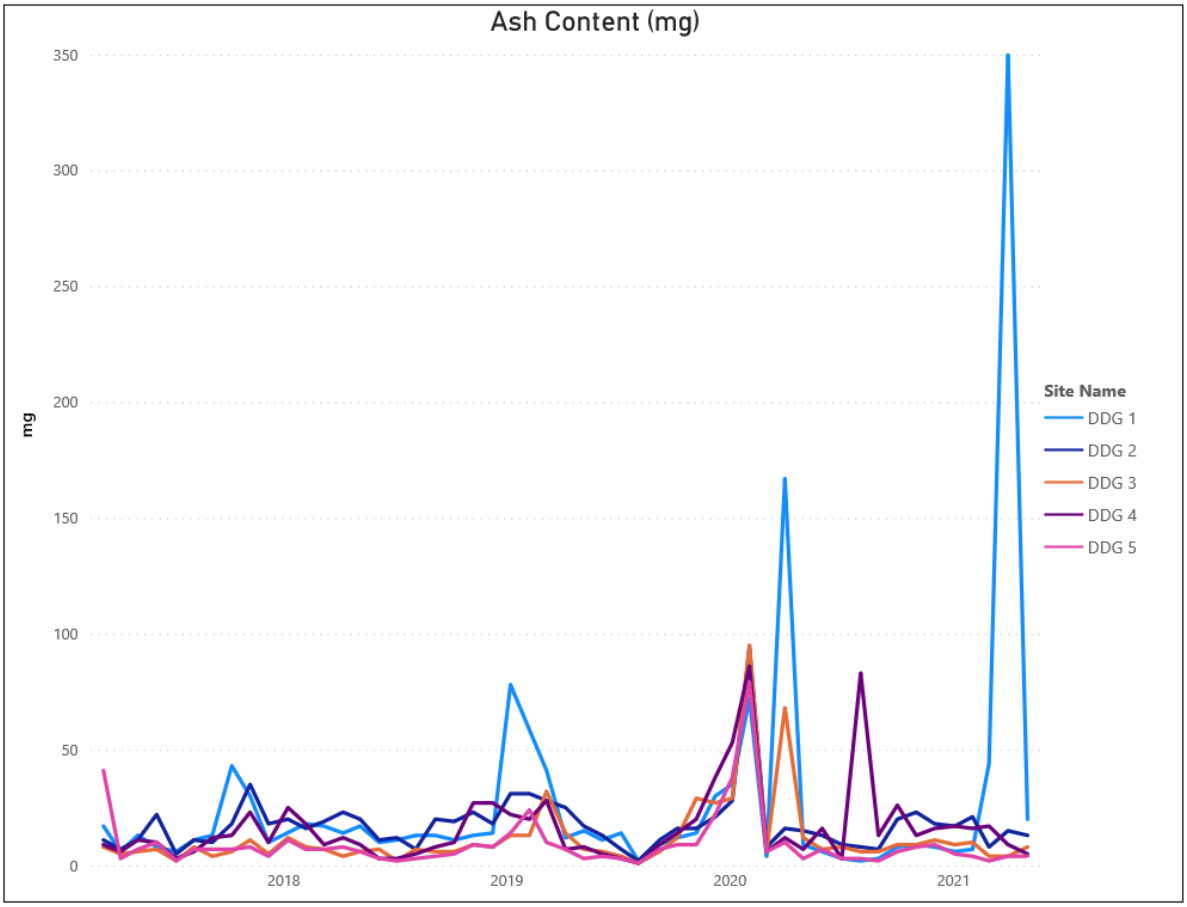

Zinc
1.5
1.0
0.5
0.0
mg/L
2018
2019
2020
2021
Site Name
(Point 5) - GABH02
(Point 9) - GMW102
(Point 10) - GMW103
(Point 11) - GMW104
(Point 12) - GMW105
(Point 14) - GMW108S
(Point 15) - GMW108D
(Point 16) - GMW109S
(Point 17) - GMW110
(Point 18) - GMW111
(Point 19) - GMW109D
(Point 20) - BH6

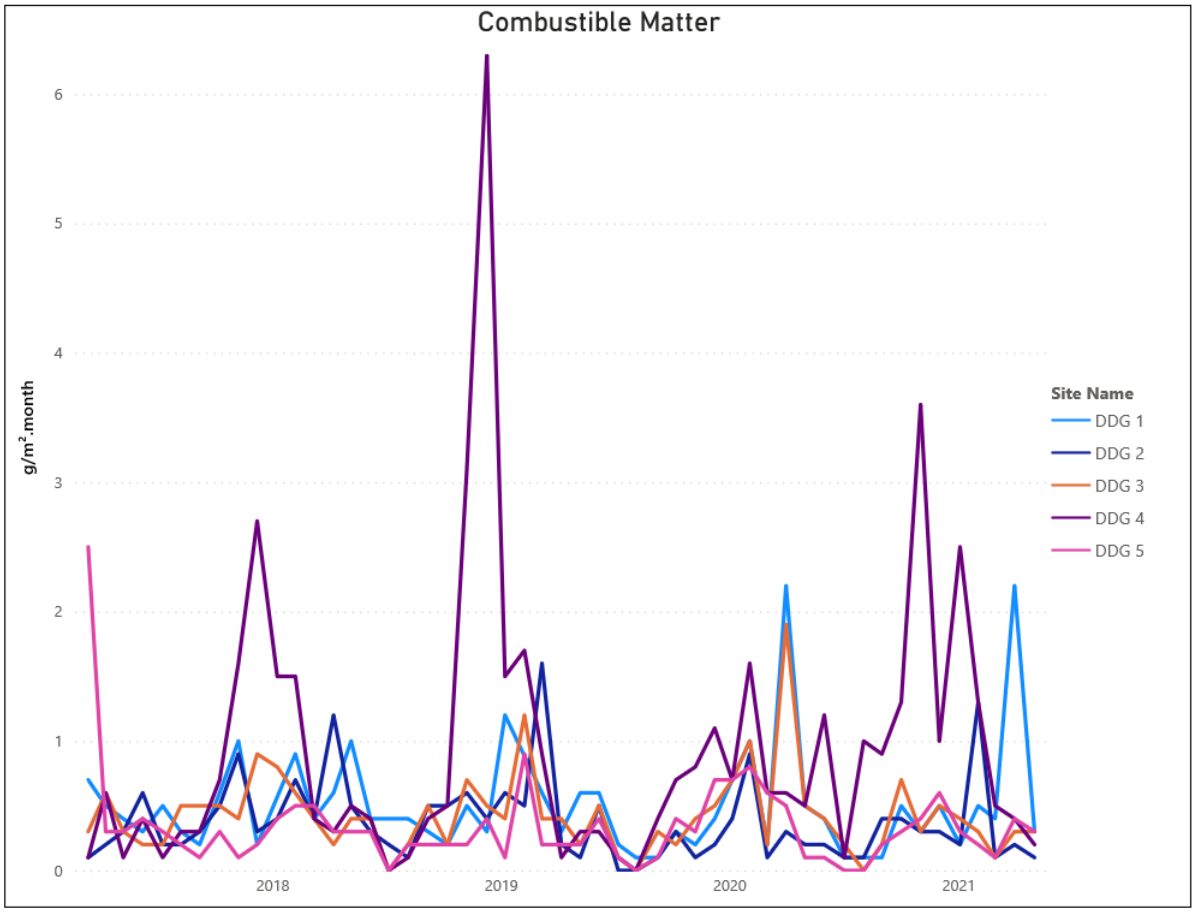
Deposited Dust 29/5/2016 to 28/5/2021

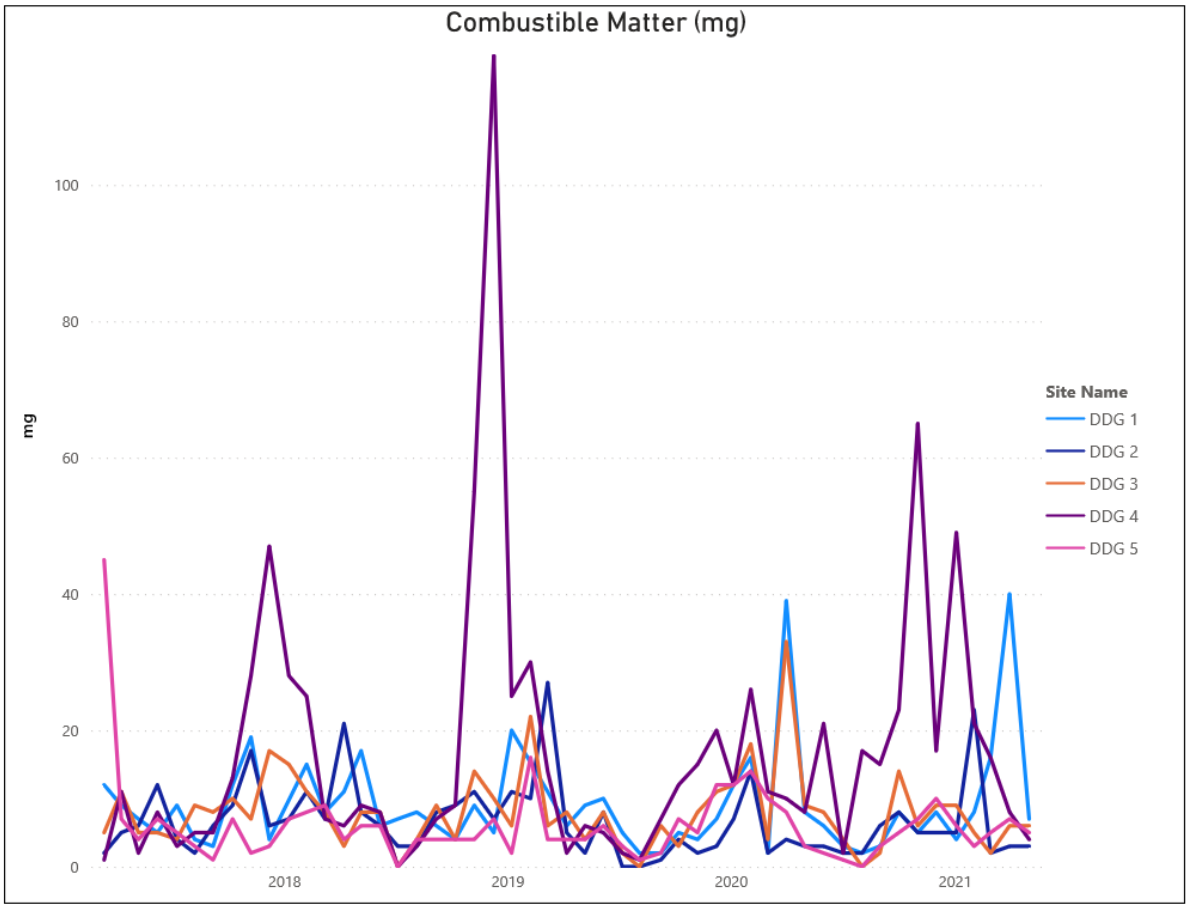


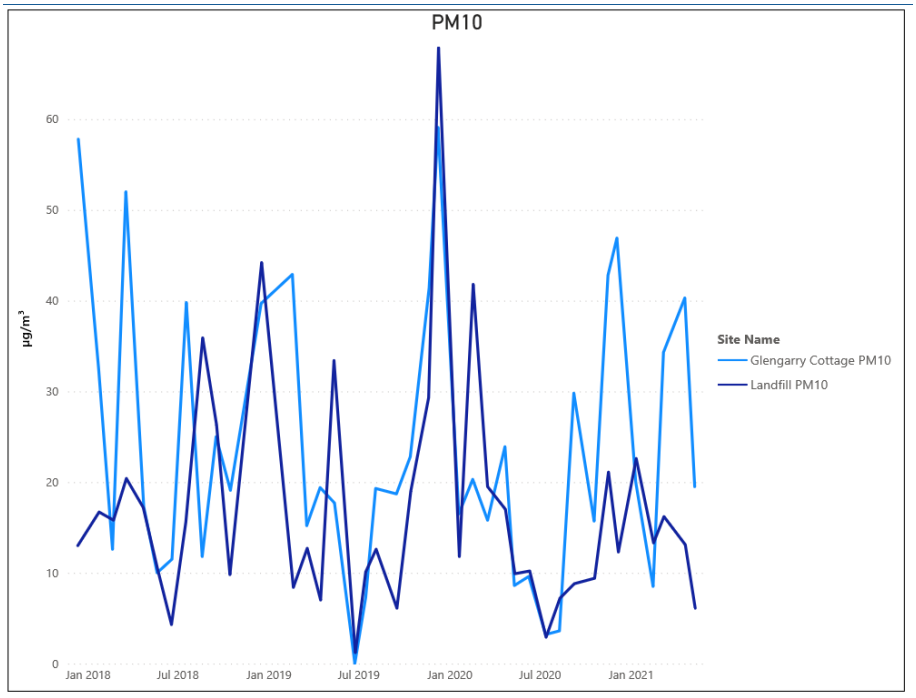

Total Insoluble Matter (mg)
mg
350
300
250
200
150
100
50
0
2018
2019
2020
2021
Site Name
DDG 1
DDG 2
DDG 3
DDG 4
DDG 5

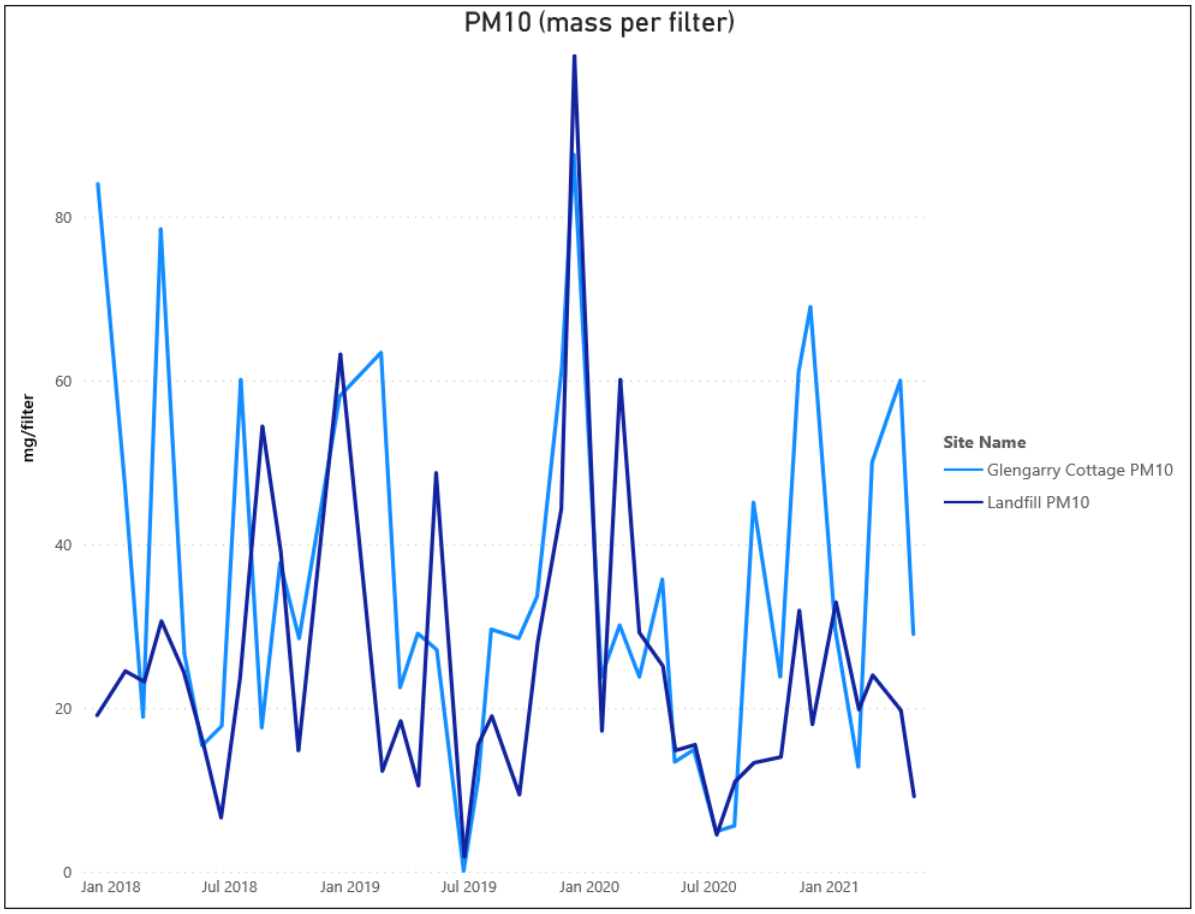

Ash Content
g/m².month
15
10
5
0
2018
2019
2020
2021
Site Name
DDG 1
DDG 2
DDG 3
DDG 4
DDG 5

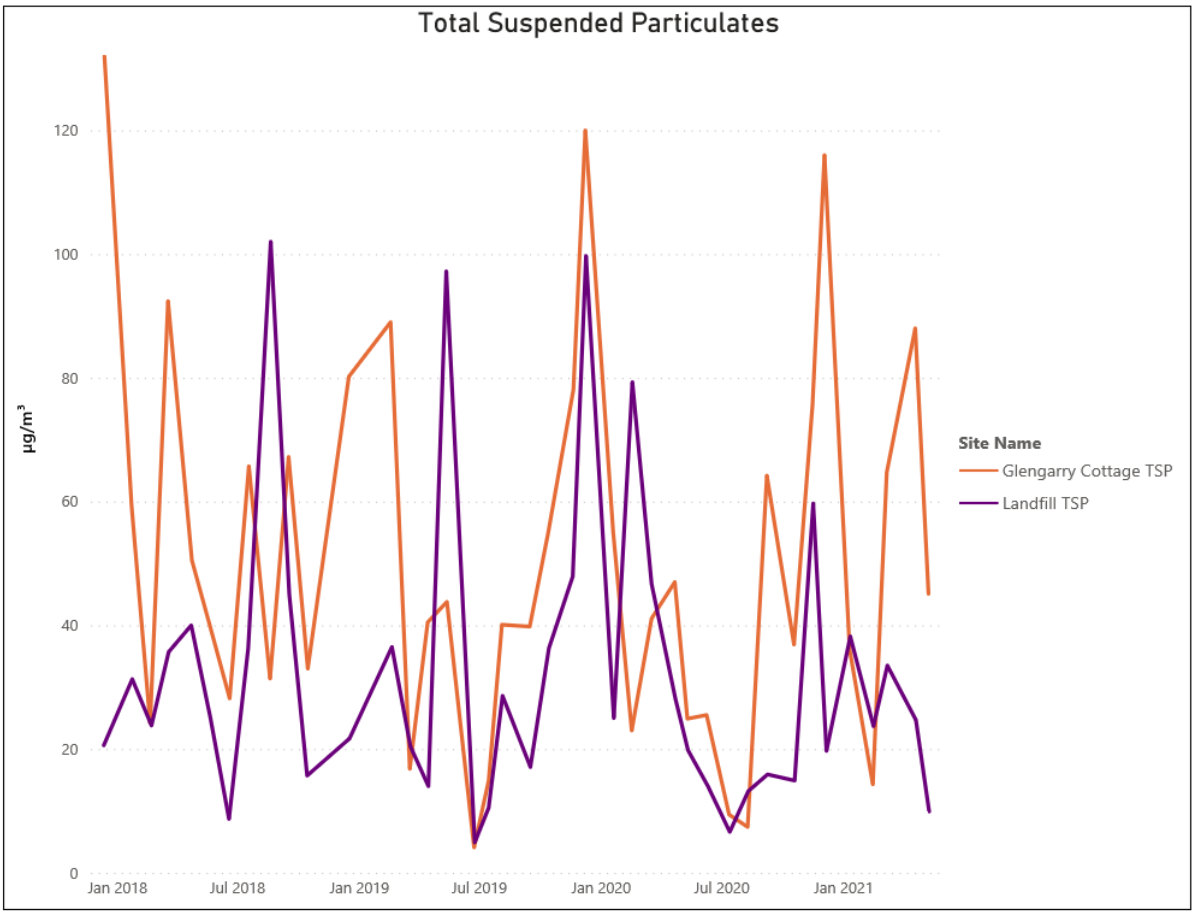

Ash Content (mg)
mg
350
300
250
200
150
100
50
0
2018
2019
2020
2021
Site Name
DDG 1
DDG 2
DDG 3
DDG 4
DDG 5


Combustible Matter
g/m².month
6
5
4
3
2
1
0
2018
2019
2020
2021
Site Name
DDG 1
DDG 2
DDG 3
DDG 4
DDG 5


Combustible Matter (mg)
mg
100
80
60
40
20
0
2018
2019
2020
2021
Site Name
DDG 1
DDG 2
DDG 3
DDG 4
DDG 5


PM10
µg/m³
60
50
40
30
20
10
0
Jan 2018
Jul 2018
Jan 2019
Jul 2019
Jan 2020
Jul 2020
Jan 2021
Site Name
Glengarry Cottage PM10
Landfill PM10


PM10 (mass per filter)
mg/filter
80
60
40
20
0
Jan 2018
Jul 2018
Jan 2019
Jul 2019
Jan 2020
Jul 2020
Jan 2021
Site Name
Glengarry Cottage PM10
Landfill PM10


Total Suspended Particulates
µg/m³
120
100
80
60
40
20
0
Jan 2018
Jul 2018
Jan 2019
Jul 2019
Jan 2020
Jul 2020
Jan 2021
Site Name
Glengarry Cottage TSP
Landfill TSP