



M12 Motorway Surface water monitoring

Report 10 – October 2023 to March 2024

Transport for NSW

23 July 2024

→ The Power of Commitment



GHD Pty Ltd ABN 39 008 488 373

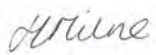
133 Castlereagh Street, Level 15

Sydney, New South Wales 2000, Australia

T +61 2 9239 7100 | **F** +61 2 9239 7199 | **E** sydmail@ghd.com | **ghd.com**

Printed date	23/07/2024 2:57:00 PM
Last saved date	23 July 2024 2:57 PM
File name	C:\Users\aduval\Downloads\12554717_REP_M12 Motorway_Surface water Monitoring Report 10.docx
Author	Andrew Duval
Project manager	Henry Luo
Client name	Transport for NSW
Project name	M12 Motorway water quality and level monitoring services (contract number: 20.0000303606.0590)
Document title	M12 Motorway Surface water monitoring Report 10 – October 2023 to March 2024
Document number	M12CDD-GHDA-ALL-EV-RPT-000034
Revision version	Rev 0
Project number	12554717

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4	A	A. Duval	N. Rosen H. Milne	On-file	H. Milne	On-file	17/05/2024
S4	0	N. Rosen	H. Milne		H. Milne		23/07/2024

© GHD 2024

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

Executive Summary

Background

The M12 Motorway (the project) is in the process of being constructed between the M7 Motorway at Cecil Hills, and The Northern Road at Luddenham, covering a distance of approximately 16 kilometres (km). The motorway will provide direct access between the Western Sydney International Airport (WSIA) at Badgerys Creek and Sydney's motorway network.

The Instrument of Approval granted by NSW Government Department of Planning, Industry and Environment in April 2021 stipulates conditions of approval for the M12 Motorway SSI 9364. Condition C17 of the approval requires the construction monitoring program for surface water quality and groundwater quality and levels (as approved by the Planning Secretary) to be implemented for the duration of construction.

Condition D9 of the approval requires the operational monitoring program for surface water quality and groundwater quality and levels to be implemented for the duration specified in the program.

- The Amendment Report to the Submissions Report states in Revised Environmental Management Measure (REMM) SWH06 that surface water monitoring will be carried out for a minimum of 12 months following the completion of construction.
- GW04 states that groundwater quality monitoring will be carried out for a minimum of six months following construction.

To meet these conditions of approval GHD Pty Ltd (GHD) was engaged by Transport for New South Wales (TfNSW) to undertake the surface water monitoring program for the M12 Motorway construction and operation project. This report details monitoring results from the monitoring period (October 2023 to March 2024), incorporating continual construction period data for the east, west and central portions. Baseline data from previous events prior to April 2021 have been removed from the data assessment undertaken in this report (see Section 1.1 for further details).

The project has been divided into three packages and is being carried out by three separate construction contractors. The Central and Western M12 Motorway construction contractors took possession of their respective sites' in August 2022, which triggered the transition into the construction phase of the surface water monitoring program for the Central and Western portions of the site. The Eastern portion construction contractor took possession of the site in July 2023 which triggered the transition into the construction phase of the surface water monitoring program for the site.

Surrounding the M12 project area there are other major infrastructure projects located upstream that may be impacting on the surface waters, this may include the Western Sydney International Airport that may be impacting on Badgerys Creek and Cosgroves Creek, and the Sydney Water Upper South Creek Water Recycling Centre construction works and the Sydney Water Treatment Plant overflow discharge into South Creek.

Water quality monitoring scope

TfNSW require a surface water quality monitoring program for the described construction works to characterise the post baseline surface water conditions in the vicinity of the project during construction and to assess any impacts the construction phase of the project has had / having on surface water quality. Baseline data and relevant public health and environment water quality criteria will be compared against the ongoing surface water quality. The scope of work undertaken to support the preparation of this report includes:

- Collection of monthly field observations and samples from up to thirteen surface water locations from six creeks that intersect, or will be affected by, the proposed project alignment over six months.
- Completion of one wet weather sampling event during the six-month reporting period.
- Laboratory analysis of surface water samples for contaminants of potential concern.
- Preparation of a surface water monitoring report every six months.

Summary of monitoring data

GHD have assessed the surface water quality for the baseline and construction monitoring periods since April 2021. The baseline period includes results from April 2021 to the start of the construction period. The construction period for the Central and Western portions started in August 2022 and in July 2023 for the Eastern portion. Surface water analytical results for the current monitoring period (October 2023 to March 2024) indicated:

- Exceedances of the baseline 80th percentile concentrations in the construction period for electrical conductivity, total suspended solids, dissolved oxygen, chlorophyll-a and manganese were reflected in both upstream and downstream locations. Slight exceedances of calculated percentiles for BADMS may not be indicative of a trend and may instead be attributed to the limited size of the data set for the baseline monitoring period compared to the construction monitoring period at the time of reporting.
- Most samples reported total suspended solid concentrations above ANZECC & ARMCANZ (2000) ecological criteria during monitoring events, with BADMS reporting the highest concentrations.
- All sampling locations reported multiple nutrient concentrations (ammonia, oxidised nitrogen, total nitrogen, soluble reactive phosphorus, total phosphorus, chlorophyll-a) above adopted ANZECC & ARMCANZ (2000) ecological criteria.
- Exceedances of ANZG (2018) 95% freshwater criterion above the laboratory LOR were reported for nitrate, chromium, copper, lead, manganese, zinc, and organophosphorus pesticide compounds dimethoate and malathion.
- Exceedances of the ADWG (NHMRC & NRMCC, 2011) criterion above the laboratory LOR were reported for
 - Lead at BADUS (February 2024)
 - Manganese at BADDS (October 2023), BADMS (October 2023), BADUS (February 2024), COSDS (December 2023), COSUS (October and December 2023), HINDS (October 2023), ROPDS (February and March 2024), and ROPUS (October 2023 to February 2024)
- Overall the calculated construction phase percentiles were within or are slightly exceeding the baseline percentiles for the western, central, and eastern portions of work, with noted increases above the baseline in some metals and nutrients at a of minority locations, no management is required within these portions, with the exception of total suspended solid (TSS) at Cosgroves Creek.
 - The downstream location (COSDS) was consistently above the upstream location.
 - This monitoring period has been characterised by short intense rainfall systems that has left the ground saturated. This has resulted in increased surface water flows throughout the catchment during smaller rain events.
 - During the monitoring period, TfNSW indicated there have been significant rainfall events prior to each sampling event that have been above the design criteria and therefore the sediment dams have overflowed into the water course. It was also noted by TfNSW that the creek is characterised by ephemeral flows and one un-named tributary has been redirected to drain directly to the project between COSUS and COSDS.

Recommendations

GHD recommends the following in regard to the surface water monitoring program:

- One round of thermotolerant coliform analysis during the next wet weather event, and one round of OCP and PCB analysis during the next six-month monitoring period to comply with the laboratory analytical schedule (refer Section 3.6).
- TfNSW to check with the M12 west contractor to ensure that all the sediment dams designs and systems are correct and in place and whether there is a need for additional sediment controls.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.4 and the assumptions and qualifications contained throughout the Report.

Contents

Background	iii
Water quality monitoring scope	iii
Summary of monitoring data	iv
Recommendations	iv
1. Introduction	1
1.1 Background	1
1.2 Objective	2
1.3 Scope of work	3
1.4 Limitations	3
2. Project description	4
2.1 Project identification	4
2.2 Historical land use summary	4
2.3 Environmental setting	5
3. Field program	6
3.1 Workplace health and safety	6
3.2 Sampling dates	6
3.3 Summary of surface water monitoring locations	6
3.4 Surface water sampling methodology	7
3.5 Wet weather monitoring	8
3.6 Laboratory analytical schedule	9
3.7 Quality assurance / Quality control (QA/QC)	9
4. Assessment methodology	10
4.1 Data quality objectives	10
4.2 Basis for assessment	10
4.2.1 Water quality objective	10
4.2.2 Relevant guidelines	10
4.2.3 Adopted assessment criteria	11
4.2.4 PFAS	11
5. Data assessment	13
5.1 Rainfall	13
5.2 Field measured surface water quality parameters	15
5.2.1 pH	15
5.2.2 Electrical conductivity	17
5.2.3 Dissolved oxygen	18
5.2.4 Turbidity	19
5.3 Laboratory analytical results	21
5.3.1 Total suspended solids (TSS)	21
5.3.2 Total dissolved solids (TDS)	23
5.3.3 Nutrients	23
5.3.4 Nitrogen	23
5.3.5 Soluble reactive phosphorus (SRP)	27
5.3.6 Total phosphorus	29

5.3.7	Chlorophyll-a	29
5.3.8	N:P Ratios	31
5.3.9	Metals	32
5.3.10	Hardness	42
5.3.11	Thermotolerant coliforms and E. coli	43
5.3.12	Benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN)	43
5.3.13	Polycyclic aromatic hydrocarbons (PAHs) and phenols	43
5.3.14	Organochlorine pesticides (OCPs) and Organophosphorus pesticides (OPPs)	43
5.3.15	Oil and Grease	43
5.3.16	Volatile organic compounds (VOCs) and Polychlorinated biphenyls (PCBs)	44
5.3.17	PFAS	44
5.4	Wet weather event monitoring	44
6.	Conclusions and recommendations	45
6.1	Conclusions	45
6.2	Recommendations	45
7.	References	47

Table index

Table 1	Project identification summary	4
Table 2	Environmental setting summary	5
Table 3	Surface water monitoring locations	6
Table 4	Summary of rainfall (mm) received at Badgerys Creek BOM station (ID 067108)	14
Table 5	Summary statistics for pH monitoring	16
Table 6	Summary statistics for EC monitoring (in $\mu\text{S}/\text{cm}$)	17
Table 7	Summary statistics for DO monitoring (in % Saturation)	19
Table 8	Summary statistics for total suspended solids (in mg/L)	22
Table 9	Summary statistics for ammonia (in mg/L)	24
Table 10	Summary statistics for total oxidised nitrogen (in mg/L)	25
Table 11	Summary statistics for total nitrogen (in mg/L)	26
Table 12	Summary statistics for soluble reactive phosphorus (in mg/L)	28
Table 13	Summary statistics for total phosphorus (in mg/L)	29
Table 14	Summary statistics for chlorophyll-a (in mg/L)	30
Table 15	N:P Ratios characterising the monitored locations (mg/L)	32
Table 16	Summary statistics for arsenic (in mg/L)	33
Table 17	Summary statistics for cadmium (in mg/L)	34
Table 18	Summary statistics for chromium (in mg/L)	35
Table 19	Summary statistics for copper (in mg/L)	36
Table 20	Summary statistics for iron (in mg/L)	37
Table 21	Summary statistics for lead (in mg/L)	38
Table 22	Summary statistics for manganese (in mg/L)	39
Table 23	Summary statistics for mercury (in mg/L)	40
Table 24	Summary statistics for nickel (in mg/L)	41
Table 25	Summary statistics for zinc (in mg/L)	42

Appendices

Appendix A	Figures
Appendix B	Results Tables
Appendix C	Graphs of recorded field parameters
Appendix D	Box and whisker plots
Appendix E	Calibration certificates
Appendix F	Field sheets
Appendix G	Laboratory reports
Appendix H	Quality assurance / Quality control program and assessment

1. Introduction

GHD Pty Ltd (GHD) was engaged by Transport for New South Wales (TfNSW) to undertake the surface water monitoring program for the M12 Motorway construction and operation project.

This biannual report is the second to include the construction monitoring results for all portions of the sites, and tenth overall report for the program. Reports 1, 2, 3, 4, 5, 6, 7, 8, and 9 describe the 2019 through to September 2023 monitoring program, further detailing baseline as well as the start of construction monitoring program. This report (Report 10) provides details of the monitoring locations, sampling methodology, and results of the surface water samples collected during the baseline and construction monitoring program for the most recent monitoring period (October 2023 to March 2024).

This report details the sixth set of a six-month period of baseline and construction data collected from new sampling locations established in April 2021. This six-month monitoring period and six-monthly report sits under contract number 20.0000303606.0590.

1.1 Background

The M12 Motorway construction works (the project) in Western Sydney covers approximately 16 kilometres (km). The project is being constructed between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham. At the completion of the project, the M12 Motorway will provide direct access between the Western Sydney International Airport (WSIA) at Badgerys Creek and Sydney's motorway network.

The Instrument of Approval granted by NSW Government Department of Planning, Industry and Environment in April 2021 stipulates conditions of approval for the M12 Motorway SSI 9364. Condition C17 of the approval requires the construction monitoring program for surface water quality and groundwater quality and levels (as approved by the Planning Secretary) to be implemented for the duration of construction.

Condition D9 of the approval requires the operational monitoring program for surface water quality and groundwater quality and levels to be implemented for the duration specified in the program.

- The Amendment Report to the Submissions Report states in Revised Environmental Management Measure (REMM) SWH06 that surface water monitoring will be carried out for a minimum of 12 months following the completion of construction.
- GW04 states that groundwater quality monitoring will be carried out for a minimum of six months following construction.

To meet these conditions of approval GHD Pty Ltd (GHD) was engaged by TfNSW to undertake the surface water monitoring program for the M12 Motorway construction and operation project.

The project has been determined to be a controlled action under Section 75 of the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) (EPBC Act) (EPBC 2018/8286) for significant impact to threatened species and communities (Section 18 and Section 18A of the EPBC Act). This requires assessment and approval from the Commonwealth Government. As part of the project approval conditions, TfNSW are required to prepare and implement a surface water monitoring program for the project. GHD was commissioned to develop and undertake a surface water monitoring program during pre-construction (baseline), construction, and operational stages of the project.

A surface water quality and hydrology assessment report was prepared as part of the M12 Motorway Environmental Impact Statement (JAJV, 2019). The investigation concluded that the existing water quality within the relevant waterways was poor, with elevated concentrations of nutrients and heavy metals, and low concentrations of dissolved oxygen. As such, the existing water quality does not currently meet the water quality guidelines that have been adopted in this report (discussed in Section 4.2).

The purpose of this surface water monitoring program is to implement an environmental management measure to allow the observation of any changes in surface water quality that may be attributable to the project, assess the project's performance against the agreed water quality objectives (see Section 4.2), and inform appropriate management responses if required.

Between April 2019 and March 2021, GHD monitored twelve surface water locations in the pre-construction phase for the collection of baseline data. As per discussions with TfNSW in March 2021, surface water locations COSUS, COSDS, BADDS, SOUUS, SOUDS, KEMDS, ROPDS and ROPUS were relocated closer to the proposed M12 alignment to allow more representative sampling. Sampling of relocated sites and unmoved locations (BADUS, KEMUS, HINUS, HINDS) commenced in April 2021. An additional location (BADMS) was added to the current sampling program in October 2021 which is closer to the M12 project alignment to allow more representative sampling of Badgery's Creek. The sampling location names of ROPUS and ROPDS were also switched in October 2021 to ensure that upstream and downstream samples from Ropes Creek were accurately represented¹. As per discussions with TfNSW, in August 2023 sampling locations SOUDS, BADDS, BADMS, and COSDS were moved slightly downstream, and COSUS was moved slightly upstream, to provide more representative sampling as the construction phase continued. Figure 1, Appendix A identifies the updated sampling locations.

The M12 Central Construction Soil and Water Quality Monitoring Program (Rev E), provided in Appendix B of the Construction Environmental Management Plan (CEMP) Appendix B4 Construction Soil and Water Management Plan (Rev E) (Seymour Whyte, 2023) also included thermotolerant coliforms as a surface water quality analyte which was not required by the EIS and the contract. Based on discussions with TfNSW, thermotolerant coliforms were added into the monitoring program in selected monitoring events.

The baseline and construction data has been documented in nine previous reports including:

- Report 1 (GHD, 2019), presenting data from April 2019 to September 2019
- Report 2 (GHD, 2020), presenting data from October 2019 to March 2020
- Report 3 (GHD, 2021b), presenting data from April 2020 to September 2020
- Report 4 (GHD, 2021a), presenting data from October 2020 to March 2021
- Report 5 (GHD, 2022a), presenting data from April 2021 to September 2021.
- Report 6 (GHD, 2022b), presenting data from October 2021 to March 2022
- Report 7 (GHD, 2022c), presenting data from April 2022 to September 2022
- Report 8 (GHD, 2023a), presenting data from October 2022 to March 2023
- Report 9 (GHD, 2024), presenting data from April 2023 to September 2023.

The most recent surface water monitoring period (October 2023 to April 2024) includes construction phase data for the Western, Central, and Eastern portions of the site. The Central and Western M12 Motorway construction contractors took possession of the site in August 2022, which triggered the transition into the construction phase of the surface water monitoring program for the Central and Western portions of the site. The Eastern portion construction contractors took possession in July 2023 which triggered the transition into the construction phase of the surface water monitoring program for the Eastern portion. Figure 1, Appendix A identifies the portions of the site.

1.2 Objective

The initial objective of the surface water monitoring program is to determine pre-construction (baseline) surface water conditions within the M12 Motorway project boundary prior to the commencement of the construction. As the monitoring program has now transitioned into the construction phase of the M12 Motorway, the objective of the program has evolved to evaluate the construction phase surface water conditions to the baseline to ascertain any impacts/changes and whether management measures are required.

Surface water monitoring will continue throughout the duration of construction and into operation of the M12 Motorway. The period of monitoring in the operational phase will be for a period of at least 12 months, as approved by TfNSW. Baseline data will be used to assess whether the construction and operational phases of the project are meeting the water quality objectives of the project, as described in Section 4.2.

The baseline data supported the development of a surface water monitoring program and management plans for construction and operation of the project. The baseline data was also used to inform the design of construction and operational water quality control devices, such as sedimentation basins and vegetation swales.

¹ Please note all previous reported data in Report 5 (April 2021 to September 2021) will have the old Ropes Creek upstream and downstream sample location names. The analytical data and field parameters have been amended since to show the correct sample location names.

1.3 Scope of work

For the duration of the pre-construction (baseline), construction, and operational phases, GHD is to undertake a monthly surface water monitoring event at each of the monitoring locations within the project.

The pre-construction monitoring was to occur for a minimum of 12 months, followed by up to four years of construction monitoring on a stage-by-stage basis. This will be followed by at least 12 months of post-construction (operational) monitoring commencing at the opening of each stage.

The scope for the surface water monitoring events undertaken within the project area includes:

- Collection of monthly field observations and samples from up to thirteen surface water locations from six creeks that intersect, or will be affected by, the project alignment.
- Completion of up to three wet weather sampling events during the six-month reporting period.
- Laboratory analysis of surface water samples for contaminants of potential concern, as detailed in Section 3.6.
- Preparation of a surface water monitoring report every six months.

This report provides the results of the baseline monitoring period (April 2021 to July 2022 (Central and West portion) (April 2023 to June 2023 (East portion)), and construction reporting for the central and western packages (August 2022 to March 2024), and the eastern package (July 2023 to March 2024).

1.4 Limitations

This report has been prepared by GHD for Transport for New South Wales and may only be used and relied on by Transport for New South Wales for the purpose agreed between GHD and Transport for New South Wales as set out in Section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Transport for New South Wales arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

2. Project description

2.1 Project identification

A summary of available information pertaining to the project is presented in Table 1. A location plan of the project is provided in Figure 1, Appendix A.

Table 1 *Project identification summary*

Item	Description
Description of the project	The M12 Motorway project is approximately 16 km in length. This will extend between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham.
Local Government Area	Liverpool City Council - eastern portion up to Mamre Road Penrith City Council - westwards from Mamre Road
Traditional Custodians	Darug and Dharawal people
Local Land Use Zoning	Liverpool LEP 2008: – RU4 – primary production small lots – SEPP Western Sydney Parklands 2009 Fairfield LEP 2013: – RU4 – primary production small lots – RU1 – primary production Penrith LEP 2010: – RU4 – primary production small lots – C2 – environmental conservation – RU2 – rural landscape – SP2 – classified road State Environmental Planning Policy (Western Sydney Aerotropolis) 2020: – ENZ – environment and recreation – ENT – enterprise – SP2 – infrastructure
Land Use	The project is currently used for agricultural, industrial, residential, and rural purposes. Potentially contaminating activities within and/or directly adjacent to the project include the SUEZ Kemps Resource Recovery Park, Brandown Quarry and general agricultural land use.
Surrounding Land Use	A range of land uses including industrial, commercial, residential, agriculture and landfill surround the project. Potentially contaminating activities outside of the project include the Hi-Quality Group Quarry and Sydney Recycling Park (located adjacent to the Hi-Quality Group Quarry). An Ampol service station is located approximately 300 m north-east of the project at 1163 Mamre Road, Kemps Creek. Regulation under the Contaminated Land Management (CLM) Act is not required at the site. Major infrastructure projects associated surround the alignment including the Western Sydney International Airport, Sydney Metro Western Sydney Airport, the Sydney Water Upper South Creek Recycling Centre Water Recycling Centre, and upgrades to Elizabeth Drive.

2.2 Historical land use summary

An historical aerial photograph review of the project and surrounding area was completed by JAJV (2019). The review indicated that the project and surrounding area has remained largely rural/agricultural and residential since the 1940s. Increased rural residential density in suburban pockets, and a number of commercial/industrial premises in Kemps Creek have been observed since the 1950s and 1960s until present-day.

2.3 Environmental setting

JAJV (2019) undertook a desktop review of the existing environment for the entire M12 Motorway construction footprint. An updated summary of this information is presented in Table 2.

Table 2 Environmental setting summary

Item	Description
Climate	The long-term average monthly rainfall for the project ranges between 33.0 millimetres (mm) in July to 107.9 mm in February, with an average annual rainfall of 716.9 mm (Badgerys Creek AWS Station ID 067108) (BOM, 2024). Long-term maximum mean temperatures range between 17.6°C in July to 30.1°C in January, and minimum mean temperatures between 4.2°C in July to 17.4°C in January (Badgerys Creek AWS Station ID 067108) (BOM, 2024).
Topography and drainage	The ground surface along the project ranges between reduced level (RL) 70 metres (m) Australian Height Datum (AHD) to RL 115 metres AHD. The landscape comprises relatively flat terrain with low rising crests. Flat floodplains are present at South Creek and Kemps Creek. Low rolling hills are situated between the floodplain areas, typically comprising gentle rises and undulations with broad rounded crests (Geological Survey of NSW , 1991; NSW EPA, 2020). Based on the topography within the project, surface runoffs are expected to drain to nearby dams and creeks (i.e. Kemps Creek and South Creek), as well as infiltrating into subsurface soils across unsealed lands in the surrounding area.
Soil and landscapes	The project is primarily underlain by the Blacktown residual soil unit (Geological Survey of NSW , 1991). The South Creek and Kemps Creek areas are underlain by the South Creek fluvial soil landscape. The Blacktown residual soil landscape typically comprises of clayey soils over gently undulating crests. The soil unit can have moderately reactive, highly plastic subsoils and poor drainage. The South Creek fluvial soil comprises floodplains and drainage depressions of very deep layered clays and sands. These fluvial soils are prone to erosion and frequent flooding.
Acid sulfate soils (ASS)	The project is not covered by areas mapped in the Acid Sulfate Soil Risk Maps prepared by Department of Land and Water Conservation.
Geology	Majority of the project is underlain by two geological units, Bringelly Shale (Rwb) and Quaternary aged alluvial deposits (Qal) (Geological Survey of NSW , 1991). – Bringelly Shale is the predominant geological unit for the project. Bringelly Shale is described as comprising shale, carbonaceous claystone, laminite and rare coal. Bringelly Shale is the upper portion of the Wianamatta Group and the upper sedimentary sequence in the Sydney Basin with a thickness of typically 150 m. – Quaternary aged alluvial deposits (Qal) are described as comprising quartz and lithic fluvial sand, silt and clay. These are present near South Creek and Kemps Creek.
Hydrology	The project crosses South Creek in the western portion and Kemps Creek in the eastern portion. Kemps Creek is a tributary of South Creek, joining approximately three kilometres north of Elizabeth Drive, which then flows north to discharge into the Hawkesbury River.
Hydrogeology	The underlying aquifers are dominated by shale, siltstone and other sedimentary basins. They have a low potential for groundwater movement and comprise salinity levels greater than 16,000 micro Siemens per centimetre (µs/cm), being unsuitable for stock use (DPI, 2014). According to the groundwater data collected during the groundwater baseline period (April 2019 to July 2022), groundwater levels within the project range between 9.114 m below top of casing (m bTOC) and 19.85 m bTOC.

3. Field program

3.1 Workplace health and safety

GHD developed a site-specific health safety and environment (HSE) plan for the works as part of the overall commitment to provide a healthy and safe working environment for staff and contractors. All work was conducted with appropriate personal protection equipment (PPE).

The HSE included a site-specific job safety and environmental analysis, detailing the step-by-step procedures of all aspects of the works and associated hazards and control measures to be implemented. The HSE plan was read by all GHD personnel with feedback and discussion provided prior to the works commencing. A site-specific pre-start safety assessment was conducted each morning before commencing works.

3.2 Sampling dates

Surface water sampling for the most recent monitoring period (October 2023 to March 2024) was conducted at all surface water locations on the following dates, with the exception of ROPUS, which wasn't able to be sampled during Event 58 due to access constraints:

- Event 53 – 4 and 6 October 2023
- Event 54 – 8-9 November 2023
- Event 55 – 5-6 December 2023
- Event 56 – 18-19 January 2024
- Event 57 – 13-14 February 2024
- Event 58 – 14-15 March 2024

The sampling statuses of the monitoring locations throughout the monitoring program are presented in Table B1, Appendix B

3.3 Summary of surface water monitoring locations

The surface water locations identified are detailed below in Table 3 and in Figure 1, Appendix A. Surface water locations COSUS, was moved slightly upstream, and locations COSDS, SOUDS, BADMS, and BADDs were moved slightly downstream from August 2023 as per agreement with TfNSW to provide more representative sampling as the construction phase continued. Original and current locations are identified in Figure 1, Appendix A. Table 3 below identifies the current monitoring locations. Table B2, Appendix B identifies deviations and observations in monitoring locations including accessibility restrictions during each of the events for the recent monitoring period.

Table 3 Surface water monitoring locations

Location	Approximate latitude	Approximate longitude	Description	Comments
COSUS	-33.859602	150.729091	Cosgroves Creek upstream of motorway alignment.	Located east of Luddenham Road. Access through CPBGGJV compound off Luddenham Road.
COSDS	-33.857257	150.732789	Cosgroves Creek downstream of motorway alignment.	Located east of Luddenham Road. Access through CPBGGJV compound off Luddenham Road.
BADUS	-33.873812	150.754808	Badgerys Creek upstream of motorway alignment.	Located under Elizabeth Drive road bridge, public access on north side anytime.
BADMS	-33.859556	150.754736	Badgerys Creek upstream of motorway alignment. Closer than BADUS to the	Added into monitoring program from October 2021.

Location	Approximate latitude	Approximate longitude	Description	Comments
			alignment and is considered downstream of the nearby SUEZ waste facility.	Located approximately halfway between Luddenham Rd and Mamre Rd. Access through CPBGGJV compound off Luddenham Road.
BADDS	-33.856868	150.757777	Badgerys Creek downstream of motorway alignment.	Located approximately halfway between Luddenham Rd and Mamre Rd. Access through CPBGGJV compound off Luddenham Road.
SOUUS	-33.862360	150.770795	South Creek upstream of motorway alignment.	Located approximately halfway between Luddenham Rd and Mamre Rd. Access through Seymour Whyte compound off Clifton Ave.
SOUDS	-33.860191	150.768887	South Creek downstream of motorway alignment.	Located approximately halfway between Luddenham Rd and Mamre Rd. Access through Seymour Whyte compound off Clifton Ave.
KEMUS	-33.880991	150.798390	Kemps Creek upstream of motorway alignment.	Located under Elizabeth Drive road bridge, public access via gravel road on southeast side anytime
KEMDS	-33.874734	150.799028	Kemps Creek downstream of motorway alignment.	Located west of Mamre Road. Access through Seymour Whyte worksite off Clifton Ave.
ROPUS	-33.865962	150.849636	Ropes Creek downstream of motorway alignment. It was labelled as ROPDS between April 2021 and September 2021.	Pond in Western Sydney Parklands reserve, access negotiated.
ROPDS	-33.865970	150.846230	Ropes Creek upstream of motorway alignment. It was labelled as ROPUS between April 2021 and September 2021.	Located next to roundabout on Wallgrove Road, public access via gravel road on north side anytime.
HINUS	-33.885917	150.822292	Hinchinbrook Creek upstream of motorway alignment.	Pond in Western Sydney Parklands reserve, access through Wylde MTB and BMX park.
HINDS	-33.894390	150.842382	Hinchinbrook Creek downstream of motorway alignment.	Access via Kensington Close, sampling from dam adjacent to corner of Vidal Avenue and Antrim Drive.

3.4 Surface water sampling methodology

All fieldwork was conducted in general accordance with:

- Australian Standard 5667:1998 Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples (AS/NZS 5667.1:1998).
- Australian Standard 5667:1998 Water Quality – Sampling, Part 6: Guidance on sampling of rivers and streams (AS/NZS 5667.6:1998).
- GHD's standard operating procedures (SOP) for surface water quality sampling, which complies with procedures detailed in the ANZECC & ARMCANZ (2000) guidelines and the NSW EPA's Approved Methods for the Sampling and Interpretation of Results of Water Pollutants (NSW EPA, 2004).

Surface water monitoring locations were sampled routinely on a monthly basis, and in previous monitoring periods have been supplemented by event sampling during wet weather (Section 3.5). There were no wet weather event monitoring rounds in the current monitoring period.

At each site, field water quality parameters were recorded and grab samples collected for laboratory analysis. Where available sample volume permitted, the following physio-chemical measurements were collected using a calibrated multi-parameter water quality meter:

- Temperature (°C);
- pH (pH units);
- Electrical conductivity (EC) (µS/cm);
- Reduction-oxidation potential (ORP);
- Dissolved oxygen (DO) (mg/L and % saturation); and
- Turbidity (NTU).

The water quality meter was calibrated prior to each monitoring event by the equipment rental company (i.e. Air-Met). Calibration certificates for each sampling event in the current monitoring period are provided in Appendix E. In addition, relevant descriptions of visual and olfactory characteristics, such as colour, turbidity, odour, and sheen were recorded and provided on field sheets in Appendix F.

Grab samples were collected near the monitoring point to ensure representative sampling. At each location, a laboratory-supplied, unpreserved bottle was filled and used to distribute the collected water into sample bottles for laboratory analysis. Samples were collected from all sampling locations during the current monitoring period, with the exception of ROPUS in the March 2024 monitoring event due to access constraints.

Surface water samples were transported on ice and submitted to ALS Environmental, a national association of testing authorities (NATA) Australia accredited laboratory, under chain of custody (CoC) procedures (presented in Appendix G). A maximum of 13 primary samples were collected during each sampling event. The NEPM (NEPC, 2013) states that split samples should be collected at a rate of one per 20 primary samples. As such, one intra-laboratory and one inter-laboratory duplicate samples were collected per event as part of the current surface water monitoring program.

3.5 Wet weather monitoring

The program is to include the monitoring of wet weather events during both the pre-construction and construction phases, in accordance with the Guideline for Construction Water Quality Monitoring (RTA, 2004). Rainfall can transport greater pollutant loads compared to dry weather base flows. Data from wet weather samples will demonstrate the variability in pollutant concentrations at each of the sampling locations over time.

The wet weather criterion as per an agreement with TfNSW and aligning with the Environmental Impact Statement (EIS) is defined as 22 mm over a 24-hour period, this criterion will be used to identify wet weather event triggers.

Rainfall data to determine the trigger of a wet weather event is obtained from the Badgerys Creek Bureau of Meteorology (BOM) Station (ID 067108) near the project. The trigger value was selected to ensure that rainfall was sufficient for substantial flows in waterways and ephemeral creeks. The wet weather event sampling data are likely to provide a greater level of detail for assessment of the influence of urban development (including road construction) on adjacent waterways, and of the effectiveness of construction impact mitigation measures.

The analytical suite for wet weather samples is identical to the monthly sampling analytical suite. This allows a direct comparison with samples collected during dry weather.

There have been six wet weather monitoring events to date:

- Four events in the baseline monitoring period for all portions (August 2021, November 2021, January 2022, July 2022)
- One event in November 2022 within the baseline monitoring period for the East portion and the construction monitoring period for the West and Central portions.
- One event in August 2023, within the construction monitoring period for all portions.
- There were no wet weather monitoring events within the current monitoring period (October 2023 to April 2024). Most of the wet weather triggers occurred over a weekend when the site was closed and sampling could not be undertaken.

3.6 Laboratory analytical schedule

All primary samples were analysed by ALS Environmental and all secondary samples were analysed by Eurofins, both NATA accredited laboratories. The analytical schedule for surface water is presented in Table B3 through to Table B7 in Appendix B, and summarised below.

Surface water samples were submitted for laboratory analysis including:

- Total suspended solids (TSS)
- Total dissolved solids (TDS)
- Hardness (at ROPUS in January 2024 only)
- Chlorophyll- a
- Oil and grease
- Nutrients (including ammonia (NH₃), nitrite (NO₂), Nitrate (NO₃), total nitrogen (TN), total kjeldahl nitrogen (TKN), total oxidised nitrogen (NO_x), total phosphorus (TP) and soluble reactive phosphorus (SRP))
- Heavy metals (arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, and zinc)
- Benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN)
- Polycyclic aromatic hydrocarbons (PAH) (standard reporting level)
- Phenols
- Volatile organic compounds (VOCs)
- Organochlorine pesticides (OCPs) (January 2024 only)
- Organophosphorus pesticides (OPPs)
- Chlorinated and halogenated hydrocarbons
- Fungicides
- PCBs (January 2024 only)

The laboratory analytical schedule is consistent with the surface water monitoring indicator requirements as stated in the EIS (JAJV, 2019) and the Overarching Construction Environmental Management Plan (OCEMP) (TfNSW, 2021).

It is noted that analysis OCPs and PCBs were conducted only in January 2024 for the current monitoring period. These compounds are monitored once per monitoring period only due to consistent non-detections of these compounds in the baseline period.

Hardness analysis is not a requirement of the EIS or OCEMP, but was conducted at ROPUS in January 2024 to characterise high metals results obtained at this location within the July 2023 event of the previous monitoring period (April 2023 to September 2023).

The analysis requirements of certain additional compounds not monitored during this event are outlined below:

- Thermotolerant coliforms: one dry weather event and one wet weather event for each stage of works (baseline, construction, and post-construction).
- Per- and polyfluoroalkyl substances (PFAS): on an ad-hoc basis as per request from TfNSW.

3.7 Quality assurance / Quality control (QA/QC)

A review of the field and laboratory QA/QC performance from the current monitoring period (October 2023 to March 2024) is presented Appendix H. QA/QC assessments from previous monitoring rounds are provided in the previous monitoring reports. It was considered the analytical dataset collected during the baseline monitoring period (April 2021 to July 2022 (and to June 2023 for East portion)) can be relied on for interpretation and assessment of background surface water conditions in the vicinity of the project. QA/QC assessment from previous monitoring rounds during the construction monitoring period (August 2022 to March 2023), including the current monitoring period (October 2023 to March 2024, as presented in Appendix H) can be relied upon for comparison to the baseline data.

4. Assessment methodology

4.1 Data quality objectives

Data Quality Objectives (DQO) have been established for this Surface Water Report and are detailed in Appendix H. DQOs have been established to ensure the investigation is undertaken in a way that supports the collection and reporting of reliable data on which to base the investigation.

Data quality indicators (DQIs) have also been established to assess the usability of the data to allow decisions to be made with confidence. These are presented in Appendix H.

4.2 Basis for assessment

4.2.1 Water quality objective

As per the EIS, and as identified in the Secretary's Environmental Assessment Requirements (SEARs), the desired performance outcome for the project in relation to water quality is detailed below (JAJV, 2019).

The project is designed, constructed, and operated to protect the NSW Water Quality Objectives where they are currently being achieved, and contribute towards achievement of the Water Quality Objectives over time where they are currently not being achieved, including downstream of the project to the extent of the project impact including estuarine and marine water (if applicable).

The NSW Water Quality Objectives are the agreed environmental values and long-term goals for NSW's surface water (DECCW, 2006). Additionally, following an independent inquiry by the Healthy Rivers Commission (HRC), further environmental values for the waterways were agreed upon by the NSW Government. The environmental values determined in the HRC water quality have been adopted as the relevant environmental values to be protected during this project, which include:

- Protection of aquatic ecosystems.
- Visual amenity.
- Primary and secondary contact recreation.
- Irrigation water supply.
- Homestead water supply.

In order to achieve this, the framework in The Australian and New Zealand Environment Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (ANZECC & ARMCANZ) water quality guidelines (2000) is adopted to guide the conservation of ambient water quality. These guidelines provide recommended trigger values that have been applied to understand the current health of the waterways and key indicators of concern. There is the potential that baseline water quality does not meet the existing guidelines and trigger values for protecting nominated environmental values. Irrespective of the baseline condition of waterways, the project should not allow further degradation of water quality.

4.2.2 Relevant guidelines

The framework for the contamination assessment made herein, was developed in accordance with guidelines "made or approved", by the NSW EPA under Section 105 of the Contaminated Land Management Act, 1997. These guidelines include, but are not limited to the following:

- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ, 2000).
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) (updated 26 July 2021).
- Consultants Reporting on Contaminated Land: Contaminated Land Guidelines, NSW EPA (2020).

- Heads of EPAs Australia and New Zealand (HEPA) PFAS National Environmental Management Plan (NEMP) (version 2.0) (HEPA, 2020).
- National Health and Medical Research Council & National Resource Management Ministerial Council (NHMRC & NRMMC) Australian Drinking Water Guidelines 6, 2011 (version 3.6 updated in March 2021) (NHMRC & NRMMC, 2011).
- NSW EPA, Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (NSW EPA, 2015).

4.2.3 Adopted assessment criteria

To assess and understand baseline and construction surface water quality conditions, assessment criteria have been adopted from ANZECC & ARMCANZ (2000), ANZG (2018) and NHMRC & NRMMC (2011). In order to achieve the water quality objectives (Section 4.2), which include the protection of environmental values such as aquatic ecosystems, visual amenity, primary and secondary recreational contact, irrigation and homestead water supply, various criteria have been adopted from these guidelines, as discussed below.

The ANZECC & ARMCANZ (2000) guidelines are trigger values for physical and chemical stressors for protection of waterway health. The guidelines are specific to the type of ecosystem being monitored, which, in this case, are lowland rivers (specifically east-flowing coastal lowland rivers in NSW). These guidelines are based on toxicological studies, which define trigger values for physical and chemical stressors at which an effect on aquatic ecosystem is observed.

The ANZECC & ARMCANZ (2000) guidelines relate to reference conditions of aquatic systems that are minimally disturbed, and therefore, they are regarded as conservative in relation to the current condition of the sampling locations. However, the trigger values can be used to assess the risks of adverse effects of excessive amounts of pollutants in various ecosystem types.

For the locations monitored in this project, the trigger values for NSW lowland coastal rivers have been applied as the most applicable system group described in ANZECC & ARMCANZ (2000). Additionally, ANZECC & ARMCANZ stock watering guidelines have been adopted to provide criteria where lowland river criteria does not. The listed criteria values for the parameters monitored in this project are as presented in Tables B3 to Table B7, Appendix B.

To supplement the ANZECC & ARMCANZ guidelines and facilitate the protection of the environmental values listed above and potential human receptors, additional criteria have been included:

- Australian Drinking Water Guidelines (ADWG) v3.7, updated in January 2022 (NHMRC & NRMMC, 2011), protective of human health.
- ANZG (2018) (updated 26 July 2021) Freshwater – 95% level of species protection (slightly to moderately disturbed systems), protective of ecological health.

These criteria are generally more conservative than those for aesthetic, primary contact recreation and secondary contact recreation, and as such no criteria have been selected for these environmental values.

4.2.4 PFAS

The NEMP (HEPA, 2020) is the national guidance document on the management of PFAS contamination in Australia. The purpose of the NEMP is to establish a practical basis for nationally consistent environmental guidance and standards for preventing and managing PFAS contamination. The NEMP details guidelines values adopted for exposure to PFAS contamination in soil and water, for human and ecological receptors. The NEMP further details waste management procedures for PFAS contaminated soil and water.

The recreational species protection criteria, outlined in the NEMP (HEPA, 2020), has been selected for the assessment of potential exposure of surface water to human receptors, particularly during construction works. The NEMP (2020) drinking water criteria has also been adopted as a conservative measure and to align with drinking water criteria adopted for remaining analytes.

The surface water locations are considered moderately disturbed systems, and during the construction phase would be considered as highly disturbed systems. As a conservative approach and given the bioaccumulation

potential of PFAS, the 95% species protection criteria for slightly to moderately disturbed systems has been adopted.

Adopted assessment criteria for PFAS is presented in Table B4, Appendix B.

5. Data assessment

As the majority of surface water sampling locations were relocated following the March 2021 event, and eighteen months of baseline data has been collected from these new locations prior to the construction of the M12 Motorway, baseline data from events prior to April 2021 have been removed from the data assessment. This is considered appropriate to enable an accurate depiction of the sampling locations moving forward while still providing sufficient data to inform future events.

The current monitoring period includes six months of construction phase monitoring data from the West, Central, and East portions of the M12 Motorway (Figure 1, Appendix A).

5.1 Rainfall

BOM rainfall gauging Station ID 067108 at Badgerys Creek (Lat.: -33.90 °S; Long: 150.73 °E) was utilised for rainfall data analysis. Data from the Badgerys Creek station was available between November 1995 and March 2024, however there were five periods where rainfall data was not recorded (BOM, 2024):

- 20 December 2022 to 21 February 2023
- 25 March 2023 to April 21 2023
- 26 September 2023 to 30 September 2023
- 9 October 2023
- 27 January 2024 to 29 January 2024

To address these data gaps, rainfall data was obtained from Station ID 067119 located at Horsley Park Equestrian Centre where available (Lat.: -33.85 °S; Long: 150.86 °E).

Long-term monthly and annual rainfall data, including monthly rainfall received between November 1995 and March 2024, is summarised in Table 4. The long-term average annual rainfall recorded between 1995 and March 2024 was 716.9 mm, with a median annual rainfall of 664.6 mm recorded.

Rainfall recorded for the recent monitoring period (402.8 mm, for October 2024 to March 2024) was lower than the October to March long-term average (475.6 mm, 1995 to 2024). Rainfall fluctuated throughout the reporting period, with maximum monthly rainfall recorded in December 2023 and February 2024 at 104.6 mm, and minimum monthly rainfall recorded in March 2024 at 16.4 mm.

Average monthly rainfall was 119 mm during the baseline monitoring period of the Central and West portions (April 2021 to July 2022), and 59 mm to date for the construction period (August 2022 to March 2024).

The daily rainfall for the Badgerys Creek station during the monitoring program (April 2021 to March 2024) with supplementary data from the Horsley Park station is presented in Figure 2, Appendix A. On-site weather station data from the Seymour Whyte M12 Central weather station was provided to GHD and is also included. The figure shows the six wet weather events and the associated peaks of heavy rainfall events. The wet-weather events were conducted on the following dates:

- WW Event 1: 25 August 2021
- WW Event 2: 29 November 2021
- WW Event 3: 14 January 2022
- WW Event 4: 5-6 July 2022
- WW Event 5: 14-15 November 2022
- WW Event 6: 31 August 2023

Table 4 **Summary of rainfall (mm) received at Badgerys Creek BOM station (ID 067108)**

	January	February	March	April	May	June	July	August	September	October	November	December	ANNUAL
Long-term average rainfall (mm), Nov 1995 – March 2024	78.5	107.9	106.3	51.6	38.8	55.1	33.0	36.8	34.6	57.7	68.9	56.3	716.9
Long-term median rainfall (mm), Nov 1995 – September 2023	61.0	93.0	58.2	30.0	30.4	41.3	20.0	22.8	28.8	46.6	50.7	46.8	664.6
Reported rainfall (mm) for 2021	67.0	99.8	371.8	5.0	69.0	41.8	17.6	49.8	18.2	82.4	145.0	96.6	1064.0
Reported rainfall (mm) for 2022	170.0	194.4	561.4	118.4	52.0	4.2	280.0	32.8	74.6	186.8	45.8	3.8 ¹	1724.2 ¹
Reported rainfall (mm) for 2023	97.6 ¹	91.0 ¹	49.2 ¹	74.4 ¹	47.6	14.6	6.8	44.2	13.0 ¹	23.2 ¹	65.4	104.6	631.6 ¹
Reported rainfall (mm) for 2024	88.6 ¹	104.6	16.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

N/A: Not applicable. Rainfall in these months will be reported in future reports.

¹Partial or all rainfall data obtained from Station ID 067119 – Horsley Park as Station ID 067108 – Badgerys Creek has no or partial recorded rainfall data during this period.

5.2 Field measured surface water quality parameters

Surface water quality parameters measured in the field during the surface water monitoring program are summarised in Tables B8 to B10, Appendix B. The sampling statuses of the monitoring locations throughout the monitoring program are presented in Table B1, Appendix B. Field observations during sampling are presented in Table B2, Appendix B.

Summary statistics of field parameters for all dry weather monitoring events during the baseline monitoring period and construction monitoring period to March 2024 were calculated for all sampling locations.

These summary statistics include the 20th and 80th percentile concentrations of pH, electrical conductivity, and dissolved oxygen, which can be used to define site-specific conditions during the baseline and construction and phases of the works. 20th percentile concentrations have also been included for these field parameters as declining values in the construction period compared to the baseline period may indicate a risk to receptors.

These summary statistics are presented in Sections 5.2.1 to 5.2.4 below. The tables present the number of samples collected that create the percentiles as well as how many samples from the construction exceed the baseline percentiles. Additionally, graphs presenting the field parameters at each location since the beginning of the monitoring program are presented in Appendix C. It is noted that missing data points observed in Figure 1 to Figure 12 in Appendix C, are the result of access restrictions limiting the collection of field parameters (see Table B1, Appendix B). Box and whisker plots have been created for selected field parameters and are included in Appendix D.

5.2.1 pH

pH levels within natural waters can vary greatly, as it is interdependent with a range of water quality parameters, including carbon dioxide, alkalinity and hardness. The pH of water is a measure of its acidity or alkalinity. Generally, pH itself is not a contaminant of concern, however it can become toxic in its own right, and is also known to influence the toxicity of hydrogen sulfide, cyanides, heavy metals and ammonia.

Most of the adverse effects of pH in water are associated with low pH values (acidic), effectively when pH is less than 6. ANZECC & ARMCANZ (2000) states that almost all water quality guidelines across the world recommend that pH should be maintained in the range 6.5 to 9.0, to protect freshwater aquatic organisms. The adopted ANZECC & ARMCANZ (2000) criteria for pH are 6.5 – 8.5 for NSW lowland rivers.

The summary statistics for the current monitoring period (October 2023 to March 2024) and the construction monitoring period to date compared to the baseline monitoring period are presented in Table 5 below. Variations in recorded pH across sampling locations and sampling events are presented in Figure 1 to Figure 3 in Appendix C, and in Figure 13, Appendix D

Table 5 Summary statistics for pH monitoring

ANZECC 2000 Guideline Value					6.5 – 8.5					
Phase		Current			Construction			Baseline		
	Sampling Location	N	20 th %ile	80 th %ile	N	20 th %ile	80 th %ile	N	20 th %ile	80 th %ile
West	BADDS	6	7.17	7.53	19	7.07	7.50	10	7.02	7.76
	BADMS	6	7.18	7.43	19	7.01	7.45	5	7.00	7.16
	BADUS	6	7.27	7.49	19	7.23	7.66	15	7.13	7.84
	COSDS	6	7.22	7.58	19	7.28	7.82	14	7.26	8.03
	COSUS	6	7.12	7.58	19	7.05	7.77	14	7.23	8.20
Central	KEMDS	6	7.08	7.30	19	7.12	7.53	13	6.85	7.75
	KEMUS	6	7.22	7.38	19	7.14	7.56	14	7.16	7.57
	SOUDS	6	7.42	8.16	19	7.13	7.97	13	7.19	7.96
	SOUUS	6	7.31	7.60	19	7.11	7.63	13	7.21	7.80
East	HINDS	6	7.54	8.01	9	7.50	8.04	24	7.06	8.24
	HINUS	6	7.78	7.88	9	7.58	8.25	22	6.92	8.42
	ROPDS	6	7.29	7.38	9	7.29	7.52	24	7.19	7.68
	ROPUS	5	7.03	7.15	8	6.97	7.18	21	6.94	8.14

Notes: 1. **BOLD** = sits outside the baseline data (i.e. either below the 20th baseline percentile or above the 80th baseline percentile.)

The comparison of calculated percentiles for pH monitoring data in each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - BADMS: the 20th and 80th percentiles are above the baseline 80th percentiles.
 - COSDS and COSUS: the 20th percentiles are below the baseline 20th percentiles.
 - SOUDS: the 80th percentile is above the baseline 80th percentile.
- Construction period:
 - BADMS: the 80th percentiles is above the baseline 80th percentile.
 - COSUS, KEMUS, and SOUUS: the 20th percentiles are below the baseline 20th percentiles.
 - SOUDS: the 20th percentile is below the baseline 20th percentile, and the 80th percentile is above the baseline 80th percentile.

These results still sit within the ANZECC (2000) guidelines values of 6.5-8.5 pH and therefore it appears that no major impact is occurring to these rivers from the construction.

pH readings at SOUDS have tended more alkaline since approximately May 2023, but have increased in line with similar increases at SOUUS. Despite this slight increasing trend, construction period 20th percentile concentrations at these locations remain below the baseline. This is attributed to relatively alkaline results recorded during the March 2023 and May 2023 monitoring rounds.

pH 20th percentile concentrations at COSDS and COSUS are below the baseline 20th percentile but are still within the historical range of data and are tending slightly alkaline during the current monitoring period.

pH concentrations at BADMS during the current monitoring period are above the baseline but are still within the historical range of data and have been tending slightly towards neutral during the current monitoring period.

5.2.2 Electrical conductivity

Electrical conductivity (EC) is a measure of the types of salts (ions) in water, including anions: chlorides, sulphates, carbonates, phosphates and nitrates, as well as cations: sodium, calcium, magnesium and potassium. Concentrations of individual ions can vary, impacting EC accordingly.

Metallic ions are able to raise EC in water, and are affected by local geology and soils, land use and catchment run off, agriculture, irrigation, urban and industrial development and run off, and groundwater inflows. High EC concentrations may also be caused by clearing of vegetation and the resultant rise in the water table.

EC above 1,500 $\mu\text{S}/\text{cm}$ is known to be harmful to freshwater aquatic organisms (ANZECC & ARMCANZ, 2000). Therefore, it is possible to predict that such high ionic contents in the waterbodies are likely to change the freshwater environment into a part-saline habitat. If such a change occurs, biotic communities may also change, over time, as a result.

The ANZECC & ARMCANZ (2000) guideline range for EC in NSW coastal lowland rivers is 200-300 $\mu\text{S}/\text{cm}$ and is applicable to flowing creeks. However, these guidelines also state that Australia's east flowing lowland rivers could have EC as high as 2200 $\mu\text{S}/\text{cm}$, and likewise should be above 125 $\mu\text{S}/\text{cm}$. As such, the guideline range for EC for these waters adopted from ANZECC & ARMCANZ (2000) is 125-2200 $\mu\text{S}/\text{cm}$.

The 20th and 80th percentile EC values calculated for the current monitoring period (October 2023 to March 2024) and the construction monitoring period to date compared to the baseline monitoring period are presented in Table 6 below. Variations in EC concentrations across sampling locations and sampling events are presented in Figure 4 to Figure 6 in Appendix C, and in Figure 14 Appendix D.

Table 6 Summary statistics for EC monitoring (in $\mu\text{S}/\text{cm}$)

ANZECC 2000 Guideline Value					125 – 2200 $\mu\text{S}/\text{cm}$					
Phase		Current			Construction			Baseline		
	Sampling Location	N	20 th %ile	80 th %ile	N	20 th %ile	80 th %ile	N	20 th %ile	80 th %ile
West	BADDS	6	903	1535	19	854	1628	10	641	1182
	BADMS	6	895	1285	19	871	1602	5	750	1139
	BADUS	6	864	1563	19	927	1517	15	782	1302
	COSDS	6	923	2495	18	688	1519	14	599	1210
	COSUS	6	1071	3007	18	957	2819	14	630	1185
Central	KEMDS	6	795	1421	19	881	1982	13	179	1566
	KEMUS	6	809	1459	19	891	2040	14	1000	1879
	SOUDS	6	887	1533	19	862	1310	13	794	1056
	SOUUS	6	785	1542	19	810	1317	13	799	1047
East	HINDS	6	608	731	9	437	723	24	151	324
	HINUS	6	897	1028	9	529	1017	22	178	470
	ROPDS	6	822	2754	9	1352	3493	24	946	4429
	ROPUS	5	374	422	8	285	416	21	128	237

Notes: 1. **BOLD** = sits outside the baseline data (i.e. either below the 20th baseline percentile or above the 80th baseline percentile.)

The comparison of calculated percentiles for electrical conductivity monitoring data in each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - All locations with the exception of ROPDS, KEMDS, and KEMUS: 80th percentiles are above the baseline 80th percentiles.
 - HINDS, HINUS, and ROPUS: 20th percentiles are above the baseline 80th percentiles.

- KEMUS, SOUUS and ROPDS: 20th percentiles are below the baseline 20th percentiles.
- Construction period:
 - All locations with the exception of ROPDS: 80th percentiles are above the baseline 80th percentiles.
 - HINDS, HINUS, and ROPUS: 20th percentiles are above the baseline 80th percentiles.
 - KEMUS: 20th percentile is below the baseline 20th percentile.

Increases in electrical conductivity across all sampling locations may be related to the reduced rainfall trend and the subsequent decrease in freshwater runoff into streams (refer Section 5.1). This is reflected by all the locations including upstream of the project are increasing overall in EC.

Stagnant water levels or low flowing water was noted during sampling at the majority of locations during the October, November, December, February, and March monitoring events in the current monitoring period (refer Appendix F).

5.2.3 Dissolved oxygen

Dissolved oxygen (DO) is a critical water quality parameter as most living organisms require oxygen. Low DO concentrations have adverse effects on many aquatic organisms, including fish, invertebrates, and aerobic microorganisms, which depend upon oxygen dissolved in the water for efficient functioning. Low concentrations of DO creates reducing conditions in sediments, which can release previously bound nutrients and toxicants such as metals to the surrounding water.

The concentration of DO in water is highly dependent on temperature, salinity, biological activity (microbial, primary production) and the rate of transfer from the atmosphere. Under natural conditions, DO levels can vary considerably during a daily cycle (diurnal change). Highly productive systems (e.g., tropical wetlands, dune lakes and estuaries) can become severely depleted in DO, particularly when these systems are stratified.

Of greatest concern for water quality is the decrease in DO that can occur when bio-degradable organic matter is introduced (e.g., sewage, or dead plant matter). The depletion of DO depends on the organic load, microbial activity, and any re-aeration mechanisms that may be operating.

ANZECC & ARMCANZ (2000) describes a lower and upper range for DO saturation as 85%-110% in flowing waters. The 20th and 80th percentiles for DO data for the current monitoring period and the construction monitoring period to date compared to the baseline monitoring period is presented in Table 7. Variations in DO concentrations across sampling locations and sampling events is presented in Figure 7 to Figure 9 in Appendix C, and in Figure 15 in Appendix D.

Table 7 Summary statistics for DO monitoring (in % Saturation)

ANZECC 2000 Guideline Value					85 - 110 %S					
Phase		Current			Construction			Baseline		
	Sampling Location	N	20 th %ile	80 th %ile	N	20 th %ile	80 th %ile	N	20 th %ile	80 th %ile
West	BADDS	6	41.40	76.10	19	43.26	78.18	10	36.86	77.30
	BADMS	6	38.90	65.80	19	35.75	68.40	5	54.04	71.28
	BADUS	6	60.00	83.50	19	58.01	94.27	15	44.82	93.06
	COSDS	6	61.10	74.70	18	61.14	83.81	14	67.16	92.14
	COSUS	6	31.00	74.20	18	30.76	73.99	14	50.88	87.56
Central	KEMDS	6	40.90	56.50	19	45.29	64.70	13	6.26	82.46
	KEMUS	6	40.00	55.80	19	49.96	75.63	14	40.20	75.61
	SOUDS	6	72.90	134.90	19	69.63	103.28	13	53.44	88.65
	SOUUS	6	55.60	98.30	19	60.37	97.46	13	55.04	81.08
East	HINDS	6	91.30	106.90	9	83.98	107.30	24	43.27	101.28
	HINUS	6	102.60	161.60	9	69.44	152.42	22	45.11	103.66
	ROPDS	6	35.00	70.30	9	44.90	76.36	24	44.66	79.48
	ROPUS	5	45.40	57.48	8	42.20	60.24	21	46.75	120.90

Notes: 1. **BOLD** = sits outside the baseline data (i.e. either below the 20th baseline percentile or above the 80th baseline percentile.)

The comparison of calculated percentiles for dissolved oxygen monitoring data in each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - BADMS, COSDS, COSUS, KEMUS, ROPDS, and ROPUS: 20th percentiles are below the baseline 20th percentiles.
 - SOUDS, SOUUS, HINDS, and HINUS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - BADMS, COSDS, COSUS, and ROPUS: 20th percentiles are below the baseline 20th percentiles.
 - BADDS, BADUS, KEMUS, SOUDS, SOUUS, HINDS, HINUS: 80th percentiles are above the baseline 80th percentiles.

Current period dissolved oxygen 20th percentile concentrations below the baseline 20th percentile may be related to the reduced rainfall trend and the subsequent decrease in freshwater runoff into streams (refer Section 5.1). as well as increased water temperatures during summer. This is reflected in both upstream and downstream sample point reporting increases.

Increases in concentrations at both upstream and downstream locations for South Creek (SOUDS, SOUUS) and Hinchinbrook Creek (HINDS, HINUS) follow an increasing trend with concentrations slowly increasing since approximately March 2022.

5.2.4 Turbidity

Turbidity, directly measured in situ by the water quality probe, provides readings which express how light is scattered by suspended particulate material in the water. These results, given in Nephelometric Turbidity Units (NTU), generally provide an accurate correlation with the concentration of particles in the water that affect water clarity and phytoplankton productivity.

Although high turbidity is often a sign of poor water quality and land management, clear water does not always guarantee healthy water. Extremely clear water can signify very acidic conditions, or high levels of salinity.

The ANZECC & ARMCANZ freshwater guidelines provide a trigger value of 6-50 NTU for turbidity in lowland rivers.

Variations in turbidity concentrations across sampling locations and sampling events are presented in Figure 10 to Figure 12 in Appendix C, and in Figure 16 Appendix D. Turbidity is a similar measure to total suspended solids, and therefore the summary statistics and results discussion have not been included as they have been summarised in Section 5.3.1.

5.3 Laboratory analytical results

The analytical results of the baseline period constitute the baseline data of the refined monitoring locations (as described in Section 5). This data is compared against relevant assessment criteria (outlined in Section 4.2).

The laboratory analytical results of surface water samples throughout the baseline monitoring program excluding wet weather events are tabulated in Table B3, Appendix B. PFAS analytical results for the baseline monitoring period are tabulated in Table B4, Appendix B. The laboratory analytical results of surface water samples for the construction monitoring period to date tabulated in Table B5, Appendix B. The laboratory analytical results of surface water samples for the current monitoring period are tabulated in Table B7, Appendix B. Laboratory reports are provided in Appendix B. A summary of the analysis is presented below in Sections 5.3.1 to 5.3.16.

80th percentile summary statistics for laboratory analytical results for all dry weather monitoring events during the baseline monitoring period and construction monitoring period to March 2024 were calculated for all sampling locations.

5.3.1 Total suspended solids (TSS)

Total suspended solids (TSS) consist of an inorganic fraction (silts, clays, etc.) and an organic fraction (algae, zooplankton, bacteria, and detritus) that are carried along by water as they run off the land. When suspended particles settle to the bottom of a water body, they become sediments or 'silt'. Turbidity is correlated with the force of moving water, which keeps the particles suspended.

Suspended solids reduce sunlight penetration, reducing algal photosynthesis, thereby controlling phytoplankton abundance and the abundance of animals that feed on algae. Suspended solids also clog fish gills, either killing them or reducing their growth rate. When suspended sediment settles out and drops to the bottom, this causes the water to clear, but as the silt or sediment settles, it may change the nature of the lake bottom. The silt may be unfavourable to bottom-dwelling organisms, as it may cover breeding areas, and smother eggs.

Indirectly, suspended solids affect other water quality parameters, such as temperature and DO. Siltation (sediment deposition) may eventually fill up a water body converting it into a wetland.

A positive effect of the presence of suspended solids in water is that toxic chemicals, such as pesticides and metals tend to adsorb to them, or become complexed with them, which makes the toxins less available to be absorbed by living organisms.

It should be noted that TSS is an important parameter to be measured in waterways that may be impacted by construction activities. Elevated TSS, which is often transient, may not always be ecologically significant for biota. However, it is generally considered a good indicator of how effective the construction related sediment and runoff controls and other mitigation measures might be, which are taken to reduce adverse impacts on downstream waterways.

The adopted guideline concentration for TSS for these waters is 6 mg/L (Tables B3 to B7, Appendix B), as per ANZECC & ARMCANZ guidelines for lowland coastal rivers. The 80th percentiles for TSS data calculated for the current monitoring period and the construction monitoring period to date compared to the baseline monitoring program are presented in Table 8 below. Variations in TSS concentrations are presented as a box plot in Figure 17, Appendix D.

Table 8 Summary statistics for total suspended solids (in mg/L)

ANZECC 2000 Guideline Value				6 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	153	19	75	10	34
	BADMS	6	90	19	64	5	29
	BADUS	6	40	19	38	15	36
	COSDS	6	52	18	50	14	39
	COSUS	6	12	18	27	14	52
Central	KEMDS	6	40	19	23	13	42
	KEMUS	6	42	19	25	14	19
	SOUDS	6	30	19	42	13	25
	SOUUS	6	54	19	44	13	26
East	HINDS	6	11	9	13	24	11
	HINUS	6	11	9	10	22	37
	ROPDS	6	34	9	21	24	9
	ROPUS	5	39	8	49	21	83

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for total suspended solids results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - BADDS, BADMS, COSDS, KEMUS, SOUDS, SOUUS, and ROPDS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - BADDS, BADMS, BADUS, COSDS, KEMUS, SOUDS, SOUUS, HINDS, and ROPDS: 80th percentiles are above the baseline 80th percentiles.

TSS concentrations at SOUDS and SOUUS may be attributed to increased discharge into South Creek with the highest levels during the current monitoring period reported in December 2023 and January 2024 after periods of rainfall greater than 5mm less than a week before the monitoring events. In addition, concentrations at SOUDS may be attributed to Sydney Water Treatment Plant overflow discharge into South Creek between SOUUS and SOUDS.

Similarly, increased TSS 80th percentile concentrations above the baseline at KEMDS may be attributed to the highest concentrations in the reporting period occurring in the December 2023, January 2024, and February 2024 sampling events when rainfall of greater than 5mm was recorded less than one week before sampling. Concentrations were reduced in the next monitoring event in March 2024.

TSS concentrations in the current monitoring above the baseline 80th percentile at ROPUS may be attributed to a slight increasing trend in TSS since August 2023 at the start of the construction monitoring period.

TSS concentrations in the current above the 80th percentile in the current monitoring at Badgerys Creek locations (BADUS, BADMS, BADDS) are related to elevated concentrations reported in November 2023 and February 2023. The concentrations in November 2023 may be attributed to over 20mm of rainfall recorded in the week prior to sampling these locations.

TSS 80th percentile concentrations above the baseline at COSDS may be attributed to an increase in concentrations in the February 2024 event. However, concentrations had reduced in the next monitoring event. It is noted that TSS concentrations at COSDS have been 2 to 11 orders of magnitude higher than COSUS within the

current monitoring period. This data would suggest that the project is impacting on the sediment load in the creek may be attributed to over 20mm of rainfall recorded in the week prior to sampling these locations.

Current and construction period 80th percentile concentrations at all other locations remain consistent with the baseline monitoring period.

5.3.2 Total dissolved solids (TDS)

All surface water samples in the baseline monitoring period reported TDS concentrations above the laboratory LOR (10 mg/L). Ecological and human health criteria are generally not applied to total dissolved solids as it is an aesthetic issue; however, the ADWG (NHMRC & NRMCC, 2011) recommends that TDS concentrations below 600 mg/L will exhibit good palatability.

Variations in TDS concentrations are presented as a box plot in Figure 18, Appendix D. TDS is a similar measure to electrical conductivity, and therefore the summary statistics and results discussion have not been included as they have been summarised in Section 5.2.2.

5.3.3 Nutrients

Of the range of parameters monitored as aquatic ecosystem health indicators in the monitoring program, algal growth nutrients (Nitrogen, N; and Phosphorus, P) are the most significant. The concentrations of N and P provide useful information on the changes that are occurring in the waterways and waterbodies of the project.

All surface water samples reported concentrations above the laboratory LOR for the majority of nutrients.

Summary statistics for the current monitoring period, the construction monitoring period to March 2024, and the baseline monitoring period were calculated, including 80th percentile concentrations for ammonia, oxidised nitrogen (NO_x), total nitrogen, total phosphorus, soluble reactive phosphorus and chlorophyll-a. The 80th percentile values have been compared against the applicable ANZECC & ARMCANZ (2000) trigger values and ANZG (2018) 95% freshwater species protection criteria. These summary statistics are presented in 5.3.4 to 5.3.7.

5.3.4 Nitrogen

Nitrogen is the most abundant element, with the Earth's atmosphere comprising approximately 80% nitrogen. It is found in the cells of all living things and as a major component of proteins. Inorganic nitrogen may exist in the free-state as gaseous nitrogen (N₂); or ammonia (NH₃); or as oxides (nitrate (NO₃⁻); nitrite (NO₂⁻). Organic N is found in proteins and is continually recycled by plants and animals. Concentrations of these N species and total nitrogen (TN) are major indicators of aquatic ecosystem health (ANZECC & ARMCANZ, 2000). TN is the sum of organic nitrogen, NO_x and ammonia:

$$TN = (\text{organic nitrogen}) + (\text{NO}_3^-) + (\text{NO}_2^-) + (\text{NH}_3)$$

By definition, Total Kjeldahl Nitrogen (TKN), a component of TN, is the sum of organic nitrogen and ammonia. Therefore, the above equation may be re-written as:

$$TN = (\text{TKN}) + (\text{NO}_3^-) + (\text{NO}_2^-)$$

Ammonia

High levels of ammonia in water indicate poor water quality, as ammonia is a metabolic waste product. At high concentrations ammonia is toxic to most aquatic life, including fish, in which the structural development, hatching and growth rates of fish is impacted. Ammonia toxicity to aquatic life increases as pH and temperature decreases. Plants are more tolerant of ammonia than animals, and invertebrates are more tolerant than fish.

Most of the ammonia produced in Australia is used in fertilizers, as ammonium sulfate, nitrate and urea. It is also used in the production of ice and in refrigerating plants, and in household cleaning products. As ammonia is a decomposition product from urea and protein, it is found in domestic wastewater. Waste products from aquatic life also contribute to ammonia found in water bodies.

The ANZG (2018) criteria protective of 95% of freshwater species (0.9 mg/L) has been adopted. Summary statistics and analytical results for ammonia concentrations measured at the monitored locations are provided in Table 9 below. Variations in ammonia concentrations are presented as a box plot in Figure 19, Appendix D.

Table 9 Summary statistics for ammonia (in mg/L)

ANZG 2018 Value				0.9 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.04	19	0.04	10	0.07
	BADMS	6	0.04	19	0.04	5	0.18
	BADUS	6	0.04	19	0.05	15	0.08
	COSDS	6	0.07	18	0.07	14	0.05
	COSUS	6	0.10	18	0.11	14	0.06
Central	KEMDS	6	0.08	19	0.07	13	0.26
	KEMUS	6	0.08	19	0.06	14	0.09
	SOUUS	6	0.07	19	0.11	13	0.21
	SOUUS	6	0.14	19	0.14	13	0.17
East	HINDS	6	0.06	9	0.07	24	0.08
	HINUS	6	0.04	9	0.04	22	0.06
	ROPDS	6	0.06	9	0.05	24	0.05
	ROPUS	5	0.16	8	0.63	21	0.02

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for ammonia results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - COSDS, COSUS, ROPDS, and ROPUS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - COSDS, COSUS, and ROPUS: 80th percentiles are above the baseline 80th percentiles.

These percentile values are below the ANZG (2018) value with the exception of ROPUS.

COSUS and COSDS 80th percentile concentrations above the baseline are attributed to higher concentrations recorded during the August 2023 and September 2023 monitoring events. Increased concentrations at COSUS in August may be attributable to stagnant flow noted when sampling, with concentrations at COSDS and COSUS in September potentially attributed to increased rainfall in the week prior to sampling. Concentrations in all sampling events from December 2023 to March 2024 have returned to levels at or below the baseline 80th percentiles.

ROPDS 80th percentile concentrations above the baseline are attributed to a single sampling event in October 2023, with the result within the historical range for this location.

ROPUS construction period 80th percentile concentrations above can be attributed to reported concentrations around 1 mg/L in August and September 2023 monitoring events, prior to this the maximum reported concentration was 0.06 mg/L. The water levels at ROPUS have been noted as decreasing during sampling events and the location is also frequented by livestock, this may contribute to the increased concentrations in the current monitoring period above the baseline 80th percentile.

Current and construction period 80th percentile concentrations at all other locations remain consistent with the baseline monitoring period.

Nitrogen oxides

Nitrate [NO₃⁻] and nitrite [NO₂⁻] are related N compounds, which occur naturally in soil, water, plants and food. They are formed when microorganisms break down organic materials, such as plants, animal manure, and sewage. Nitrate is found in chemical fertiliser and is also used as a preservative and a curing agent for meat. The occurrence of high levels of both nitrate and nitrite in water points to the contamination of water by various sources of N, such as fertiliser and wastewater (in runoff, or leaking septic tanks); manure from livestock, animal wastes (e.g. fish and birds); and discharges from car exhausts.

Bacteria in water readily convert nitrites to nitrates in an aerobic process called nitrification, which consumes dissolved oxygen. Because of the rapid conversion, nitrites in water are relatively short-lived. In poorly aerated water or water overloaded with organic contamination, low oxygen levels can inhibit nitrification, leaving most of the nitrogen as ammonia or nitrite. Both of these compounds are relatively toxic to organisms.

The major impact of NO_x on freshwater is nutrient enrichment, stimulating the growth of phytoplankton, which provides food for higher organisms (invertebrates and fish). An excess of nitrogen often results in over-production of phytoplankton, and as they die and decompose, they use up oxygen, causing oxygen-depletion and death of other oxygen-dependent organisms.

The ANZECC & ARMCANZ (2000) criteria value for NO_x is 0.04 mg/L for lowland rivers. Summary statistics for nitrogen oxide concentrations measured at the monitored locations are provided in Table 10. Variations in total oxidised nitrogen concentrations are presented as a box plot in Figure 20, Appendix B.

Table 10 Summary statistics for total oxidised nitrogen (in mg/L)

ANZECC & ARMCANZ 2000 Value				0.04 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.15	19	0.39	10	0.42
	BADMS	6	0.14	19	0.39	5	0.31
	BADUS	6	0.20	19	0.29	15	0.60
	COSDS	6	0.25	18	0.21	14	0.27
	COSUS	6	0.10	18	0.14	14	0.29
Central	KEMDS	6	6.15	19	5.09	13	2.20
	KEMUS	6	5.56	19	3.87	14	5.59
	SOUUS	6	0.90	19	2.03	13	1.78
	SOUUS	6	0.84	19	1.97	13	1.75
East	HINDS	6	0.01	9	0.03	24	0.07
	HINUS	6	0.01	9	0.01	22	0.04
	ROPDS	6	0.23	9	0.29	24	0.13
	ROPUS	5	0.02	8	0.02	21	0.01

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for total oxidised nitrogen results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - KEMDS, ROPDS, ROPUS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - BADMS, KEMDS, SOUDS, SOUUS, ROPDS, ROPUS: 80th percentiles are above the baseline 80th percentiles.

Concentrations above the baseline 80th percentile at BADMS can be attributed to increased concentrations recorded in the May 2023 and September 2023 monitoring events which occurred less than a week after short periods of increased rainfall.

Baseline 80th percentile concentrations at KEMDS and KEMUS are higher than other streams. Throughout the current monitoring period concentrations at KEMDS and KEMUS have been within 0.6 mg/L of each other, with the exception of the February and March 2024 monitoring events, with the difference in concentrations ranging from 1.9 mg/L in March 2024 to 3.45 mg/L in February 2024 between the two locations, with the downstream location, KEMDS, having higher concentrations than the upstream location.

Current and construction period concentrations above the baseline 80th percentile at ROPDS may be attributed to rainfall. Concentrations have fluctuated between the <LOR (0.01 mg/L) and 0.46 mg/L, with the higher results recorded less than 1 week after 5mm of rainfall.

The water levels at ROPUS have been noted as decreasing during sampling events and the location is also frequented by livestock, this may contribute to the increased concentrations in the current monitoring period above the baseline 80th percentile.

Current and construction period 80th percentile concentrations at all other locations remain consistent with the baseline monitoring period.

Total nitrogen (TN)

The ANZECC & ARMCANZ (2000) guidelines outline a default TN trigger value of 0.35 mg/L for freshwater lakes and reservoirs, and for east flowing coastal rivers in NSW. Summary statistics for total nitrogen concentrations measured at the monitored locations are provided in Table 11. Variations in total nitrogen concentrations are presented as a box plot in Figure 21, Appendix D.

Table 11 Summary statistics for total nitrogen (in mg/L)

ANZECC & ARMCANZ 2000 Value				0.35 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	1.60	19	1.48	10	2.22
	BADMS	6	1.30	19	1.54	5	1.68
	BADUS	6	1.80	19	1.80	15	2.06
	COSDS	6	1.00	18	1.06	14	1.20
	COSUS	6	0.70	18	0.90	14	1.08
Central	KEMDS	6	8.00	19	6.60	13	8.44
	KEMUS	6	7.50	19	5.16	14	7.10
	SOUUS	6	2.50	19	4.12	13	3.40
	SOUUS	6	2.60	19	3.58	13	3.44
East	HINDS	6	1.40	9	1.28	24	1.50
	HINUS	6	1.40	9	1.44	22	1.50
	ROPDS	6	1.40	9	1.22	24	1.32
	ROPUS	5	2.02	8	2.94	21	2.00

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for total nitrogen results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - KEMUS, ROPDS, ROPUS: 80th percentiles are above the baseline 80th percentiles.

- Construction period:
 - SOUDS, SOUUS, ROPUS: 80th percentiles are above the baseline 80th percentiles.

Current period 80th percentiles above the baseline at ROPDS and KEMUS is related to two events in October and November 2024 where concentrations were recorded above the baseline 80th percentile value. Concentrations in November may be related to rainfall above 5mm recorded in the week prior to monitoring. All remaining events in the current monitoring period have recorded concentrations below the baseline value of 1.32 mg/L for ROPDS and 7.10 mg/L for KEMUS.

ROPUS is frequented by cows and the high concentrations above the baseline during the current and construction periods may be a result of cow manure and low water levels observed during monitoring.

Whilst construction period 80th percentiles are above the baseline at South Creek (SOUUS, SOUDS), current period 80th percentiles for these locations are below the baseline, suggesting a declining trend. The exceedances above the baseline at South Creek can be attributed to higher total nitrogen concentrations reported in the May 2023, September 2023, and January 2024 monitoring events, which were monitored less than a week after short periods of increased rainfall.

Current and construction period 80th percentile concentrations at all other locations remains consistent with the baseline monitoring period.

5.3.5 Soluble reactive phosphorus (SRP)

Phosphorus (P) is a key element necessary for growth of all plants and animals. Phosphates can exist in three forms: orthophosphate, meta-phosphate (or polyphosphate) and organically bound phosphate. Each compound contains phosphorus in a different chemical formula. Ortho forms are produced by natural processes and are found in sewage. Poly forms are used for treating boiler waters and in detergents, where in water they change into the ortho form. Organic phosphates result from the breakdown of organic pesticides, which contain phosphates. All forms of P may exist in solution, as particles, loose fragments or in the bodies of aquatic organisms.

Rainfall can cause varying amounts of phosphates to wash from farm soils into waterways. Phosphates stimulate the growth of plankton and aquatic plants, which provide food for fish. This may cause an increase in the fish population and improve the overall water quality.

However, under excess concentrations of P, algae and aquatic plants could grow wildly, choke up the waterways and consume large amounts of dissolved oxygen. This condition is known as eutrophication or over-fertilization of receiving waters. The excessive growth of aquatic vegetation eventually dies, and as it decays, it uses up oxygen. This process in turn causes the death of aquatic life, because of the lowering of oxygen levels.

The ANZECC & ARMCANZ (2000) criteria value for readily available, soluble P is 0.008 mg/L for east-flowing lowland coastal rivers. Summary statistics for reactive phosphorus concentrations measured at the monitored locations are provided in Table 12.

Table 12 Summary statistics for soluble reactive phosphorus (in mg/L)

ANZECC & ARMCANZ 2000 Value				0.008 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.010	19	0.010	10	0.012
	BADMS	6	0.010	19	0.010	5	0.014
	BADUS	6	0.010	19	0.010	15	0.078
	COSDS	6	0.010	18	0.010	14	0.010
	COSUS	6	0.010	18	0.010	14	0.010
Central	KEMDS	6	0.830	19	0.722	13	0.544
	KEMUS	6	0.790	19	0.638	14	0.944
	SOUDS	6	0.120	19	0.062	13	0.138
	SOUUS	6	0.110	19	0.080	13	0.140
East	HINDS	6	0.010	9	0.010	24	0.010
	HINUS	6	0.010	9	0.010	22	0.010
	ROPDS	6	0.020	9	0.020	24	0.020
	ROPUS	5	0.010	8	0.010	21	0.010

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for soluble reactive phosphorus results at each location for the current and construction monitoring periods are summarised as follows:

- Current period and construction period 80th percentiles at KEMDS are above the baseline 80th percentiles.

The 80th percentile concentrations for all sampling locations in the construction and current monitoring periods were consistent with those for the baseline monitoring period, with exception of KEMDS which reported current and construction period 80th percentile concentrations above the baseline 80th percentile. Concentrations have continued in an increasing trend throughout the construction monitoring period but remain consistent with concentrations reported upstream at KEMUS. The area in between the upstream and downstream sample point for Kemps Creek has greenhouses located adjacent to the Creek. This spike in phosphorus may potentially be caused by overland flow from this site.

5.3.6 Total phosphorus

The ANZECC & ARMCANZ (2000) criteria value for total phosphorus (TP) is 0.025 mg/L for east-flowing lowland coastal rivers. Summary statistics for reactive phosphorus concentrations measured at the monitored locations are provided in Table 13 below. Variations in total phosphorus concentrations are presented as a box plot in Figure 22, Appendix D.

Table 13 Summary statistics for total phosphorus (in mg/L)

ANZECC & ARMCANZ 2000 Value				0.025 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.200	19	0.190	10	0.260
	BADMS	6	0.220	19	0.164	5	0.162
	BADUS	6	0.170	19	0.140	15	0.350
	COSDS	6	0.080	18	0.092	14	0.078
	COSUS	6	0.040	18	0.076	14	0.090
Central	KEMDS	6	0.880	19	0.788	13	1.044
	KEMUS	6	0.900	19	0.774	14	1.074
	SOUDS	6	0.250	19	0.298	13	0.330
	SOUUS	6	0.250	19	0.308	13	0.350
East	HINDS	6	0.100	9	0.076	24	0.150
	HINUS	6	0.080	9	0.080	22	0.108
	ROPDS	6	0.120	9	0.114	24	0.134
	ROPUS	5	0.122	8	0.136	21	0.210

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for total phosphorus results at each location for the current and construction monitoring periods are summarised as follows:

- Current period and construction period:
 - BADMS and COSDS: 80th percentiles are above the baseline 80th percentiles.

The 80th percentile concentrations for all sampling locations in the construction and current monitoring periods were consistent with those for the baseline monitoring period, with exception of BADMS and COSDS, which reported current and construction period 80th percentile concentrations above the baseline 80th percentile.

Concentrations above the baseline 80th percentile at COSDS and may be attributed to higher total phosphorus concentrations reported in the May 2023, September 2023, and January 2024 events. Concentrations within the current monitoring period at COSDS are largely consistent with concentrations recorded upstream at COSUS.

Current and construction period 80th percentile locations at BADMS above the baseline 80th percentile, however, due to the limited range of the baseline dataset compared to the current and construction monitoring periods. All current and construction period concentrations are within the range of the baseline dataset and are consistent with upstream location BADDS and downstream location BADUS.

5.3.7 Chlorophyll-a

Chlorophyll-a (chl-a) is the primary, green, photosynthetic pigment, which captures sunlight, and found in all plants, including phytoplanktonic algae. Chl-a levels in water are a proven indicator of the condition of a waterway or a waterbody.

Nutrients alone cannot indicate whether a waterbody actually has a nuisance algae problem, whereas increased chl-a in the water indicates the productivity status of the water, due to the excessive growth of various algal groups, including cyanobacteria (blue-green algae).

Chl-a can be used as a non-specific indicator of the trophic status (productivity, which is driven by levels of nutrient pollution) of a waterbody (ANZECC & ARMCANZ, 2000). Low chl-a levels are often associated with less impacted waterways with good quality water, with high levels characteristic of water that has been nutrient-enriched, where algal productivity is high (eutrophic).

Chl-a concentrations often reflect the integrated effect of many of the water quality factors that may be altered in water bodies by human activities. The ANZECC & ARMCANZ (2000) criteria value for chl-a in east-flowing coastal rivers in NSW is 0.003 mg/L.

Summary statistics for chlorophyll-a concentrations measured at the monitored locations are provided in Table 14 below.

Table 14 Summary statistics for chlorophyll-a (in mg/L)

ANZECC & ARMCANZ 2000 Value				0.003 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.026	19	0.015	10	0.025
	BADMS	6	0.020	19	0.022	5	0.009
	BADUS	6	0.028	19	0.027	15	0.015
	COSDS	6	0.008	18	0.011	14	0.005
	COSUS	6	0.003	18	0.011	14	0.006
Central	KEMDS	6	0.003	19	0.009	13	0.015
	KEMUS	6	0.004	19	0.015	14	0.003
	SOUDS	6	0.048	19	0.043	13	0.020
	SOUUS	6	0.035	19	0.036	13	0.018
East	HINDS	6	0.048	9	0.046	24	0.026
	HINUS	6	0.018	9	0.016	21	0.018
	ROPDS	6	0.024	9	0.016	24	0.003
	ROPUS	5	0.025	8	0.081	21	0.078

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for chlorophyll-a results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - BADDS, BADMS, BADUS, COSDS, KEMUS, SOUDS, SOUUS, HINDS, and ROPDS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - BADMS, BADUS, COSDS, COSUS, KEMUS, SOUDS, SOUUS, HINDS, ROPDS, and ROPUS: 80th percentiles are above the baseline 80th percentiles.

All sampling locations in the current or construction monitoring period, with the exception of KEMDS and HINUS, reported 80th percentile concentrations in exceedance of the baseline 80th percentile concentrations.

Chl-a concentrations have slightly increased since the construction period began. Chl-a is affected by nitrogen, phosphorus, water temperature and rainfall. The increases in Chl-a concentrations may be attributed to increased nitrogen and phosphorus recorded in November 2022, May 2023, and September 2023, November 2023, and February 2024 following periods of rainfall within a week of monitoring.

5.3.8 N:P Ratios

Many cyanobacteria can fix atmospheric, gaseous N₂ through heterocysts, and therefore, nitrogen does not limit their growth. On the other hand, phosphorus is often the limiting factor for the growth of most cyanobacteria. High P concentrations are, therefore, directly implicated in the pre-disposition of the waterbodies to algal blooms.

Many Australian studies have shown that it is the balance between the major nutrients (e.g. the N: P ratio) that influences the composition and abundance of the algal community (Cullen, Victor, & Bronson, 1993), including cyanobacterial dominance. The ratio of available N and P is an important determinant of which algal species would flourish during a bloom.

A ratio of N: P below ~16:1 is known to present favourable conditions for N-fixing cyanobacteria, such as *Anabaena*. As previously discussed, high concentrations of TP and TN characterise the significant nutrient enrichment of waterways in the projects.

The N: P ratios for the monitored sampling locations were calculated using the average concentrations of TN and TP at each location, as presented in Table 15. Low values below 16:1 point to the potential for eutrophication, largely due to elevated concentrations of TP within the drainage systems. High values may reflect N contamination; however, lower concentrations of TP would limit algal growth, even though TN may be high.

The comparison of calculated ratios and mean TN and TP at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - The lowest calculated N: P ratio was at KEMUS with a value of 6.31
 - The highest N:P ratio was at HINDS with a value of 19.47.
 - BADDS, BADMS, KEMUS, SOUUS, and HINUS: N:P ratios are below the baseline
- Construction period:
 - N:P ratios:
 - The lowest calculated N: P ratio was at KEMUS with a value of 7.02
 - The highest N:P ratio was at HINDS with a value of 21.02.
 - All locations with the exception of BADDS: N:P ratios have increased above the baseline.
 - Mean TP:
 - All locations with the exception of ROPUS: Mean TP is below the baseline
 - Mean TN:
 - BADMS, COSDS, SOUDS, SOUUS, and ROPUS: Mean TN is above the baseline

N:P ratios above the baseline in the construction period at all but one location indicate a more nitrogen rich environment despite Mean TN concentrations reported above the baseline in only five locations in the construction period. However, current monitoring period (October 2023 to March 2024) N:P ratios are below the baseline in five locations, indicating a slight reducing trend in nitrogen in the current monitoring period.

Table 15 N:P Ratios characterising the monitored locations (mg/L)

Phase		Current			Construction			Baseline		
	Sampling Location	Mean TN	Mean TP	N:P	Mean TN	Mean TP	N:P	Mean TN	Mean TP	N:P
West	BADDS	1.27	0.17	7.60	1.13	0.10	11.03	1.80	0.15	11.84
	BADMS	1.13	0.18	6.48	1.26	0.11	11.32	1.24	0.13	9.54
	BADUS	1.62	0.14	11.41	1.58	0.11	13.95	1.76	0.22	7.90
	COSDS	0.95	0.06	15.00	0.86	0.07	13.14	0.79	0.08	10.38
	COSUS	0.60	0.04	16.36	0.73	0.05	13.47	0.75	0.06	13.29
Central	KEMDS	5.75	0.81	7.07	4.77	0.62	7.68	6.13	1.04	5.88
	KEMUS	4.87	0.77	6.31	4.19	0.60	7.02	5.56	0.82	6.79
	SOU DS	2.27	0.21	10.71	2.85	0.22	13.12	2.66	0.25	10.61
	SOUUS	2.00	0.20	10.00	2.81	0.21	13.32	2.76	0.24	11.58
East	HINDS	1.23	0.06	19.47	1.14	0.05	21.02	1.25	0.12	10.64
	HINUS	1.32	0.09	14.63	1.26	0.08	16.14	1.30	0.09	15.03
	ROPDS	0.95	0.09	10.75	0.86	0.07	13.05	1.73	0.23	7.42
	ROPUS	1.68	0.10	16.15	2.86	0.25	11.51	1.51	0.16	9.22

5.3.9 Metals

Metals at elevated concentrations in aquatic ecosystems can act as stressors and direct toxicants to the biota present. There is extensive discussion about the relative toxicity of different metals in ANZECC & ARM CANZ (2000), which is reflected in the criteria values adopted in this program.

Samples were examined for a suite of ten metals (arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel and zinc) and compared against the NHMRC 2011 Australian Drinking Water Guidelines - Health criteria and ANZG (2018) Freshwater – 95% level of species protection – Ecological criteria.

Summary statistics were calculated for heavy metals, including 80th percentile concentrations for the current monitoring period, the construction monitoring period to date, and the baseline monitoring period. The 80th percentile values have been compared against the applicable criteria and are presented in Table 16 to Table 25.

It is noted that metals concentrations above the baseline at ROPUS can be attributed to increased concentrations recorded in the July 2023 event which may have been caused by increased sediment load within the water as water levels at this location were observed to have decreased. GHD conducted one round of filtered metals sampling and analysis at this location in January 2024 to characterise the increase in concentrations. Analytical results above the LOR from this round identified reduced concentrations when metals were filtered, with the exception of copper which showed equal concentrations between total and filtered metals analysis results in this round. Results from this round of monitoring compared to the adopted criteria are included in Table B7, Appendix B.

Arsenic

Table 16 Summary statistics for arsenic (in mg/L)

ADWG 2011 Criterion:				0.010 mg/L			
ANZG 2018 Criterion:				0.013 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.0020	19	0.0014	10	0.0020
	BADMS	6	0.0020	19	0.0020	5	0.0012
	BADUS	6	0.0020	19	0.0020	15	0.0020
	COSDS	6	0.0010	18	0.0010	14	0.0010
	COSUS	6	0.0010	18	0.0010	14	0.0010
Central	KEMDS	6	0.0020	19	0.0020	13	0.0016
	KEMUS	6	0.0020	19	0.0020	14	0.0020
	SOUDS	6	0.0010	19	0.0014	13	0.0020
	SOUUS	6	0.0010	19	0.0010	13	0.0020
East	HINDS	6	0.0010	9	0.0010	24	0.0020
	HINUS	6	0.0020	9	0.0020	22	0.0018
	ROPDS	6	0.0010	9	0.0010	24	0.0010
	ROPUS	6	0.0030	9	0.0030	21	0.0020

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for arsenic results at each location for the current and construction monitoring periods are summarised as follows:

- Current period and construction period:
 - BADMS, KEMDS, HINUS, and ROPUS: 80th percentiles are above the baseline 80th percentiles.

Current period arsenic concentrations at BADMS, KEMDS, HINUS, and ROPUS have fluctuated between the LOR (<0.001 mg/L) and 0.003 mg/L and whilst 80th percentile concentrations are above baseline, there is no indication of an increasing trend.

Current and construction period 80th percentile concentrations at all other locations remain consistent with the baseline monitoring period. 80th percentile concentrations at all locations are below the adopted criterion.

Cadmium

Table 17 Summary statistics for cadmium (in mg/L)

ADWG 2011 Criterion:				0.0020 mg/L			
ANZG 2018 Criterion:				0.0002 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.0001	19	0.0001	10	0.0001
	BADMS	6	0.0001	19	0.0001	5	0.0001
	BADUS	6	0.0001	19	0.0001	15	0.0001
	COSDS	6	0.0001	18	0.0001	14	0.0001
	COSUS	6	0.0001	18	0.0001	14	0.0001
Central	KEMDS	6	0.0001	19	0.0001	13	0.0001
	KEMUS	6	0.0001	19	0.0001	14	0.0001
	SOUDS	6	0.0001	19	0.0001	13	0.0001
	SOUUS	6	0.0001	19	0.0001	13	0.0001
East	HINDS	6	0.0001	9	0.0001	24	0.0001
	HINUS	6	0.0001	9	0.0001	22	0.0001
	ROPDS	6	0.0001	9	0.0001	24	0.0001
	ROPUS	6	0.0001	9	0.0001	21	0.0001

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

Current and construction period 80th percentile cadmium concentrations at all sampling locations were consistent with the baseline period.

Chromium

Table 18 Summary statistics for chromium (in mg/L)

ADWG 2011 Criterion:				No criterion			
ANZG 2018 Criterion:				0.0001 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.0040	19	0.0020	10	0.0012
	BADMS	6	0.0030	19	0.0024	5	0.0020
	BADUS	6	0.0020	19	0.0020	15	0.0020
	COSDS	6	0.0020	18	0.0020	14	0.0014
	COSUS	6	0.0010	18	0.0010	14	0.0010
Central	KEMDS	6	0.0020	19	0.0010	13	0.0020
	KEMUS	6	0.0010	19	0.0010	14	0.0010
	SOUDS	6	0.0010	19	0.0010	13	0.0016
	SOUUS	6	0.0010	19	0.0010	13	0.0016
East	HINDS	6	0.0010	9	0.0010	24	0.0020
	HINUS	6	0.0020	9	0.0014	22	0.0020
	ROPDS	6	0.0030	9	0.0024	24	0.0010
	ROPUS	6	0.0010	9	0.0024	21	0.0020

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for chromium results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - BADDS, BADMS, COSDS, and ROPDS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - BADDS, BADMS, COSDS, ROPDS, and ROPUS: 80th percentiles are above the baseline 80th percentiles.

Current period chromium concentrations at BADDS, BADMS, COSDS, and ROPDS have fluctuated between the LOR (<0.001 mg/L) and 0.004 mg/L, with the exception of BADDS and BADMS in November 2023 where concentrations up to 0.007 mg/L were recorded. This may be attributed to rainfall above 5mm recorded within the week prior to monitoring and mobilised sediment. Whilst 80th percentile concentrations are above baseline, there is no indication of an increasing trend.

Current and construction period 80th percentile concentrations at all other locations remains consistent with the baseline monitoring period.

Copper

Table 19 Summary statistics for copper (in mg/L)

ADWG 2011 Criterion:				2.0000 mg/L			
ANZG 2018 Criterion:				0.0014 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.0070	19	0.0040	10	0.0042
	BADMS	6	0.0070	19	0.0034	5	0.0026
	BADUS	6	0.0040	19	0.0040	15	0.0052
	COSDS	6	0.0040	18	0.0032	14	0.0024
	COSUS	6	0.0010	18	0.0020	14	0.0028
Central	KEMDS	6	0.0070	19	0.0060	13	0.0170
	KEMUS	6	0.0070	19	0.0050	14	0.0064
	SOUDS	6	0.0030	19	0.0040	13	0.0046
	SOUUS	6	0.0040	19	0.0044	13	0.0050
East	HINDS	6	0.0010	9	0.0010	24	0.0040
	HINUS	6	0.0010	9	0.0010	22	0.0040
	ROPDS	6	0.0070	9	0.0046	24	0.0050
	ROPUS	6	0.0020	9	0.0024	21	0.0050

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for copper results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - BADDS, BADMS, COSDS, KEMUS, and ROPDS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - BADMS and COSDS: 80th percentiles are above the baseline 80th percentiles.

Current period copper concentrations at BADDS, BADMS, COSDS, KEMUS, and ROPDS have fluctuated between the LOR (<0.001 mg/L) and 0.014 mg/L. Concentrations in the current period were highest in the November 2023 and January 2024 monitoring rounds when sampling was conducted within a week of rainfall recorded above 5mm. Whilst 80th percentile concentrations are above baseline, there is no indication of an increasing trend.

Current and construction period 80th percentile concentrations at all other locations remains consistent with the baseline monitoring period.

Iron

Table 20 Summary statistics for iron (in mg/L)

ADWG 2011 Criterion:				No criterion			
ANZG 2018 Criterion:				0.3 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	4.00	19	2.86	10	2.58
	BADMS	6	3.50	19	2.26	5	2.54
	BADUS	6	2.42	19	1.99	15	1.95
	COSDS	6	2.46	18	2.20	14	2.25
	COSUS	6	1.33	18	1.73	14	1.61
Central	KEMDS	6	1.49	19	1.15	13	4.63
	KEMUS	6	1.42	19	1.08	14	1.23
	SOUUS	6	1.20	19	1.78	13	2.86
	SOUUS	6	1.23	19	1.55	13	2.76
East	HINDS	6	1.02	9	1.02	24	3.84
	HINUS	6	3.76	9	3.34	22	4.26
	ROPDS	6	1.50	9	0.89	24	1.01
	ROPUS	6	4.47	9	5.20	21	5.19

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for iron results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - BADDS, BADMS, BADUS, COSDS, KEMUS, and ROPDS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - BADDS, BADUS, COSUS, and ROPUS: 80th percentiles are above the baseline 80th percentiles.

Current period iron concentrations at BADDS, BADMS, BADUS, COSDS, KEMUS, and ROPDS have fluctuated between 0.13 mg/L and 6.87 mg/L. Concentrations in the current period were highest in the November 2023 and January 2024 monitoring rounds when sampling was conducted within a week of rainfall recorded above 5mm. Whilst 80th percentile concentrations are above baseline, there is no indication of an increasing trend.

Current and construction period 80th percentile concentrations at all other locations remains consistent with the baseline monitoring period.

Variations in iron concentrations are presented as a box plot in Figure 23, Appendix D.

Lead

Table 21 Summary statistics for lead (in mg/L)

ADWG 2011 Criterion:				0.0100 mg/L			
ANZG 2018 Criterion:				0.0034 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.0030	19	0.0030	10	0.0016
	BADMS	6	0.0030	19	0.0020	5	0.0020
	BADUS	6	0.0020	19	0.0020	15	0.0022
	COSDS	6	0.0020	18	0.0016	14	0.0010
	COSUS	6	0.0010	18	0.0010	14	0.0010
Central	KEMDS	6	0.0010	19	0.0010	13	0.0022
	KEMUS	6	0.0020	19	0.0014	14	0.0010
	SOUUS	6	0.0010	19	0.0010	13	0.0010
	SOUUS	6	0.0020	19	0.0020	13	0.0010
East	HINDS	6	0.0010	9	0.0010	24	0.0020
	HINUS	6	0.0020	9	0.0014	22	0.0018
	ROPDS	6	0.0010	9	0.0010	24	0.0014
	ROPUS	6	0.0020	9	0.0030	21	0.0020

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for Lead results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - BADDS, BADMS, COSDS, KEMUS, SOUDS, and HINUS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - BADDS, COSDS, KEMUS, SOUUS, and ROPUS: 80th percentiles are above the baseline 80th percentiles.

Current period lead concentrations at BADDS, BADMS, COSDS, KEMUS, SOUUS, and HINUS have fluctuated between the LOR (<0.001 mg/L) and 0.012 mg/L. Concentrations in the current period were highest in the November 2023 monitoring rounds when sampling was conducted within a week of rainfall recorded above 5mm. Whilst 80th percentile concentrations are above the baseline, there is no indication of an increasing trend.

Current and construction period 80th percentile concentrations at all other locations remains consistent with the baseline monitoring period.

Manganese

Table 22 Summary statistics for manganese (in mg/L)

ADWG 2011 Criterion:				0.5 mg/L			
ANZG 2018 Criterion:				1.9 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.38	19	0.34	10	0.38
	BADMS	6	0.30	19	0.54	5	0.49
	BADUS	6	0.37	19	0.46	15	0.33
	COSDS	6	0.46	18	1.08	14	0.40
	COSUS	6	0.80	18	2.39	14	0.45
Central	KEMDS	6	0.10	19	0.11	13	0.79
	KEMUS	6	0.09	19	0.11	14	0.10
	SOUDS	6	0.36	19	0.37	13	0.33
	SOUUS	6	0.48	19	0.42	13	0.39
East	HINDS	6	0.42	9	0.42	24	0.39
	HINUS	6	0.44	9	0.44	22	0.19
	ROPDS	6	0.98	9	0.91	24	1.15
	ROPUS	6	1.07	9	1.19	21	0.32

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for manganese results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - BADUS, COSDS, COSUS, SOUDS, SOUUS, HINDS, HINUS, and ROPUS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - BADMS, BADUS, COSDS, COSUS, KEMDS, SOUDS, SOUUS, HINDS, HINUS, and ROPUS: 80th percentiles are above the baseline 80th percentiles.

Current period concentrations at South Creek (SOUDS and SOUUS) are on an increasing trend however remain within the historical range of the baseline. Concentrations at Cosgroves Creek (COSDS and COSUS) are on a decreasing trend towards the baseline 80th percentile since a peak during the August 2023 monitoring round. Concentrations at Hinchinbrook Creek (HINDS and HINUS) are on an increasing trend since the April 2023 monitoring round but remains below the historical range of the baseline period.

ROPUS is a shallow standing water body and increasing concentrations above the baseline during the current and construction period may be a result of increasingly low and stagnant water levels observed during monitoring (refer Appendix F). Concentrations remain within the historical range of the baseline period.

Variations in manganese concentrations are presented as a box plot in Figure 24, Appendix D

Mercury

Table 23 Summary statistics for mercury (in mg/L)

ADWG 2011 Criterion:				0.0010 mg/L			
ANZG 2018 Criterion:				0.0006 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.0001	19	0.0001	10	0.0001
	BADMS	6	0.0001	19	0.0001	5	0.0001
	BADUS	6	0.0001	19	0.0001	15	0.0001
	COSDS	6	0.0001	18	0.0001	14	0.0001
	COSUS	6	0.0001	18	0.0001	14	0.0001
Central	KEMDS	6	0.0001	19	0.0001	13	0.0001
	KEMUS	6	0.0001	19	0.0001	14	0.0001
	SOUDS	6	0.0001	19	0.0001	13	0.0001
	SOUUS	6	0.0001	19	0.0001	13	0.0001
East	HINDS	6	0.0001	9	0.0001	24	0.0001
	HINUS	6	0.0001	9	0.0001	22	0.0001
	ROPDS	6	0.0001	9	0.0001	24	0.0001
	ROPUS	6	0.0001	9	0.0001	21	0.0001

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

Current and construction period 80th percentile mercury concentrations at all sampling locations were consistent with the baseline period.

Nickel

Table 24 Summary statistics for nickel (in mg/L)

ADWG 2011 Criterion:		0.0200 mg/L					
ANZG 2018 Criterion:		0.0110 mg/L					
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.0040	19	0.0034	10	0.0032
	BADMS	6	0.0040	19	0.0030	5	0.0032
	BADUS	6	0.0030	19	0.0030	15	0.0032
	COSDS	6	0.0030	18	0.0030	14	0.0020
	COSUS	6	0.0010	18	0.0016	14	0.0024
Central	KEMDS	6	0.0020	19	0.0020	13	0.0026
	KEMUS	6	0.0020	19	0.0020	14	0.0024
	SOUUS	6	0.0040	19	0.0030	13	0.0036
	SOUUS	6	0.0040	19	0.0030	13	0.0030
East	HINDS	6	0.0010	9	0.0010	24	0.0020
	HINUS	6	0.0010	9	0.0010	22	0.0020
	ROPDS	6	0.0030	9	0.0030	24	0.0020
	ROPUS	6	0.0020	9	0.0030	21	0.0030

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for nickel results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - BADDS, BADMS, COSDS, SOUDS, SOUUS, and ROPDS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - BADDS, COSDS, and ROPDS: 80th percentiles are above the baseline 80th percentiles.

Current period nickel concentrations at BADDS, BADMS, COSDS, SOUDS, SOUUS, and ROPDS have fluctuated between the LOR (<0.001 mg/L) and 0.008 mg/L. Concentrations in the current period were highest in the November 2023 monitoring rounds when sampling was conducted within a week of rainfall recorded above 5mm. Whilst 80th percentile concentrations are above the baseline, there is no indication of an increasing trend.

Current and construction period 80th percentile concentrations at all other locations remains consistent with the baseline monitoring period.

Zinc

Table 25 Summary statistics for zinc (in mg/L)

ADWG 2011 Criterion:				No criterion			
ANZG 2018 Criterion:				0.008 mg/L			
Phase		Current		Construction		Baseline	
	Sampling Location	N	80 th %ile	N	80 th %ile	N	80 th %ile
West	BADDS	6	0.022	19	0.020	10	0.011
	BADMS	6	0.020	19	0.010	5	0.014
	BADUS	6	0.009	19	0.010	15	0.021
	COSDS	6	0.041	18	0.039	14	0.007
	COSUS	6	0.010	18	0.006	14	0.009
Central	KEMDS	6	0.018	19	0.016	13	0.020
	KEMUS	6	0.021	19	0.017	14	0.015
	SOUDS	6	0.005	19	0.010	13	0.011
	SOUUS	6	0.007	19	0.010	13	0.011
East	HINDS	6	0.005	9	0.010	24	0.008
	HINUS	6	0.005	9	0.005	22	0.007
	ROPDS	6	0.018	9	0.013	24	0.022
	ROPUS	6	0.005	9	0.008	21	0.012

Notes: 1. **BOLD** = sits outside the baseline data (i.e. above the 80th baseline percentile.)

The comparison of calculated percentiles for zinc results at each location for the current and construction monitoring periods are summarised as follows:

- Current period:
 - BADDS, BADMS, COSDS, COSUS, and KEMUS: 80th percentiles are above the baseline 80th percentiles.
- Construction period:
 - BADDS, COSDS, KEMUS, and HINDS: 80th percentiles are above the baseline 80th percentiles.

Current period zinc concentrations at BADDS, BADMS, COSUS and KEMUS have fluctuated between the LOR (<0.005 mg/L) and 0.025 mg/L. Concentrations in the current period were highest in the November 2023 monitoring rounds when sampling was conducted within a week of rainfall recorded above 5mm. Whilst 80th percentile concentrations are above the baseline, there is no indication of an increasing trend.

Current period zinc concentrations at COSDS are on an increasing trend above the baseline that is not reflected in upstream location COSUS.

Current and construction period 80th percentile concentrations at all other locations remains consistent with the baseline monitoring period.

5.3.10 Hardness

ANZECC & ARMCANZ (2000) stated that the toxicity of certain heavy metals in freshwater reduces with increasing hardness. In the July 2023 monitoring round at ROPUS, results for some metals analytes several orders of magnitude higher than previously reported at this location. Hardness analysis was conducted at ROPUS in the January 2024 monitoring round to characterise the increase in concentrations. Hardness-modified trigger values (HMTV) were derived for selected metals exceeding ecological criteria (cadmium, chromium, lead, nickel, and

zinc) using guidance by ANZECC & ARMCANZ (2000). This provides a more accurate assessment of risk to ecological receptors. It is noted that HMTV algorithms are not able to be applied to copper, iron, and manganese.

One exceedance of the ANZECC & ARMCANZ (2000) criteria for chromium was reported at ROPUS in January 2024. The exceedance for chromium was eliminated following the application of HMTV, as summarised in Table B11, Appendix B.

5.3.11 Thermotolerant coliforms and E. coli

No samples were analysed for thermotolerant coliforms and E. coli during the current monitoring period.

5.3.12 Benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN)

All samples reported concentrations of BTEXN below the adopted assessment criteria and below the laboratory LOR of 1 µg/L.

5.3.13 Polycyclic aromatic hydrocarbons (PAHs) and phenols

All samples reported concentrations of PAHs and phenols below the laboratory limit of reporting and adopted assessment criteria.

It is noted that the laboratory limit of reporting was higher than the adopted assessment criteria for anthracene, benzo(a)pyrene, and PAH (sum of total) analysis, and therefore any exceedances of the assessment criteria may not have been reported. Anthracene and benzo(a)pyrene results were compared to previous ultra-trace PAH sampling undertaken during earlier baseline period monitoring (2021) where the laboratory reporting limit was less than adopted assessment criteria. No ultra-trace Benzo(a)pyrene was detected above the LOR in any previous samples.

5.3.14 Organochlorine pesticides (OCPs) and Organophosphorus pesticides (OPPs)

All OCPs reported concentrations below the laboratory LOR and adopted criteria.

The majority of OPPs reported concentrations below the laboratory LOR, with all samples reporting concentrations of OPPs below adopted human health criterion. However, the following samples exceeded the ANZG freshwater criteria:

- Dimethoate (0.15 µg/L) at KEMDS in November 2023 and February 2024, and in October 2023 and November 2023. The maximum reported concentration was 0.60 µg/L.
- Malathion at KEMDS in January 2024, and KEMUS in February 2024. The maximum reported concentration was of 0.24 µg/L.

The following OPPs reported concentrations above the LOR, but below the adopted criteria:

- Acephate at KEMUS (1.9 µg/L) and KEMDS (1.2 µg/L) in October 2023. There are no guidelines applied to this analyte.

It is noted that the laboratory limit of reporting was higher than the adopted assessment criteria for chlorpyrifos, fenitrothion, and parathion, and therefore any exceedances of the assessment criteria may not have been reported.

5.3.15 Oil and Grease

All samples in the current monitoring period reported concentrations oil and grease below the laboratory LOR (5000 µg/L) with exception of the following:

- BADMS in February 2024 with a reported concentration of 6000 µg/L
- BADUS in December 2023 with a reported concentration of 6000 µg/L

There is no adopted ecological or human health criteria for this analyte. Concentrations above the LOR for oil and grease are not uncommon in surface water locations in the western package, with concentrations above 5000 µg/L reported in these locations during the baseline and construction periods since August 2021. Badgerys Creek detected the highest concentration upstream and therefore may have been from an upstream source.

5.3.16 Volatile organic compounds (VOCs) and Polychlorinated biphenyls (PCBs)

All samples reported concentrations of VOCs and PCBs below the adopted assessment criteria and below the laboratory limit of reporting. It is noted that the laboratory limit of reporting was higher than the adopted assessment criteria for 1,2-dichloroethane, carbon tetrachloride, hexachlorobutadiene, vinyl chloride, bromomethane, and 1,2-dibromoethane analysis therefore any exceedances of the assessment criteria may not have been reported.

5.3.17 PFAS

No samples were analysed for PFAS in the current monitoring period.

5.4 Wet weather event monitoring

Wet weather flows can be expected to result in changed waterway conditions. The project during the baseline monitoring period included semi-rural landscapes where some intensive agriculture is present. Wet weather flows in such environments frequently transport agricultural wastes to waterways, with resultant degradation in particular water quality parameters such as nutrients. As construction and development of the area continues, the expected contaminants associated with wet weather events are likely to change.

As noted in Section 3.5, four wet weather (WW) sampling events have occurred during the baseline monitoring period, the fifth wet weather event occurred simultaneously in during the baseline monitoring period for the East portion and the construction period for the West and Central portions, and the sixth wet weather event occurring in during the construction period for all portions.

The analytical results from the wet weather monitoring events are presented in Table B6, Appendix B. The wet weather events included sampling of all 13 surface water locations except for ROPUS during the August 2021 event as it was inaccessible.

Comparison between data from the wet weather events and data from dry weather conditions was made, and observations are summarised below:

- An increase in TSS were reported in majority of locations during wet weather events.
- Elevated concentrations of nutrients, particularly ammonia, total nitrogen and phosphorus were reported in the majority of locations during wet weather events.
- Elevated concentrations of heavy metals were observed in all sampling locations during wet weather events, with the exception of the August 2023 event.
- Elevated concentrations of thermotolerant coliforms were reported in most locations during wet weather events.

No wet weather sampling events were undertaken during this monitoring period.

6. Conclusions and recommendations

6.1 Conclusions

The measured surface water quality parameters and the project analytical suite have provided sufficient data to refine the trigger values determined by the baseline monitoring period. This is the third report providing construction data for the Central and Western portions, and the second report for the Eastern portion. Previous data collected in former locations may be used in future reports to provide additional data if needed.

GHD have assessed the surface water quality for the baseline and construction monitoring periods since April 2021. The baseline period includes results from April 2021 to the start of the construction period. The construction period for the Central and Western portions started in August 2022 and in July 2023 for the Eastern portion. Surface water analytical results for the current monitoring period (October 2023 to March 2024) indicated:

- Exceedances of the baseline 80th percentile concentrations in the construction period for electrical conductivity, total suspended solids, dissolved oxygen, chlorophyll-a and manganese were reflected in both upstream and downstream locations. Slight exceedances of calculated percentiles for BADMS may not be indicative of a trend and may instead be attributed to the limited size of the data set for the baseline monitoring period compared to the construction monitoring period at the time of reporting.
- Most samples reported total suspended solid concentrations above ANZECC & ARMCANZ (2000) ecological criteria during monitoring events, with BADMS reporting the highest concentrations.
- All sampling locations reported multiple nutrient concentrations (ammonia, oxidised nitrogen, total nitrogen, soluble reactive phosphorus, total phosphorus, chlorophyll-a) above adopted ANZECC & ARMCANZ (2000) ecological criteria.
- Exceedances of ANZG (2018) 95% freshwater criterion above the laboratory LOR were reported for nitrate, chromium, copper, lead, manganese, zinc, and OP pesticide compounds dimethoate and malathion.
- Exceedances of the ADWG (NHMRC & NRMCC, 2011) criterion above the laboratory LOR were reported for
 - Lead at BADUS (February 2024)
 - Manganese at BADDs (October 2023), BADMS (October 2023), BADUS (February 2024), COSDS (December 2023), COSUS (October and December 2023), HINDS (October 2023), ROPDS (February and March 2024), and ROPUS (October 2023 to February 2024)
- Overall the calculated construction phase percentiles were within or are slightly exceeding the baseline percentiles for the western, central, and eastern portions of work, with noted increases above the baseline in some metals and nutrients at a minority of locations, no management is required within these portions, with the exception of TSS at Cosgroves Creek.
 - The downstream location (COSDS) was consistently above the upstream location.
 - This monitoring period has been characterised by short intense rainfall systems that has left the ground saturated. This has resulted in increased surface water flows throughout the catchment during smaller rain events.
 - During the monitoring period, TfNSW indicated there have been significant rainfall events prior to each sampling event that have been above the design criteria and therefore the sediment dams have overflowed into the water course. It was also noted by TfNSW that the creek is characterised by ephemeral flows and one un-named tributary has been redirected to drain directly to the project between COSUS and COSDS.

6.2 Recommendations

GHD recommends the following in regard to the surface water monitoring program:

- One round of thermotolerant coliform analysis during the next wet weather event, and one round of OCP and PCB analysis during the next six-month monitoring period to comply with the laboratory analytical schedule (refer Section 3.6).

- TfNSW to check with the M12 west contractor to ensure that all the sediment dams designs and systems are correct and in place and whether there is a need for additional sediment controls.

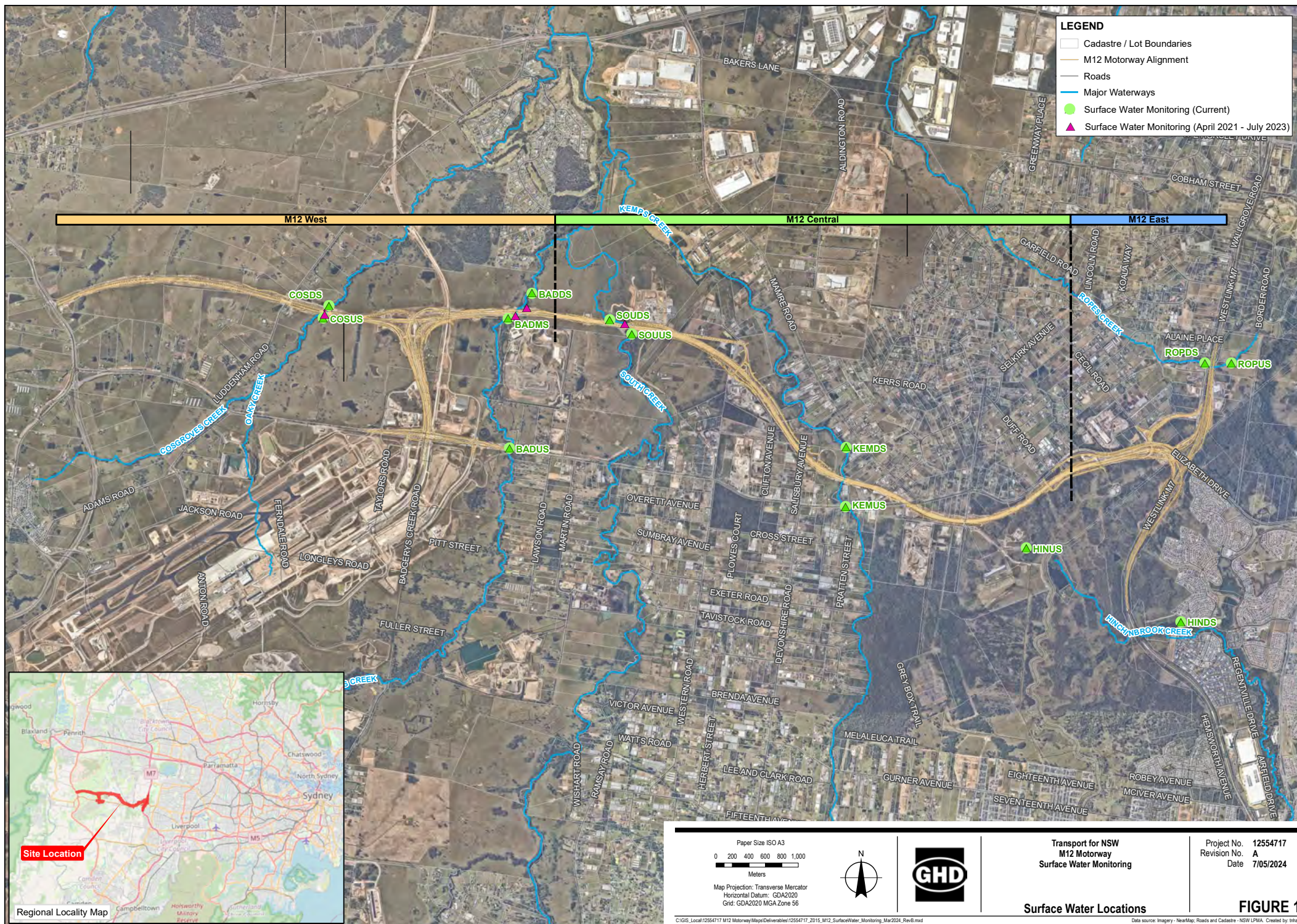
7. References

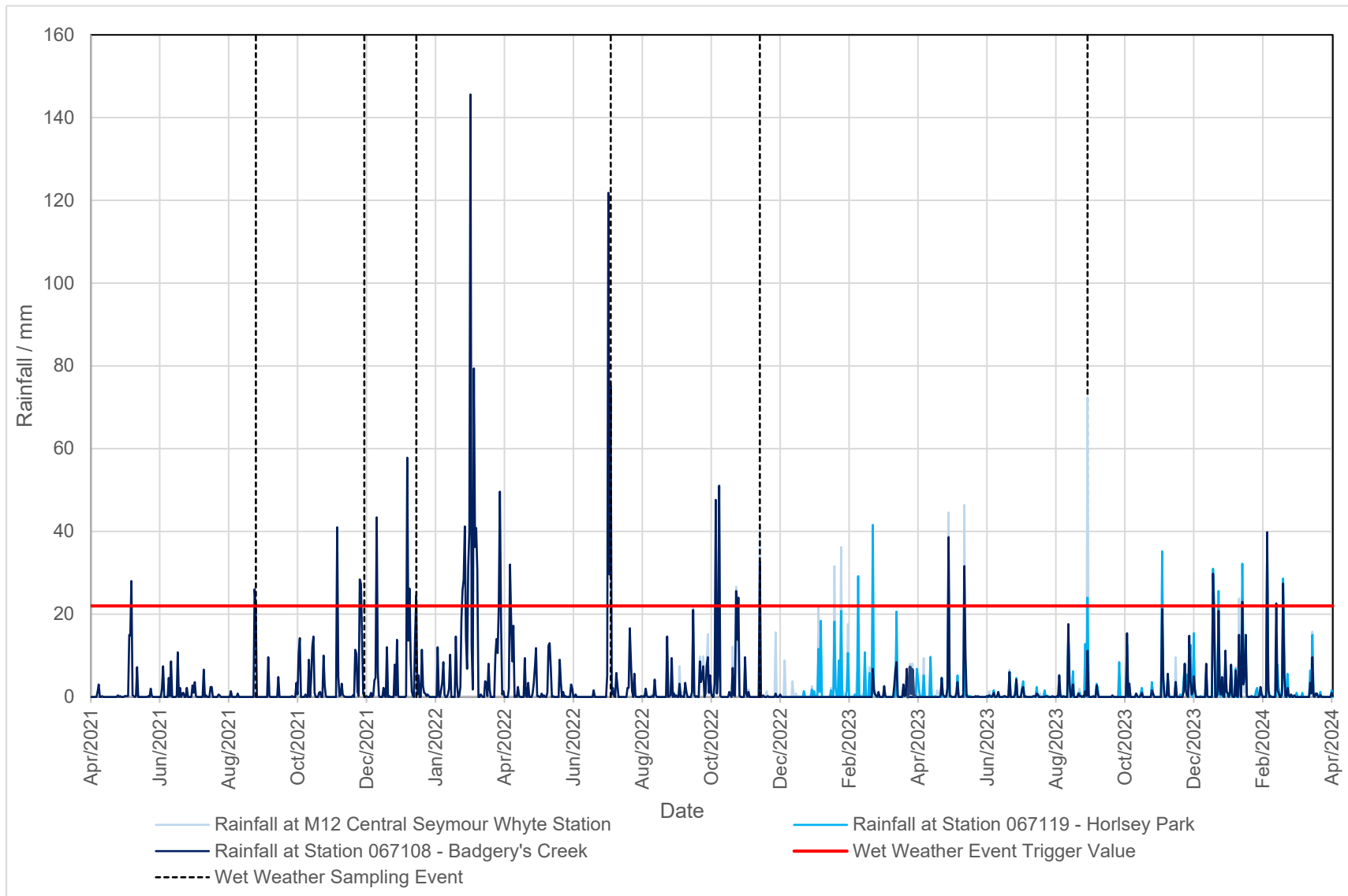
- ANZECC & ARMCANZ. (2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Canberra: Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ).
- ANZG. (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (updated 26 July 2021)*. Canberra ACT, Australia: Australian and New Zealand Governments and Australian state and territory governments: Available at www.waterquality.gov.au/anz-guidelines.
- BOM. (2024). *Climate Data Online Long-term Rainfall and Temperature - Station ID 067108*. Bureau of Meteorology.
- BOM. (2024). *Climate Data Online Long-term Rainfall and Temperature - Station ID 067108*. Bureau of Meteorology.
- Cullen, J., Victor, B., & Bronson, J. (1993). The ethical climate questionnaire: An assessment of its development and validity. *Psychological Reports*.
- DECCW. (2006). *Managing Urban Stormwater, Department of Environment Climate CHange and Water*. Sydney, NSW.
- DPI. (2014, April). Water for livestock: interpreting water quality tests. Department of Primary Industries.
- Geological Survey of NSW . (1991). *Penrith 1:100,000 Geological Series Sheet 9030*.
- GHD. (2019). *M12 Motorway Surface Water Monitoring – Six Monthly Report – April to September 2019*.
- GHD. (2020). *M12 Motorway Surface Water Monitoring – Second Report – October 2019 to March 2020*.
- GHD. (2021a). *M12 Motorway Surface Water Monitoring Bainnual Report 4 - October 2020 to March 2021*.
- GHD. (2021b). *M12 Motorway Surface Water Monitoring Report for monitoring period of April to September 2020*.
- GHD. (2022a). *M12 Surface Water Monitoring Report 5 - April 2021 to September 2021*.
- GHD. (2022b). *M12 Motorway Surface water monitoring program Report 6 - October 2021 to March 2022*.
- GHD. (2022c). *M12 Motorway Surface Water Monitoring Program Report 7 - April 2022 to September 2022*. Sydney: GHD Pty Ltd.
- GHD. (2023a). *M12 Motorway Surface Water Monitoring Program Report 8 - October 2022 to March 2023*. Sydney: GHD Pty Ltd.
- GHD. (2024). *M12 Motorway Surface Water Monitoring Report 9 (April to September 2023)*. Sydney: GHD Pty Ltd.
- HEPA . (2020). *PFAS National Environmental Management Plan (NEMP), Version 2.0*. National Chemicals Working Group of the Heads of EPAs Australia and New Zealand.
- JAJV. (2018a). *M12 Motorway Concept Design and Environmental Impact Statement: Surface Water and Hydrology Assessment Report. Report prepared for Roads and Maritime Services by Jacobs Arcadis Joint Venture*. Sydney, NSW.
- JAJV. (2018b). *M12 Motorway Concept Design and Environmental Impact Statement: Contamination Factual Report. Report prepared for Roads and Maritime Services by Jacobs Arcadis Joint Venture*. Sydney, NSW.
- JAJV. (2018c). *M12 Motorway Concept Design and Environmental Impact Statement: Groundwater Assessment. Report prepared for Roads and Maritime Services by Jacobs Arcadis Joint Venture*. Sydney, NSW.
- JAJV. (2019). *M12 Motorway Environmental Impact Statement. Report prepared for Roads and Maritime Services by Jacobs Arcadis Joint Venture*. Sydney NSW.
- NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM)*. National Environmental Protection Council (NEPC).
- NHMRC & NRMHC. (2011). *Australian Drinking Water Guidelines 6 (version 3.6 updated in March 2021) - Health and Recreation criteria*.
- NSW EPA. (2004). *Approved Methods for the Sampling and Interpretation of Results of Water Pollutants* .
- NSW EPA. (2015). *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*.
- NSW EPA. (2020). *Consultants reporting on contaminated land – Contaminated Land Guidelines*. Parramatta: NSW Environment Protection Authority.
- RTA. (2004). *Guideline for Construction Water Quality Monitoring*.
- Seymour Whyte. (2023). Appendix B Construction Soil and Water Monitoring Program M12 Motorway – Central August 2023, Rev E. *Construction Environmental Management Plan Appendix B4 Construction Soil and Water Management Sub-plan M12 Motorway – Central July 2023, Rev E*.
- TfNSW. (2021). *Overarching Construction Environmental Management Plan, Appendix B4*. Sydney: NSW Government. Retrieved from <https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSI-9364-PA-46%2120211220T053303.892%20GMT>

Appendices

Appendix A

Figures





Appendix A - Figure 2: Rainfall April 2021 to March 2024

Appendix B

Results Tables



Monitoring event	Western Package					Central Package				Eastern Package			
	Badgerys Creek			Cosgroves Creek		Kemps Creek		South Creek		Ropes Creek		Hinchinbrook Creek	
	BADDS	BADMS	BADUS	COSDS	COSUS	KEMDS	KEMUS	SOUDS	SOUUS	ROPDS	ROPUS	HINDS	HINUS
	Down stream	Mid stream	Up stream	Down stream	Up stream	Down stream	Up stream	Down stream	Up stream	Down stream	Up stream	Down stream	Up stream
Event 25 - April 2021	Sampled	Not Required	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 26 - May 2021		Not Required	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 27 - June 2021	Sampled	Not Required	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 28 - July 2021	Sampled	Not Required	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 29 - August 2021	Sampled	Not Required	Sampled	Sampled	Sampled			Sampled	Sampled				
WW Event 1 - 25 August 2021	Sampled	Not Required	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled		Sampled	Sampled
Event 30 - September 2021	Sampled	Not Required	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled		Sampled	
Event 31 - October 2021	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled		Sampled	Sampled
Event 32 - November 2021	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
WW Event 2 - 29 November 2021	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 33 - December 2021	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
WW Event 3 - 14 January 2022	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 34 - February 2022			Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 35 - March 2022			Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 36 - April 2022			Sampled				Sampled			Sampled		Sampled	
Event 37 - May 2022			Sampled	Sampled	Sampled	Sampled	Sampled			Sampled	Sampled	Sampled	Sampled
Event 38 - June 2022	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
WW Event 4 - 5-6 July 2022	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 39 - July 2022	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 40 - August 2022	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 41 - September 2022	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 42 - October 2022	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
WW Event 5 - 14-15 November 2022	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 43 - December 2022	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 44 - January 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 45 - February 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 46 - March 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 47 - April 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 48 - May 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 49 - June 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 50 - July 2023	Sampled	Sampled	Sampled			Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 51 - August 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
WW Event 6 - 31 August 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 52 - September 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 53 - October 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 54 - November 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 55 - December 2023	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 56 - January 2024	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 57 - February 2024	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Event 58 - March 2024	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled		Sampled	Sampled

*BADMS only sampled since October 2021

	Sampled - Baseline period
	Not sampled
	Wet weather event
	Sampled - Construction period
Bold	Current monitoring period

Zone	Location	Month	Event	Observations and Deviations	Photo
West	BADUS, BADMS, BADDs, COSUS, COSDS	October 2023	Event 53	Locations sampled were generally turbid after 15mm of rainfall recorded 2 days prior (Image is BADDs)	
East	ROPUS	November 2023	Event 54	John Holland construction works increased significantly since previous monitoring round with holding retention ponds and expansion of site office (AF9)	
East	HINDS	December 2023	Event 55	New access track visible adjacent to the north-west of HINDS related to John Holland works	
West	COSUS	December 2023	Event 55	Connecting stream at sampling point that is usually dry is now flowing. Water level was noted to be higher than previous monitoring event. This ingress point has remained flowing in subsequent monitoring events to March 2024.	
All	All surface water locations	January 2024	Event 56	Visibly higher water level and faster flow after recent rainfall (Photo is of KEMDS)	

Central	SOUUS, SOUDS	January 2024	Event 56	M12 Central Creek crossing upstream of SOUUS and SOUDS was overflowing due to rain, with construction vehicles passing through the water	
West	BADUS	February 2024	Event 57	Vegetation around BADUS was stripped bare and replaced with rocks and hessian netting. It is understood these works are not related to the M12 project and are being conducted to improve flow aperture underneath the bridge on Elizabeth Drive	
Central	KEMUS, KEMDS	February 2024	Event 57	Water flow faster was generally faster and volume larger than normal after rainfall recorded overnight prior to sampling. Faster flow was particularly noted at KEMUS and KEMDS. (Photo is of KEMUS)	
East	ROPUS	March 2024	Event 58	ROPUS was not able to be sampled due to increased John Holland construction works	

12554717

					Inorganics		Biological		Acidity & Alkalinity		Nutrients								Metals										BTEXN										TRH - NEPM 2013										TRH - NEPM 1999					TPH
					Total Dissolved Solids	Total Suspended Solids	E.coli	Thermotolerant (Faecal) Coliforms	Hardness as CaCO3	Hardness as CaCO3 (Filtered)	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Reactive Phosphorus as P	Chlorophyll a	Phosphorus (Total)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX (Sum of Total) - Lab Calc	Naphthalene (BTEXN suite)	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (C16-C34 Fraction)	F4 (C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Oil & Grease				
					mg/L	mg/L	orgs/100mL	orgs/100mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L				
EQL					10	5	1	1	1	1	0.01	0.01	0.01	0.01	0.1	0.1	0.01	1	0.01	0.001	0.0001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.005	1	2	2	2	2	2	1	5	20	20	100	100	100	100	100	100	20	50	100	50	50	5000			
ADWG 2011 Health (v3.7 updated 2022)											11.2 ⁹¹	0.91 ⁹²								0.01	0.002		2		0.01	0.5	0.001	0.02		1	800	300			600																			
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)					6						0.01166 ⁹³			0.04	0.35		0.008	0.003	0.025																																			
ANZECC 2000 - Stock Watering					5000 ⁹⁴			100			90 ⁹⁵	9.1 ⁹⁶								0.5	0.01	1	1 ⁹⁷		0.1		0.002	1	20																									
ANZG (2018) - FW - 95% (updated 26 July 2021)											0.9 ⁹⁸	2.4 ⁹⁹								0.013 ¹⁰⁰	0.0002	0.001 ¹⁰¹	0.0014		0.0034	1.9	0.0006	0.011	0.008	950	180	80	350			16																		
Package	Location Code	Sample Date	Field ID	Lab Report Number	245	5	-	-	64	-	0.02	0.04	<0.01	0.04	1.2	1.2	<0.01	25	0.08	<0.001	<0.0001	<0.001	<0.001	0.52	<0.001	0.191	<0.0001	0.002	<0.005	<1	<2	<2	<2	<2	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	<5000				
HINUS	1/05/2023	HINDS	ES2314384	235	16	-	-	-	-	-	0.01	<0.01	<0.01	<0.01	1.9	1.9	<0.01	27	0.15	0.001	<0.0001	<0.001	<0.001	1.32	<0.001	0.609	<0.0001	<0.001	<0.005	<1	<2	<2	<2	<2	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-	<5000					
	6/06/2023	HINDS	ES2319028	244	7	-	-	-	-	-	0.02	0.01	<0.01	0.01	1	1	<0.01	48	0.05	<0.001	<0.0001	<0.001	<0.001	0.86	<0.001	0.279	<0.0001	0.001	0.005	<1	<2	<2	<2	<2	<2	<1	-	-	-	-	-	-	-	-	-	-	-	<5000						
	7/04/2021	HINUS	ES2112843	97	39	-	-	-	21	-	0.02	0.02	<0.01	<0.01	1.4	1.4	<0.01	2	0.08	<0.001	<0.0001	<0.001	0.003	3.06	<0.001	0.342	<0.0001	<0.001	<0.005	<1	<2	<2	<2	<2	<2	<1	<5	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<5000					
	10/05/2021	HINUS	ES2117470	134	<5	-	-	-	26	-	0.06	0.02	<0.01	0.02	1.3	1.3	<0.01	12	0.09	<0.001	<0.0001	<0.001	<0.001	4.48	<0.001	0.164	<0.0001	0.001	<0.005	<1	<2	<2	<2	<2	<2	<1	<5	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<5000					
	10/06/2021	HINUS	ES2121872	146	8	-	-	-	30	-	0.02	0.04	<0.01	0.04	0.9	0.9	<0.01	3	0.04	<0.001	<0.0001	<0.001	<0.001	3.38	<0.001	0.036	<0.0001	<0.001	<0.005	<1	<2	<2	<2	<2	<2	<1	<5	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<5000					
	9/07/2021	HINUS	ES2125418	130	<5	-	-	-	34	<0.01	<0.01	<0.01	<0.01	0.9	0.9	<0.01	<1	0.02	<0.001	<0.0001	<0.001	<0.001	2	<0.001	0.055	<0.0001	<0.001	<0.005	<1	<2	<2	<2	<2	<2	<1	<5	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<5000						
	13/10/2021	HINUS	ES2136906	215	8	-	-	-	-	-	0.04	0.01	<0.01	0.01	1.5	1.5	<0.01	5	0.06	<0.001	<0.0001	<0.001	<0.001	2.11	<0.001	0.333	<0.0001	0.001	<0.005	<1	<2	<2	<2	<2	<2	<1	<5	-	-	-	-	-	-	-	-	-	-	<5000						
	8/11/2021	HINUS	ES2140337	260	235	-	-	-	-	-	0.06	<0.01	<0.01	<0.01	3.5	3.5	<0.01	28	0.35	0.002	<0.0001	0.002	0.008	6.73	0.004	<0.001	<0.001	0.215	0.09	<1	<2	<2	<2	<2	<1	<5	-	-	-	-	-	-	-	-	-	-	-	<5000						
	7/12/2021	SWDUP2	849475	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	<0.0002	0.001	0.003	-	0.001	-	<0.0001	0.002	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5000					
	7/12/2021	HINUS	ES2144579	328	7	18 ¹⁰²	18 ¹⁰³	-	-	-	0.01	<0.01	<0.01	<0.01	1.3	1.3	<0.01	18	0.08	<0.001	<0.0001	0.001	<0.001	2.79	<0.001	0.314	<0.0001	0.001	<0.005	<1	<2	<2	<2	<2	<2	<1	<5	-	-	-	-	-	-	-	-	-	-	-	-	<5000				
	8/02/2022	HINUS	ES2204223	264	<5	-	-	-	-	-	0.01	<0.01	<0.01	0.01	0.9	0.9	<0.01	-	0.04	0.001	<0.0001	<0.001	<0.001	2.32	<0.001	0.094	<0.0001	<0.001	<0.005	<1	<2	<2	<2	<2	<2	<1	<5	-	-	-	-	-	-	-	-	-	-	-	-	<5000				
	17/03/2022	SWDUP2	873124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	<0.0002	0.004	0.007	-	0.003	-	<0.0001	0.004	0.032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5000			
	17/03/2022	HINUS	ES2209565	98	7	-	-	-	-	-	0.02	<0.01	<0.01	<0.01	1.4	1.4	<0.01	8	0.11	0.002	<0.0001	0.002	0.004	3.4	<0.001	0.116	<0.0001	0.002	0.006	<1	<2	<2	<2	<2	<2	<1	<5	-	-	-	-	-	-	-	-	-	-	-	-	<5000				
	27/05/2022	HINUS	ES2218614	299	8	-	-	-	-	-	0.08	0.24	0.03	0.02	1.5	1.2	<0.01	10	0.09	0.001	<0.0001	0.003	0.005	2.08	0.001	0.067	<0.0001	0.002	0.015	<1	<2	<2	<2	<2	<2	<1	<5	-	-	-	-	-	-	-	-	-	-	-	-	<5000				
	28/06/2022	HINUS	ES2222658	286	<5	-	-	-	-	-	0.03	0.04	<0.01	0.04	0.7	0.7	<0.01	1	0.03	<0.001	<0.0001	0.001	0.002	1.86	<0.001	0.035	<0.0001	<0.001	<0.005	<1	<2	<2	<2	<2	<2	<1	<5	-	-	-	-	-	-	-	-	-	-	-	-	<5000				
	20/07/2022	HINUS	ES2225657	261	35	-	-	-	-	-	0.1	0.18	<0.01	0.18	1.5	1.3	<0.01	6	0.14	0.002	<0.0001	0.005	0.007	5.5	0.003	0.109	<0.001	0.004	0.012	<1	<2	<2	<2	<2	<2	<1	<5	-	-	-	-	-	-	-	-	-	-	-	-	<5000				
	15/08/2022	HINUS	ES2229050	248	5	-	-	-	-	-	0.06	0.12	<0.01	0.12	1.5	1.4	<0.01	2	0.14	0.001	<0.																																	

12554717

[illegible]

5 of 16

[illegible]

The Baseline monitoring period for M12 - West and M12 - Central ended in July 2022, and M12 - East in June 2023

Env Stds Comments

#1:Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427

#2:Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).

#3:Calculated from ammonia NH4

#4:Loss of production expected at 5000 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry

#5:400 mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO3) is likely to be toxic.

#6:30 mg/L divided by molecular weight

#7:>0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry

#8:Measured as NH3-N at pH 8

#9:Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"

#10:In absence of total As guideline, As (V) guideline has been adopted.

#11:In absence of total Cr guideline, Cr (VI) guideline has been adopted.

					OP Pesticides																																								Pesticides																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
					Bensulide	Naftalofos	Azinphos methyl	Boislar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Azinphos Ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenamiphos	Fenitrothion	Fensulfthion	Fenitrothion	Malathion	Metidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Omethoate	Parathion	Phorate	Pirimiphos-ethyl	Pirimiphos-methyl	Profenofos	Prothiotos	Pyrazophos	Romel	Sulfotep	Terbutofos	Thiometon	Trichloronate	Tetrachlorvinphos	Acaphate	Demeton-O & Demeton-S	Formothion	Temephos	Trichlorfon	Triazophos																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L</

					OP Pesticides																																														Pesticides										
					Bensulide	Natallafos	Azinphos methyl	Boisar (Buprosol)	Bromophos ethyl	Carbophenothion	Azinphos Ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethionprop	Fenamiphos	Fenitrothion	Fensulfotrhion	Fenthion	Malathion	Metidathion	Methyl parathion	Mevinphos (Phosadrin)	Monocrotophos	Omethoate	Parathion	Phorate	Priniphos-ethyl	Priniphos-methyl	Profenofos	Prothiofos	Pyrazophos	Romeil	Sulfotep	Terbufos	Thiomethon	Trichloronate	Tetrachlorvinphos	Acaphate	Demeton-O & Demeton-S	Formothion	Temphos	Trichlorfon	Triazophos							
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L						
EQI					0.1	1	30	10	10	0.5	0.02	2	10	0.2	0.01	0.02	0.02	0.02	0.02	4	5	7	4	0.05	4	1	0.5	7	10	7	70	6	0.7	5	2	1	20	0.1	0.5	90	0.3	0.1	0.1	20	10	0.005	0.9	4	0.5	0.5	100	8	0.02	50	400	7	0.005				
ADWGS 2011 Health (v3.7 updated 2022)																																																													
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																																													
ANZECC 2000 - Stock Watering																																																													
ANZG (2018) - FW - 95% (updated 26 July 2021)							0.02					0.01								0.01		0.15						0.2			0.05					0.004																									
Package	Location Code	Sample Date	Field ID	Lab Report Number	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
HINUS		4/04/2023	HINDS	ES2311425	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
		1/05/2023	HINDS	ES2314384	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
		6/06/2023	HINDS	ES2319028	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
		7/04/2021	HINUS	ES2112843	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
		10/05/2021	HINUS	ES2117470	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
		10/06/2021	HINUS	ES2121872	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
		9/07/2021	HINUS	ES2125418	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
		13/10/2021	HINUS	ES2136906	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
		8/11/2021	HINUS	ES2140337	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
		7/12/2021	SWDUP2	849475	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		7/12/2021	HINUS	ES2144579	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
		8/02/2022	HINUS	ES2204223	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005							
		17/03/2022	SWDUP2	873124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		17/03/2022	HINUS	ES2209565	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<																											

		OP Pesticides																																								Pesticides														
		Bensulfide	Natalfos	Azinphos methyl	Boislar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Azinphos Ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethionop	Fenamiphos	Fenitrothion	Fensulfotiothion	Fenthion	Malathion	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Omethoate	Parathion	Phorate	Pirimiphos-ethyl	Pirimiphos-methyl	Profenofos	Prothiobos	Pyrazophos	Ronnel	Sulfotep	Terbufos	Thiomethon	Trichloronate	Tetrachlorvinphos	Acaphate	Demeton-O & Demeton-S	Formethion	Temephos	Trichlorfon	Triazophos					
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L							
EOL		0.1	1	0.02	0.05	0.1	0.02	0.02	0.02	0.2	0.2	0.01	0.02	0.02	0.02	0.01	0.02	0.05	0.05	0.05	0.02	0.01	0.01	2	0.01	0.05	0.02	0.1	0.5	0.02	0.02	0.01	0.01	0.2	0.1	0.01	0.01	0.01	0.1	0.1	10	0.005	0.01	0.5	0.5	0.01	0.5	0.02	20	0.02	0.02	0.005				
ADIWG 2011 Health (v3.7 updated 2022)				30	10	10	0.5		2	10						4	5	7	4	0.05	0.02	1	0.5	7	10	7	70	6	0.7	5	2	1	20																							
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																																								
ANZECC 2000 - Stock Watering																																																								
ANZG (2018) - FW - 95% (updated 26 July 2021)			0.02							0.01						0.01		0.15							0.2			0.05					0.004																							
Package	Location Code	Sample Date	Field ID	Lab Report Number	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005
M12 - West	BADDs	4/04/2023	ROPUS	ES2311425	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005
		1/05/2023	ROPUS	ES23114384	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005
		6/06/2023	ROPUS	ES23119028	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005
		8/04/2021	BADDs	ES2112843	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005
		10/06/2021	BADDs	ES2121872	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005
		9/07/2021	BADDs	ES2125418	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005
		13/08/2021	BADDs	ES2129574	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005
					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
		3/09/2021	BADDs	ES2132112	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005
					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
		13/10/2021	BADDs	ES2136906	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005
		9/11/2021	BADDs	ES2140480	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005
		7/12/2021	BADDs	ES2144579	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.2	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	&lt		



Appendix B
Table B3
Analytical Results for Baseline Monitoring Period (April 2021 to June 2023)

					OP Pesticides																																								Pesticides																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					Bensulide	Natallolol	Azinphos methyl	Boistar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Azinphos Ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethionprop	Fenamiphos	Fenitrothion	Fensulfotiothion	Fenitrothion	Malathion	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Omethoate	Parathion	Phorate	Priniphos-ethyl	Priniphos-methyl	Profenofos	Prothiodis	Pyrazophos	Ronnel	Sulfotep	Terbufos	Thiometon	Trichloronate	Tetrachlorvinphos	Acaphate	Demeton-O & Demeton-S	Formothion	Temphos	Trichlorfon	Triazophos																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L

Statistical Summary																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Number of Results		202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	2

The Baseline monitoring period for M12 - West and M12 - Central ended in July 2022, and M12 - East in June 2023

Env Strds Comments

- #1:Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427
- #2:Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).
- #3:Calculated from ammonia NH4
- #4:Loss of production expected at 5000 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry
- #5:400 mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO3) is likely to be toxic.
- #6:30 mg/L divided by molecular weight
- #7:>0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry
- #8:Measured as NH3-N at pH 8
- #9:Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"
- #10:In absence of total As guideline, As (VI) guideline has been adopted.
- #11:In absence of total Cr guideline, Cr (VI) guideline has been adopted.

Data Comments

- #1 Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
- #2 Reported Analyte LOR is higher than Requested Analyte LOR
- #3 Result value is an approximate.

13 of 16

14 of 16

[illegible]

The Baseline monitoring period for M12 - West and M12 - Central ended in July 2022, and M12 - East in June 2023

#1: Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427
#2: Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).
#3: Calculated from ammonia NH4
#4: Loss of production expected at 5000 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry
#5: 400 mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO3) is likely to be toxic.
#6: 30 mg/L divided by molecular weight
#7: >0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry
#8: Measured as NH3-N at pH 8
#9: Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"
#10: In absence of total As guideline, As (VI) guideline has been adopted.
#11: In absence of total Cr guideline, Cr (VI) guideline has been adopted.

#1 Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard
#2 Reported Analyte LOR is higher than Requested Analyte LOR
#3 Result value is an approximate.

Statistical Summary																																	
Number of Results	28	28	28	28	28	28	28	28	28	28	28	2	28	28	28	28	28	2	28	28	28	28	28	28	28	28	28	28	28	2	28	2	28
Number of Detects	1	7	9	2	10	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4	1	11	1	12	
Minimum Concentration	<0.05	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	
Minimum Detect	0.1	0.01	0.02	0.03	0.01	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	0.03	0.01	0.03
Maximum Concentration	0.1	0.47	0.47	0.15	0.18	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.01	<0.02	<0.02	<0.02	<0.02	0.02	<0.01	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.02	0.03	1.39	0.03
Maximum Detect	0.1	0.47	0.47	0.15	0.18	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.02	0.03	1.39	0.03
Average Concentration	0.05	0.03	0.032	0.015	0.016	0.0096	0.01	0.0096	0.0096	0.0096	0.024			0.0096	0.0096	0.0095	0.0096	0.0061		0.0096	0.011	0.025	0.025	0.011	0.025	0.025	0.011	0.024	0.025	0.024	0.024	0.0061	
Geometric Average	0.049	0.014	0.015	0.011	0.0084	0.0095	0.0098	0.0095	0.0095	0.0095	0.022			0.0095	0.0095	0.0093	0.0095	0.0057		0.0095	0.011	0.025	0.025	0.011	0.025	0.025	0.011	0.022	0.025	0.022	0.022	0.0057	
Median Concentration	0.05	0.01	0.01	0.01	0.005	0.01	0.01	0.01	0.01	0.01	0.025	0.005		0.01	0.01	0.01	0.01	0.005	0.005	0.01	0.01	0.025	0.025	0.01	0.025	0.025	0.01	0.025	0.025	0.025	0.025	0.005	
Standard Deviation	0.012	0.087	0.087	0.027	0.034	0.0013	0.0024	0.0013	0.0013	0.0013	0.0052			0.0013	0.0013	0.0016	0.0013	0.0031		0.0013	0.0039	0	0	0.0039	0	0	0.0039	0.0052	0	0.0052	0.0052	0.0031	
Geometric Standard Deviation	1.3	2.2	2.4	1.8	2.4	1.2	1.3	1.2	1.2	1.2	1.5			1.2	1.2	1.2	1.2	1.4		1.2	1.3					1.3	1.5		1.5	1.5	1.4	3.6	

Data Comments
#1 Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.



Appendix B

Table B5

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	Inorganics			Biological	Acidity & Alkalinity	Nutrients								Metals										BTEXN							TPH		
	pH (Lab)	Total Dissolved Solids	Total Suspended Solids	Thermotolerant (Faecal) Coliforms	Hardness as CaCO3	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Reactive Phosphorus as P	Chlorophyll a	Phosphorus (Total)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX (Sum of Total) - Lab Calc	Naphthalene (BTEXN suite)	Oil & Grease
	pH units	mg/L	mg/L	orgs/100mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.01	10	5	1	1	0.01	0.01	0.01	0.01	0.1	0.1	0.01	0.001	0.01	0.001	0.0001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.005	1	2	2	2	2	2	1	5	5000
ADWG 2011 Health (v3.7 updated 2022)							11.29 ^{#1}	0.91 ^{#2}							0.01	0.002		2		0.01	0.5	0.001	0.02		1	800	300			600			
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)	6.5-9		6			0.01165 ^{#3}			0.04	0.35		0.008	0.003	0.025																			
ANZECC 2000 - Stock Watering		5000 ^{#4}		100			90 ^{#5}	9.1 ^{#6}							0.5	0.01	1	1 ^{#7}		0.1		0.002	1	20									
ANZG (2018) - FW - 95% (updated 26 July 2021)						0.9 ^{#8}	2.4 ^{#9}								0.013 ^{#10}	0.0002	0.001 ^{#11}	0.0014		0.0034	1.9	0.0006	0.011	0.008	950	180	80	350				16	

Package	Location	Date	Field ID	Sample Type	Lab Report																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										



Appendix B

Table B5

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	Inorganics			Biological	Acidity & Alkalinity	Nutrients								Metals										BTEXN							TPH		
	pH (Lab)	Total Dissolved Solids	Total Suspended Solids	Thermotolerant (Faecal) Coliforms	Hardness as CaCO3	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Reactive Phosphorus as P	Chlorophyll a	Phosphorus (Total)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX (Sum of Total) - Lab Calc	Naphthalene (BTEXN suite)	Oil & Grease
pH units	mg/L	mg/L	orgs/100mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.01	10	5	1	1	0.01	0.01	0.01	0.01	0.1	0.1	0.01	0.001	0.01	0.001	0.0001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.005	1	2	2	2	2	2	1	5	5000
ADWG 2011 Health (v3.7 updated 2022)							11.29 ^{#1}	0.91 ^{#2}							0.01	0.002		2		0.01	0.5	0.001	0.02		1	800	300			600			
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)	6.5-9		6			0.01165 ^{#3}			0.04	0.35		0.008	0.003	0.025																			
ANZECC 2000 - Stock Watering		5000 ^{#4}		100			90 ^{#5}	9.1 ^{#6}							0.5	0.01	1	1 ^{#7}		0.1		0.002	1	20									
ANZG (2018) - FW - 95% (updated 26 July 2021)						0.9 ^{#8}	2.4 ^{#9}								0.013 ^{#10}	0.0002	0.001 ^{#11}	0.0014		0.0034	1.9	0.0006	0.011	0.008	950	180	80	350				16	

Package	Location	Date	Field ID	Sample Type	Lab Report																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											



Appendix B

Table B5

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	Inorganics			Biological	Acidity & Alkalinity	Nutrients									Metals										BTEXN							TPH	
	pH (Lab)	Total Dissolved Solids	Total Suspended Solids	Thermotolerant (Faecal) Coliforms	Hardness as CaCO3	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Reactive Phosphorus as P	Chlorophyll a	Phosphorus (Total)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX (Sum of Total) - Lab Calc	Naphthalene (BTEXN suite)	Oil & Grease
	pH units	mg/L	mg/L	orgs/100mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.01	10	5	1	1	0.01	0.01	0.01	0.01	0.1	0.1	0.01	0.001	0.01	0.001	0.0001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.005	1	2	2	2	2	2	1	5	5000
ADWG 2011 Health (v3.7 updated 2022)							11.29 ^{#1}	0.91 ^{#2}							0.01	0.002		2		0.01	0.5	0.001	0.02		1	800	300			600			
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)	6.5-9		6			0.01165 ^{#3}			0.04	0.35		0.008	0.003	0.025											1		800	300					
ANZECC 2000 - Stock Watering		5000 ^{#4}		100			90 ^{#5}	9.1 ^{#6}							0.5	0.01	1			0.1		0.002	1	20									
ANZG (2018) - FW - 95% (updated 26 July 2021)						0.9 ^{#8}	2.4 ^{#9}								0.013 ^{#10}	0.0002	0.001 ^{#11}	0.0014		0.0034	1.9	0.0006	0.011	0.008	950	180	80	350				16	

Package	Location	Date	Field ID	Sample Type	Lab Report																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</



Appendix B

Table B5

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	Inorganics			Biological	Acidity & Alkalinity	Nutrients									Metals										BTEXN								TPH
	pH (Lab)	Total Dissolved Solids	Total Suspended Solids	Thermotolerant (Faecal) Coliforms	Hardness as CaCO3	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Reactive Phosphorus as P	Chlorophyll a	Phosphorus (Total)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX (Sum of Total) - Lab Calc	Naphthalene (BTEXN suite)	Oil & Grease
EQL	pH units	mg/L	mg/L	orgs/100mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	0.01	10	5	1	1	0.01	0.01	0.01	0.01	0.1	0.1	0.01	0.001	0.01	0.001	0.0001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.005	1	2	2	2	2	2	1	5	5000
ADWG 2011 Health (v3.7 updated 2022)							11.29 ^{#1}	0.91 ^{#2}							0.01	0.002		2		0.01	0.5	0.001	0.02		1	800	300		600				
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)	6.5-9		6			0.01165 ^{#3}			0.04	0.35		0.008	0.003	0.025																			
ANZECC 2000 - Stock Watering		5000 ^{#4}		100			90 ^{#5}	9.1 ^{#6}							0.5	0.01	1	1 ^{#7}		0.1		0.002	1	20									
ANZG (2018) - FW - 95% (updated 26 July 2021)						0.9 ^{#8}	2.4 ^{#9}								0.013 ^{#10}	0.0002	0.001 ^{#11}	0.0014		0.0034	1.9	0.0006	0.011	0.008	950	180	80	350				16	

Package	Location	Date	Field ID	Sample Type	Lab Report

Statistics																																	
Number of Results	17	204	204	9	10	204	204	204	204	204	204	204	204	204	232	232	232	232	204	232	204	232	232	232	204	204	204	204	204	204	204	204	204
Number of Detects	17	204	188	9	10	188	161	84	161	204	204	81	189	197	108	3	74	166	204	60	204	0	191	139	0	2	0	0	0	0	2	0	8
Minimum Concentration	7.65	164	5	10	44	0.01	0.01	0.01	0.01	0.2	0.2	0.01	0.001	<0.01	0.001	<0.0001	0.001	0.001	0.06	0.001	0.016	<0.0001	0.001	0.005	<1	2	<2	<2	<2	<2	<1	<5	5000
Minimum Detect	7.65	164	5	10	44	0.01	0.01	0.01	0.01	0.2	0.2	0.01	0.001	0.02	0.001	0.0002	0.001	0.001	0.06	0.001	0.016	ND	0.001	0.005	ND	2	ND	ND	ND	ND	2	ND	5000
Maximum Concentration	8.28	3720	1030	540	328	2.69	9.02	0.17	9.02	11.1	9.3	1.04	0.389	1.32	0.011	<0.002	0.058	0.074	65.5	0.064	3.7	<0.001	0.043	0.17	<1	5	<2	<2	<2	<2	5	<5	14000
Maximum Detect	8.28	3720	1030	540	328	2.69	9.02	0.17	9.02	11.1	9.3	1.04	0.389	1.32	0.011	0.0003	0.058	0.074	65.5	0.064	3.7	ND	0.043	0.17	ND	5	ND	ND	ND	ND	5	ND	14000
Average Concentration *	7.9	831	35	111	265	0.1	0.94	0.019	0.96	2.1	1.2	0.11	0.018	0.21	0.001	0.000059	0.0013	0.003	1.7	0.0013	0.41	0.000052	0.0022	0.01	0.5	1	1	1	1	1	0.53	2.5	2735
Median Concentration *	7.95	677	23	37	298	0.04	0.145	0.005	0.15	1.3	1	0.005	0.008	0.1	0.0005	0.00005	0.0005	0.002	1.025	0.0005	0.241	0.00005	0.002	0.007	0.5	1	1	1	1	1	0.5	2.5	2500
Standard Deviation *	0.18	537	77	171	85	0.33	1.6	0.03	1.6	2	0.91	0.22	0.036	0.25	0.00095	0.000067	0.0039	0.0052	4.7	0.0043	0.54	0.00003	0.0029	0.014	0	0.29	0	0	0	0	0.33	0	1303
95% UCL (Student's-t) *	8.022	892.7	44.19	216.7	314.2	0.139	1.132	0.0225	1.15	2.365	1.277	0.139	0.0225	0.242	0.00114	0.0006648	0.00176	0.00357	2.281	0.00176	0.472	0.00005514	0.00253	0.0119	0.5	1.058	1	1	1	1	0.568	2.5	2886

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427

#2 Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).

#3 Calculated from ammonia NH4

#4 Loss of production expected at 5000 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry

#5 400 mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO3) is likely to be toxic.

#6 30 mg/L divided by molecular weight

#7 >0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry

#8 Measured as NH3-N at pH 8

#9 Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"

#10 In absence of total As guideline, As (V) guideline has been adopted.

#11 In absence of total Cr guideline, Cr (VI) guideline has been adopted.

#12 Result value is an approximate.

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)

	PAHs - standard 16																		Phenols - Halogenated						Phenols - Non-Halogenated			OC Pesticides																					
	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 6 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	2-Chlorophenol	2,4-Dichlorophenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,6-Dichlorophenol	4-Chloro-3-methylphenol	Pentachlorophenol	Phenol	2-Nitrophenol	2-Methylphenol (o-Cresol)	3,4-Methylphenol (m,p-cresol)	2,4-Dimethylphenol	4,4'-DDE	a-BHC	Aldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4' DDD	4,4' DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)				
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L				
EQL	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	1	1	1	1	1	1	2	1	1	1	2	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
ADWG 2011 Health (v3.7 updated 2022)					0.01												0.01		300	200		20			10																								
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																						20																											
ANZECC 2000 - Stock Watering																																																	
ANZG (2018) - FW - 95% (updated 26 July 2021)			0.4		0.2						1.4			16	2				490	160		20			10	320																0.01		0.2					

[illegible]

	PAHs - standard 16																		Phenols - Halogenated						Phenols - Non-Halogenated				OC Pesticides																			
	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 6 PAHs (as BaP TEQ)/zero LOR) - Lab Calc	2-Chlorophenol	2,4-Dichlorophenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,6-Dichlorophenol	4-Chloro-3-methylphenol	Pentachlorophenol	Phenol	2-Nitrophenol	2-Methylphenol (o-Cresol)	3,4-Methylphenol (m,p-cresol)	2,4-Dimethylphenol	4,4'-DDE	a-BHC	Aldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4' DDD	4,4' DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Erdosulfan	Erdosulfan I (alpha)	Erdosulfan II (beta)			
EQL	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	1	1	1	1	1	1	2	1	1	1	2	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
ADWG 2011 Health (v3.7 updated 2022)					0.01												0.01		300	200		20			10																							
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																						20																										
ANZECC 2000 - Stock Watering																						20																										
ANZG (2018) - FW - 95% (updated 26 July 2021)			0.4		0.2						1.4			16	2				490	160		20			10	320										0.08					0.01			0.2				

[illegible]

	PAHs - standard 16																		Phenols - Halogenated						Phenols - Non-Halogenated				OC Pesticides																		
	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 6 PAHs (as BaP TEQ)/zero LOR) - Lab Calc	2-Chlorophenol	2,4-Dichlorophenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,6-Dichlorophenol	4-Chloro-3-methylphenol	Pentachlorophenol	Phenol	2-Nitrophenol	2-Methylphenol (o-Cresol)	3,4-Methylphenol (m,p-cresol)	2,4-Dimethylphenol	4,4'-DDE	a-BHC	Aldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4' DDD	4,4' DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Erdosulfan	Erdosulfan I (alpha)	Erdosulfan II (beta)		
EQL	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	1	1	1	1	1	1	2	1	1	1	2	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
ADWG 2011 Health (v3.7 updated 2022)					0.01												0.01		300	200		20			10																						
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																						20																									
ANZECC 2000 - Stock Watering																						20																									
ANZG (2018) - FW - 95% (updated 26 July 2021)			0.4		0.2						1.4			16	2				490	160		20			10	320										0.08					0.01			0.2			

[illegible]



Appendix B

Table B5

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	PAHs - standard 16																		Phenols - Halogenated						Phenols - Non-Halogenated				OC Pesticides																		
	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	2-Chlorophenol	2,4-Dichlorophenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,6-Dichlorophenol	4-Chloro-3-methylphenol	Pentachlorophenol	Phenol	2-Nitrophenol	2-Methylphenol (o-Cresol)	3,4-Methylphenol (m,p-cresol)	2,4-Dimethylphenol	4,4'-DDE	p-BHC	Aldrin	p-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)		
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
EQL	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	1	1	1	1	1	1	2	1	1	1	2	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
ADWG 2011 Health (v3.7 updated 2022)					0.01												0.01		300	200		20			10																						
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																															
ANZECC 2000 - Stock Watering																																															
ANZG (2018) - FW - 95% (updated 26 July 2021)			0.4		0.2						1.4			16	2				490	160		20			10	320										0.08					0.01			0.2			

Package	Location	Date	Field ID	Sample Type	Lab Report	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	2-Chlorophenol	2,4-Dichlorophenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,6-Dichlorophenol	4-Chloro-3-methylphenol	Pentachlorophenol	Phenol	2-Nitrophenol	2-Methylphenol (o-Cresol)	3,4-Methylphenol (m,p-cresol)	2,4-Dimethylphenol	4,4'-DDE	p-BHC	Aldrin	p-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
M12 - East	HINDS	04/07/2023	HINDS	Normal	ES2322320	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B

Table B5

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	PAHs - standard 16																	Phenols - Halogenated					Phenols - Non-Halogenated			OC Pesticides																				
	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	2-Chlorophenol	2,4-Dichlorophenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,6-Dichlorophenol	4-Chloro-3-methylphenol	Pentachlorophenol	Phenol	2-Nitrophenol	2-Methylphenol (o-Cresol)	3,4-Methylphenol (m,p-cresol)	2,4-Dimethylphenol	4,4'-DDE	a-BHC	Aldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	
EQL	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	1	1	1	1	1	1	2	1	1	1	1	2	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
ADWG 2011 Health (v3.7 updated 2022)					0.01												0.01		300	200		20			10											2					9			20		
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																														
ANZECC 2000 - Stock Watering																																														
ANZG (2018) - FW - 95% (updated 26 July 2021)			0.4		0.2						1.4			16	2				490	160		20			10	320									0.08					0.01			0.2			

Package	Location	Date	Field ID	Sample Type	Lab Report																																															
Statistics																																																				
Number of Results	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204				
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Minimum Concentration	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<2	<1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Maximum Concentration	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<2	<1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Average Concentration *	0.5	0.5	0.5	0.5	0.25	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.25	0.25	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	1	0.5	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005			
Median Concentration *	0.5	0.5	0.5	0.5	0.25	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.25	0.25	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	1	0.5	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005			
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
95% UCL (Student's-t) *	0.5	0.5	0.5	0.5	0.25	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.25	0.25	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	1	0.5	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005			

Comments

#1 Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427

#2 Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).

#3 Calculated from ammonia NH4

#4 Loss of production expected at 5000 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry

#5 400 mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO3) is likely to be toxic.

#6 30 mg/L divided by molecular weight

#7 >0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry

#8 Measured as NH3-N at pH 8

#9 Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"

#10 In absence of total As guideline, As (V) guideline has been adopted.

#11 In absence of total Cr guideline, Cr (VI) guideline has been adopted.

#12 Result value is an approximate.

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)



Appendix B

Table B5

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	OC Pesticides										OP Pesticides																														
	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Oxydlordane	Bensulide	Nafalofos	Azinphos methyl	Boistar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Azinphos Ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenamiphos	Fenitrothion	Fensulfothion	Fenthion	Malathion	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Omethoate
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.01	0.01	0.01	0.1	1	0.02	0.05	0.1	0.02	0.02	0.02	0.02	0.2	0.01	0.02	0.02	0.02	0.01	0.2	0.02	0.05	0.05	0.02	0.01	0.01	2	0.01	0.05	0.02	0.1	0.5	0.02	0.02	0.01
ADWG 2011 Health (v3.7 updated 2022)					10	0.3			300				30	10	10	0.5		2	10						4	5	7	4		4	1	0.5	7	10	7	70	6	0.7	5	2	1
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																									
ANZECC 2000 - Stock Watering																																									
ANZG (2018) - FW - 95% (updated 26 July 2021)		0.02			0.2	0.09		0.1				0.02							0.01						0.01		0.15						0.2			0.05					

Package	Location	Date	Field ID	Sample Type	Lab Report																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

	OC Pesticides										OP Pesticides																															
	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Oxydichlorane	Bensulfide	Naftalofos	Azinphos methyl	Polstar (Sulprofos)	Bomophos-ethyl	Carbophenothion	Azinphos Ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenamiphos	Fenitrothion	Fensulfathion	Fenthion	Malathion	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Onethoate	
EQL	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.01	0.01	0.01	0.1	1	0.02	0.05	0.1	0.02	0.02	0.02	0.02	0.2	0.01	0.02	0.02	0.02	0.01	0.2	0.02	0.05	0.05	0.02	0.01	0.01	0.5	0.01	0.05	0.02	0.1	0.5	0.02	0.02	0.01	
ADWG 2011 Health (v3.7 updated 2022)					10	0.3			300				30	10	10	0.5			2	10						4	5	7	4		4	1	0.5	7	10	7	70	6	0.7	5	2	1
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																										
ANZECC 2000 - Stock Watering																																										
ANZG (2018) - FW - 95% (updated 26 July 2021)		0.02			0.2	0.09		0.1				0.02							0.01						0.01		0.15							0.2			0.05					

[illegible]

Appendix B
Table B5

	OC Pesticides										OP Pesticides																																
	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Oxydordane	Bensulfide	Naftalofos	Azinphos methyl	Boistar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Azinphos Ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenamiphos	Fenitrothion	Fensulfathion	Fenthion	Malathion	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Omethoate		
EQI	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ADWG 2011 Health (v3.7 updated 2022)	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.01	0.01	0.01	0.1	1	0.02	0.05	0.1	0.02	0.02	0.02	0.02	0.2	0.01	0.02	0.02	0.02	0.01	0.2	0.02	0.05	0.05	0.02	0.01	0.5	7	10	7	70	6	0.7	5	2	1		
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)					10	0.3			300				30	10	10	0.5		2	10						4	5	7	4		4	1	0.5	7	10	7	70		6	0.7	5	2	1	
ANZECC 2000 - Stock Watering																																											
ANZG (2018) - FW - 95% (updated 26 July 2021)		0.02			0.2	0.09		0.1				0.02							0.01						0.01		0.15						0.2			0.05							

[illegible]

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

	OC Pesticides										OP Pesticides																																
	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Oxydichlordane	Bensulfide	Naftalofos	Azinphos methyl	Boislar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Azinphos Ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenamiphos	Fenitrothion	Fensulfathion	Fenthion	Malathion	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Onethoate		
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EQL	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.01	0.01	0.01	0.1	1	0.02	0.05	0.1	0.02	0.02	0.02	0.02	0.2	0.01	0.02	0.02	0.02	0.01	0.2	0.02	0.05	0.05	0.02	0.01	0.01	0.01	2	0.01	0.05	0.02	0.1	0.5	0.02	0.02	0.01	
ADWG 2011 Health (v3.7 updated 2022)					10	0.3			300				30	10	10	0.5		2	10						4	5	7	4			4	1	0.5	7	10		7	70	6	0.7	5	2	1
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																											
ANZECC 2000 - Stock Watering																																											
ANZG (2018) - FW - 95% (updated 26 July 2021)		0.02			0.2	0.09		0.1					0.02						0.01						0.01		0.15								0.2			0.05					

[illegible]



Appendix B

Table B5

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	OC Pesticides										OP Pesticides																																		
	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Oxychlorthane	Bensulide	Naftalofos	Azinphos methyl	Bolstar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Azinphos Ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenamiphos	Fenitrothion	Fensulfothion	Fenthion	Malathion	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Omethoate				
	µg/L	µg/L	µg/L	µg/L	0.01	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	0.02	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	0.01	0.2	µg/L	µg/L	0.05	µg/L	0.02	µg/L	µg/L	µg/L	µg/L	0.02	µg/L	µg/L	0.1	0.5	µg/L	µg/L	0.02	0.02
EQL	0.01	0.01	0.01	0.01	10	0.3	0.01	0.01	300	0.01	0.1	1	0.02	0.05	0.1	0.02	0.02	0.02	0.02	0.2	0.01	0.02	0.02	0.02	0.01	0.2	0.02	0.05	0.05	0.02	0.01	0.01	2	0.01	0.05	0.02	0.1	0.5	0.02	0.02	0.02	0.01			
ADWG 2011 Health (v3.7 updated 2022)					10	0.3			300				30	10	10	0.5		2	10							4	5	7	4		4	1	0.5	7	10	7	70	6	0.7	5	2	1			
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																													
ANZECC 2000 - Stock Watering																																													
ANZG (2018) - FW - 95% (updated 26 July 2021)		0.02			0.2	0.09		0.1					0.02							0.01						0.01		0.15						0.2			0.05								

Package	Location	Date	Field ID	Sample Type	Lab Report																																							
Statistics																																												
Number of Results	49	49	49	49	49	49	49	49	49	49	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203		
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	44	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0		
Minimum Concentration	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	0.01	<0.2	0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	0.02	<0.1	<0.5	<0.02	<0.02	<0.01			
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.02	ND	ND	ND	ND	ND	ND		
Maximum Concentration	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	0.02	<0.2	0.6	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	0.24	<0.1	<0.5	<0.02	<0.02	<0.01			
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.02	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24	ND	ND	ND	ND	ND	ND		
Average Concentration *	0.005	0.005	0.005	0.005	0.005	0.0025	0.005	0.005	0.005	0.005	0.05	0.5	0.01	0.025	0.05	0.01	0.01	0.01	0.01	0.1	0.005	0.01	0.01	0.01	0.0054	0.1	0.035	0.025	0.025	0.01	0.005	0.005	1	0.005	0.025	0.012	0.05	0.25	0.01	0.01	0.005			
Median Concentration *	0.005	0.005	0.005	0.005	0.005	0.0025	0.005	0.005	0.005	0.005	0.05	0.5	0.01	0.025	0.05	0.01	0.01	0.01	0.01	0.1	0.005	0.01	0.01	0.01	0.005	0.1	0.01	0.025	0.025	0.01	0.005	0.005	1	0.005	0.025	0.01	0.05	0.25	0.01	0.01	0.005			
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0022	0	0.078	0	0	0	0	0	0	0	0	0.017	0	0	0	0	0	0	0		
95% UCL (Student's-t) *	0.005	0.005	0.005	0.005	0.005	0.0025	0.005	0.005	0.005	0.005	0.05	0.5	0.01	0.025	0.05	0.01	0.01	0.01	0.01	0.1	0.005	0.01	0.01	0.01	0.0056	0.1	0.0442	0.025	0.025	0.01	0.005	0.005	1	0.005	0.025	0.0143	0.05	0.25	0.01	0.01	0.005			

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427

#2 Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).

#3 Calculated from ammonia NH4

#4 Loss of production expected at 5000 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry

#5 400 mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO3) is likely to be toxic.

#6 30 mg/L divided by molecular weight

#7 >0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry

#8 Measured as NH3-N at pH 8

#9 Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"

#10 In absence of total As guideline, As (V) guideline has been adopted.

#11 In absence of total Cr guideline, Cr (VI) guideline has been adopted.

#12 Result value is an approximate.

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

	OP Pesticides													Pesticides						Chlorinated Hydrocarbons																							
	Parathion	Phorate	Primiphos-ethyl	Primiphos-methyl	Profenofos	Prothiofos	Pyrazophos	Rennel	Sulfotepp	Terbufos	Thiometon	Trichloronate	Tetrachlorvinphos	Acephate	Demeton-O & Demeton-S	Formothion	Temephos	Trichlorfon	Triazophos	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,4-trichlorobenzene	1,2-dibromo-3-chloropropane	1,2-dichlorobenzene	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	1,4-dichlorobenzene	2,2-dichloropropane	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Carbon tetrachloride	Chlorobenzene	Chloroform	Chloromethane	cis-1,2-dichloroethene	Hexachlorobutadiene	Vinyl chloride
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.2	0.1	0.01	0.01	0.01	0.1	0.1	10	0.005	0.01	0.5	0.5	0.01	0.5	0.02	20	0.02	0.02	0.005	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	50	5	5	50	
ADWG 2011 Health (v3.7 updated 2022)	20		0.5	90	0.3		20			0.9	4		100	8		50	400	7						30					1500	3													
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																											
ANZECC 2000 - Stock Watering																																											
ANZG (2018) - FW - 95% (updated 26 July 2021)	0.004																				270	400	6500	700		170		160	1900	1100		60					240	55	770				100

[illegible]

Appendix B
Table B5

Transport for NSW M12 Motorway

Surface and Groundwater Monitoring Program

	OP Pesticides													Pesticides						Chlorinated Hydrocarbons																									
	Parathion	Phorate	Primiphos-ethyl	Primiphos-methyl	Profenofos	Prothiofos	Pyrazophos	Ronnel	Sulfotepp	Terbufos	Thiometon	Trichloronate	Tetrachlorvinphos	Acephate	Demeton-O & Demeton-S	Formothion	Ternephos	Trichlorfon	Triazophos	1,1,1,2-tetrachloroethane	1,1,1,1-trichloroethane	1,1,1,2,2-tetrachloroethane	1,1,1,2-trichloroethane	1,1,1-dichloroethene	1,1-dichloropropene	1,2,4-trichlorobenzene	1,2-dibromo-3-chloropropane	1,2-dichlorobenzene	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	1,4-dichlorobenzene	2,2-dichloropropane	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Carbon tetrachloride	Chlorobenzene	Chloroform	Chloromethane	cis-1,2-dichloroethene	Hexachlorobutadiene	Vinyl chloride		
EQ/L	0.2	0.1	0.01	0.01	0.01	0.1	0.1	10	0.005	0.01	0.5	0.5	0.01	0.5	0.02	20	0.02	0.02	0.005	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
ADWG 2011 Health (v3.7 updated 2022)	20		0.5	90	0.3		20			0.9	4		100	8		50	400	7											1500	3			40					3	300					0.7	0.3
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																													
ANZECC 2000 - Stock Watering																																													
ANZG (2018) - FW - 95% (updated 26 July 2021)	0.004																				270	400	6500	700		170			160	1900	1100		60					240	55	770				100	

[illegible]



Appendix B

Table B5

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	OP Pesticides													Pesticides					Chlorinated Hydrocarbons																									
	Parathion	Phorate	Primiphos-ethyl	Primiphos-methyl	Profenofos	Prothiofos	Pyrazophos	Ronnel	Sulfotepp	Terbufos	Thiometon	Trichloronate	Tetrachlorvinphos	Acephate	Demeton-O & Demeton-S	Formothion	Temephos	Trichlorfon	Triazophos	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,4-trichlorobenzene	1,2-dibromo-3-chloropropane	1,2-dichlorobenzene	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	1,4-dichlorobenzene	2,2-dichloropropane	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Carbon tetrachloride	Chlorobenzene	Chloroform	Chloromethane	cis-1,2-dichloroethene	Hexachlorobutadiene	Vinyl chloride	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EQL	0.2	0.1	0.01	0.01	0.01	0.1	10	0.005	0.01	0.01	0.5	0.5	0.01	0.5	0.02	20	0.02	0.02	0.005	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	50
ADWG 2011 Health (v3.7 updated 2022)	20		0.5	90	0.3		20			0.9	4		100	8		50	400	7											1500	3			40					3	300			0.7	0.3	
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																												
ANZECC 2000 - Stock Watering																																												
ANZG (2018) - FW - 95% (updated 26 July 2021)	0.004																				270	400	6500	700		170			160	1900	1100		60				240	55	770				100	

Package	Location	Date	Field ID	Sample Type	Lab Report																																										
Statistics																																															
Number of Results	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204					
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Minimum Concentration	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	<50	
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Maximum Concentration	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	1.9	<0.02	<20	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50		
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.1	0.05	0.005	0.005	0.005	0.05	0.05	5	0.0025	0.005	0.25	0.25	0.005	0.26	0.01	10	0.01	0.01	0.0025	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Median Concentration *	0.1	0.05	0.005	0.005	0.005	0.05	0.05	5	0.0025	0.005	0.25	0.25	0.005	0.25	0.01	10	0.01	0.01	0.0025	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
95% UCL (Student's-t) *	0.1	0.05	0.005	0.005	0.005	0.05	0.05	5	0.0025	0.005	0.25	0.25	0.005	0.278	0.01	10	0.01	0.01	0.0025	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

Comments

#1 Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427

#2 Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).

#3 Calculated from ammonia NH4

#4 Loss of production expected at 5000 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry

#5 400 mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO3) is likely to be toxic.

#6 30 mg/L divided by molecular weight

#7 >0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry

#8 Measured as NH3-N at pH 8

#9 Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"

#10 In absence of total As guideline, As (V) guideline has been adopted.

#11 In absence of total Cr guideline, Cr (VI) guideline has been adopted.

#12 Result value is an approximate.

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)

[illegible]



Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

M12 Motorway

Surface and Groundwater Monitoring Program

[illegible]

	Fungicides		Halogenated Hydrocarbons		PCBs							VOCs																				
	Fosetyl-al		Bromomethane	Dichlorodifluoromethane	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)	1,1-dichloroethane	1,2,3-trichlorobenzene	1,2,3-trichloropropane	1,2-dibromoethane	1,3-dichlorobenzene	Bromodichloromethane	Bromoform	Chlorodibromomethane	Chloroethane	cis-1,3-dichloropropene	cis-1,4-Dichloro-2-butene	Dibromomethane	Iodomethane	Pentachloroethane	Trichloroethene	Tetrachloroethene	trans-1,3-dichloropropene	trans-1,2-dichloroethene	trans-1,4-Dichloro-2-butene	Trichlorofluoromethane
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	10	50	50	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	5	5	5	5	5	5	5	5	5	50	5	5	5	5	5	5	5	5	5	5	50
ADWG 2011 Health (v3.7 updated 2022)		1													1													50				
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																
ANZECC 2000 - Stock Watering																																
ANZG (2018) - FW - 95% (updated 26 July 2021)							0.6		0.03				10			260										80	330	70				

[illegible]



Appendix B

Table B5

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	Fungicides	Halogenated Hydrocarbons		PCBs								VOCs																					
	Fosetyl-al	Bromomethane	Dichlorodifluoromethane	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)	1,1-dichloroethane	1,1,2,3-trichlorobenzene	1,2,3-trichloropropane	1,2-dibromoethane	1,3-dichlorobenzene	Bromodichloromethane	Bromoform	Chlorodibromomethane	Chloroethane	cis-1,3-dichloropropene	cis-1,4-Dichloro-2-butene	Dibromomethane	Iodomethane	Pentachloroethane	Trichloroethene	Tetrachloroethene	trans-1,3-dichloropropene	trans-1,2-dichloroethene	trans-1,4-Dichloro-2-butene	Trichlorofluoromethane		
EQL	10	50	50	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	5	5	5	5	5	5	5	5	50	5	5	5	5	5	5	5	5	5	5	50		
ADWG 2011 Health (v3.7 updated 2022)		1													1													50					
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																	
ANZECC 2000 - Stock Watering																																	
ANZG (2018) - FW - 95% (updated 26 July 2021)							0.6		0.03				10			260									80	330	70						

Package	Location	Date	Field ID	Sample Type	Lab Report																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											</



Appendix B

Table B5

Analytical Results for Construction Monitoring Period (August 2022 to March 2024)

	Fungicides	Halogenated Hydrocarbons		PCBs								VOCs																				
	Fosetyl-al	Bromomethane	Dichlorodifluoromethane	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)	1,1-dichloroethane	1,1,2,3-trichlorobenzene	1,2,3-trichloropropane	1,2-dibromoethane	1,3-dichlorobenzene	Bromodichloromethane	Bromoform	Chlorodibromomethane	Chloroethane	cis-1,3-dichloropropene	cis-1,4-Dichloro-2-butene	Dibromomethane	Iodomethane	Pentachloroethane	Trichloroethene	Tetrachloroethene	trans-1,3-dichloropropene	trans-1,2-dichloroethene	trans-1,4-Dichloro-2-butene	Trichlorofluoromethane	
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EQL	10	50	50	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	5	5	5	5	5	5	5	5	50	5	5	5	5	5	5	5	5	5	5	50	
ADWG 2011 Health (v3.7 updated 2022)		1												1													50					
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																
ANZECC 2000 - Stock Watering																																
ANZG (2018) - FW - 95% (updated 26 July 2021)							0.6		0.03				10			260									80	330	70					

Package	Location	Date	Field ID	Sample Type	Lab Report																										
Statistics																															
Number of Results	203	204	204	40	40	40	40	40	40	40	40	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Concentration	<10	<50	<50	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Maximum Concentration	<10	<50	<50	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<5	<5	<5	<5	<5	7	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	5	25	25	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	2.5	2.5	2.5	2.5	2.5	2.5	2.5	25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	25	
Median Concentration *	5	25	25	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	2.5	2.5	2.5	2.5	2.5	2.5	2.5	25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	25	
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
95% UCL (Student's-t) *	5	25	25	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	2.5	2.5	2.5	2.5	2.5	2.559	2.5	2.5	25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	25	

Comments

#1 Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427

#2 Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).

#3 Calculated from ammonia NH4

#4 Loss of production expected at 5000 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry

#5 400 mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO3) is likely to be toxic.

#6 30 mg/L divided by molecular weight

#7 >0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry

#8 Measured as NH3-N at pH 8

#9 Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"

#10 In absence of total As guideline, As (V) guideline has been adopted.

#11 In absence of total Cr guideline, Cr (VI) guideline has been adopted.

#12 Result value is an approximate.

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)

[illegible]

Data Comments
#1 Reported Analyte LOR is higher than Requested Analyte LOR

[illegible]

Env Stds Comments
 #1 Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427
 #2 Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033)
 #3 Calculated from ammonia NH4
 #4 Loss of production expected at 5000 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry
 #5 400 mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO3) is likely to be toxic.
 #6 30 mg/L divided by molecular weight
 #7 >0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry
 #8 Measured as NH2-N at pH 8
 #9 Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"
 #10 In absence of total As guideline, As (VI) guideline has been adopted.
 #11 In absence of total Cr guideline, Cr (VI) guideline has been adopted.

Data Comments
#1 Reported Analyte LOR is higher than Requested Analyte LOR

[illegible]

Statistical Summary																																																																											
Number of Results	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76														
Minimum Detectable Concentration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0										
Minimum Detection Limit	<0.5	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5												
Maximum Detection Limit	<0.5	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5												
Average Concentration	0.25	0.01	0	0.01	0.0025	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5												
Median Concentration	0.25	0.01	0	0.01	0.0025	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5												
Standard Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									

Ern Sids Comments

#1: Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.227

#2: Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).

#3: Calculated from ammonia N14

#4: Loss of production expected at \$500/mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry

#5: #400-mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO3) is likely to be toxic.

#6: #30 mg/L divided by molecular weight

#7: >0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry

#8: Measured as NH3-N at pH 8

#9: Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"

#10: In absence of total Cr guideline, As (VI) guideline has been adopted.

#11: In absence of total Cr guideline, Cr (VI) guideline has been adopted.

Data Comments
#1 Reported Analyte LOR is higher than Requested Analyte LOR

[illegible][illegible][illegible]

Envi Stats Comments

#1 Guideline value calculated by dividing nitrate (as Nitrate) value (50 mg/L) by 4.427

#2 Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).

#3 Calculated from ammonia N4

#4 Loss of product expected at 5500 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 8000 mg/L horses and pigs, 3000 mg/L poultry

#5 400 mg/L guided by molecular weight; solid may tolerate higher nitrate concentrations if stored in feed and no water, containing 1500 mg/L (as NO3) is likely to be toxic

#6 30 mg/L divided by molecular weight

#7 > 0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry

#8 Measured as NH3-N at pH 8

#9 Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"

#10 In absence of total As guideline, As (VI) guideline has been adopted.

#11 In absence of total Cr guideline, Cr (VI) guideline has been adopted.

Data Comments
#1 Reported Analyte LOR is higher than Requested Analyte LOR



Appendix B

Table B7

Analytical Results for Current Monitoring Period (October 2023 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	Inorganics		Acidity & Alkalinity	Nutrients									Metals																			
	Total Dissolved Solids	Total Suspended Solids	Hardness as CaCO3	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Reactive Phosphorus as P	Chlorophyll a	Phosphorus (Total)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Zinc	Zinc (filtered)
EQL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	10	5	1	0.01	0.01	0.01	0.01	0.1	0.1	0.01	0.001	0.01	0.001	0.001	0.0001	0.0001	0.001	0.001	0.001	0.001	0.05	0.05	0.001	0.001	0.001	0.001	0.0001	0.0001	0.001	0.001	0.005	0.005
ADWG 2011 Health (v3.7 updated 2022)					11.29 ^{#1}	0.91 ^{#2}							0.01	0.01	0.002	0.002			2	2			0.01	0.01	0.5	0.5	0.001	0.001	0.02	0.02		
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)		6		0.01165 ^{#3}			0.04	0.35		0.008	0.003	0.025																				
ANZECC 2000 - Stock Watering	5000 ^{#4}				90 ^{#5}	9.1 ^{#6}							0.5	0.5	0.01	0.01	1	1	1 ^{#7}	1 ^{#7}			0.1	0.1			0.002	0.002	1	1	20	20
ANZG (2018) - FW - 95% (updated 26 July 2021)				0.9 ^{#8}	2.4 ^{#9}								0.013 ^{#10}	0.013 ^{#10}	0.0002	0.0002	0.001 ^{#11}	0.001 ^{#11}	0.0014	0.0014			0.0034	0.0034	1.9	1.9	0.0006	0.0006	0.011	0.011	0.008	0.008

Package	Location	Date	Field ID	Sample Type	Lab Report																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											



Appendix B

Table B7

Analytical Results for Current Monitoring Period (October 2023 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	Inorganics		Acidity & Alkalinity	Nutrients									Metals																				
	Total Dissolved Solids	Total Suspended Solids	Hardness as CaCO3	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Reactive Phosphorus as P	Chlorophyll a	Phosphorus (Total)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Zinc	Zinc (filtered)	
EQL	10	5	1	0.01	0.01	0.01	0.01	0.1	0.1	0.01	0.001	0.01	0.001	0.001	0.0001	0.0001	0.001	0.001	0.001	0.001	0.05	0.05	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.005	
ADWG 2011 Health (v3.7 updated 2022)					11.29 ^{#1}	0.91 ^{#2}							0.01	0.01	0.002	0.002			2	2			0.01	0.01	0.5	0.5	0.001	0.001	0.001	0.02	0.02		
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)		6		0.01165 ^{#3}			0.04	0.35		0.008	0.003	0.025																					
ANZECC 2000 - Stock Watering	5000 ^{#4}				90 ^{#5}	9.1 ^{#6}							0.5	0.5	0.01	0.01	1	1	1 ^{#7}	1 ^{#7}			0.1	0.1			0.002	0.002	1	1	20	20	
ANZG (2018) - FW - 95% (updated 26 July 2021)				0.9 ^{#8}	2.4 ^{#9}								0.013 ^{#10}	0.013 ^{#10}	0.0002	0.0002	0.001 ^{#11}	0.001 ^{#11}	0.0014	0.0014			0.0034	0.0034	1.9	1.9	0.0006	0.0006	0.011	0.011	0.008	0.008	

Package	Location	Date	Field ID	Sample Type	Lab Report																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			</

Statistics																																		
Number of Results	77	77	1	77	77	77	77	77	77	77	77	77	89	1	89	1	89	1	89	1	77	1	89	1	77	1	89	1	89	1	89	1	89	1
Number of Detects	77	68	1	76	58	28	58	77	77	33	68	77	62	1	0	0	36	0	57	1	77	1	37	0	77	1	0	0	73	0	49	0		
Minimum Concentration	216	<5	44	0.01	0.01	0.01	0.01	0.5	0.4	0.01	0.001	0.02	0.001	0.001	<0.0001	<0.0001	0.001	<0.001	0.001	0.002	0.13	0.31	0.001	<0.001	0.044	0.606	<0.0001	<0.0001	0.001	<0.001	<0.005	<0.005		
Minimum Detect	216	6	44	0.01	0.01	0.01	0.01	0.5	0.4	0.01	0.001	0.02	0.001	0.001	ND	ND	0.001	ND	0.001	0.002	0.13	0.31	0.001	ND	0.044	0.606	ND	ND	0.001	ND	0.006	ND		
Maximum Concentration	2070	218	44	0.19	7.72	0.15	7.84	9.9	3.1	1.04	0.082	1.26	0.003	0.001	<0.0002	<0.0001	0.007	<0.001	0.014	0.002	6.87	0.31	0.012	<0.001	1.86	0.606	<0.0001	<0.0001	0.008	<0.001	0.046	<0.005		
Maximum Detect	2070	218	44	0.19	7.72	0.15	7.84	9.9	3.1	1.04	0.082	1.26	0.003	0.001	ND	ND	0.007	ND	0.014	0.002	6.87	0.31	0.012	ND	1.86	0.606	ND	ND	0.008	ND	0.046	ND		
Average Concentration *	729	36		0.056	0.77	0.019	0.79	2	1.2	0.13	0.014	0.23	0.0013		0.000053		0.0012		0.0028		1.7		0.0014		0.39		0.00005		0.0021		0.01			
Median Concentration *	558	25	44	0.04	0.09	0.005	0.09	1.4	1.1	0.005	0.005	0.11	0.001	0.001	0.00005	0.00005	0.0005	0.002	0.002	1.23	0.31	0.0005	0.0005	0.319	0.606	0.00005	0.00005	0.002	0.0005	0.007	0.0025			
Standard Deviation *	414	40		0.041	1.7	0.031	1.7	1.9	0.53	0.26	0.018	0.27	0.00073		0.000013		0.0012		0.0027		1.5		0.0018		0.32		0		0.0014		0.01			
95% UCL (Student's-t) *	807.7	43.07		0.0633	1.092	0.0246	1.112	2.343	1.292	0.176	0.0171	0.279	0.00138		0.000055592		0.00145		0.00329		2.005		0.00167		0.447		0.00005		0.00237		0.0122			



Analytical Results for Current Monitoring Period (October 2023 to March 2024)

[illegible][illegible][illegible]

Comments

#1 Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427

#2 Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).

#3 Calculated from ammonia NH_4

#4 Loss of production expected at 5000 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry

#5 400 mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO₃) is likely to be to

#6 30 mg/L divided by molecular weight

#7 >0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry

#8 Measured as NH₃-N at pH 8

#9 Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"

#10 In absence of total As guideline, As (V) guideline has been adopted.

#11 In absence of total Cr guideline, Cr (VI) guideline has been adopted.

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)

	OC Pesticides																				OP Pesticides																			
	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Oxychlordane	Bensulide	Natlaofos	Azinphos methyl	Boistar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Azinphos Ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton			
EQI	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
ADWG 2011 Health (v3.7 updated 2022)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.01	0.01	0.01	0.01	0.1	1	0.02	0.05	0.1	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.2	0.02	0.02	0.05	
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)				9			20							10	0.3				300				30	10	10	0.5		2	10						4	5	7	4		
ANZECC 2000 - Stock Watering																																								
ANZG (2018) - FW - 95% (updated 26 July 2021)				0.01			0.2				0.02			0.2	0.09		0.1						0.02						0.01						0.01		0.15			

[illegible]



Analytical Results for Current Monitoring Period (October 2023 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

Statistics																																						
Number of Results	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77			
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0		
Minimum Concentration	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.05		
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Maximum Concentration	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.1	<1	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.6	<0.05			
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Average Concentration *	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.00225	0.005	0.005	0.005	0.005	0.005	0.5	0.01	0.025	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.01	0.005	0.1	0.035	0.025	
Median Concentration *	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.0025	0.005	0.005	0.005	0.005	0.005	0.5	0.01	0.025	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.01	0.005	0.1	0.01	0.025	
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.096	0		
95% UCL (Student's-t) *	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.0025	0.005	0.005	0.005	0.005	0.005	0.5	0.5	0.01	0.025	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.005	0.01	0.01	0.005	0.1	0.0535	0.025

#1 Guideline value calculated by dividing Nitrate (as Nitrate) value (50 mg/L) by 4.427

#2 Guideline value calculated by dividing Nitrite (as Nitrite) value (0.3 mg/L) by molecular weight (3.2967033).

#3 Calculated from ammonia NH_4

#4 Loss of production expected at 5000 mg/L for beef cattle, 4000 mg/L dairy cattle, 10000 mg/L sheep, 6000 mg/L horses and pigs, 3000 mg/L poultry

#5 400 mg/L divided by molecular weight, stock may tolerate higher nitrate concentrations if nitrate in feed are not high, water containing >1500 mg/L (as NO₃) is likely to be too

#6 30 mg/L divided by molecular weight

#7 >0.5 mg/L hazardous to sheep, >1 mg/L for cattle, >5 mg/L pigs and poultry

#8 Measured as NH₃-N at pH 8

#9 Values taken from "Updating nitrate toxicity effects on freshwater aquatic species, 2013"

#10 In absence of total As guideline, As (V) guideline has been adopted.

#11 In absence of total Cr guideline, Cr (VI) guideline has been adopted.

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)



Appendix B

Table B7

Analytical Results for Current Monitoring Period (October 2023 to March 2024)

Transport for NSW

M12 Motorway

Surface and Groundwater Monitoring Program

	OP Pesticides																								Pesticides					Chlorinated Hydrocarbons															
	EPN	Ethion	Ethoprop	Fenamiphos	Fenitrothion	Fensulfothion	Fenthion	Malathion	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Omethoate	Parathion	Phorate	Primiphos-ethyl	Primiphos-methyl	Profenofos	Prothiofos	Pyrazophos	Ronnel	Sulfotep	Terbufos	Thiometon	Trichloronate	Tetrachlorvinphos	Acephate	Demeton-O & Demeton-S	Formothion	Temephos	Trichlorfon	Triazophos	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,4-trichlorobenzene	1,2-dibromo-3-chloropropane	1,2-dichlorobenzene	1,2-dichloroethane	1,2-dichloropropane		
EQL	0.05	0.02	0.01	0.01	2	0.01	0.05	0.02	0.1	0.5	0.02	0.02	0.01	0.2	0.1	0.01	0.01	0.01	0.1	0.1	10	0.005	0.01	0.5	0.5	0.01	0.5	0.02	20	0.02	0.02	0.005	5	5	5	5	5	5	5	5	5	5	5	5	
ADWG 2011 Health (v3.7 updated 2022)		4	1	0.5	7	10	7	70	6	0.7	5	2	1	20		0.5	90	0.3		20			0.9	4		100	8		50	400	7														
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)																																													
ANZECC 2000 - Stock Watering																																													
ANZG (2018) - FW - 95% (updated 26 July 2021)					0.2			0.05						0.004																					270	400	6500	700		170		160	1900	1100	

Package	Location	Date	Field ID	Sample Type	Lab Report	EPN	Ethion	Ethoprop	Fenamiphos	Fenitrothion	Fensulfothion	Fenthion	Malathion	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Omethoate	Parathion	Phorate	Priniphos-ethyl	Priniphos-methyl	Profenofos	Prothiofos	Pyrazophos	Ronnel	Sulfotep	Terbufos	Thiometon	Trichloronate	Tetrachlorvinphos	Acaphate	Demeton-O & Demeton-S	Formothion	Temephos	Trichlorfon	Triazophos	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,4-trichlorobenzene	1,2-dibromo-3-chloropropane	1,2-dichlorobenzene	1,2-dichloroethane	1,2-dichloropropane				
M12 - West	BADDs	06/10/2023	BADDs	Normal	ES2334428	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
		08/11/2023	BADDs	Normal	ES2338893-AE	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
		06/12/2023	BADDs	Normal	ES2342516	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
		19/01/2024	BADDs	Normal	ES2401980	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
		13/02/2024	BADDs	Normal	ES2404913	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
		15/03/2024	SWDUP1	Field D	ES2404913	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
				BADDs	Normal	ES2408635	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
				SWDUP1	Field D	ES2408635	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	BADMS	06/10/2023	BADMS	Normal	ES2334428	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
		08/11/2023	BADMS	Normal	ES2338893-AE	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
		06/12/2023	BADMS	Normal	ES2342516	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
		19/01/2024	BADMS	Normal	ES2401980	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
					SWDUP2	Interlab D	1061811	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
					BADMS	Normal	ES2404913	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
				BADMS	Normal	ES2408635	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	BADUS	06/10/2023	BADUS	Normal	ES2334428	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
		08/11/2023	BADUS	Normal	ES2338893-AE	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
					SWDUP1	Field D	ES2338893-AE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		06/12/2023	BADUS	Normal	ES2342516	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
		19/01/2024	BADUS	Normal	ES2401980	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
					BADUS	Normal	ES2404913	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	COSDS	06/10/2023	COSDS	Normal	ES2334428	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
		08/11/2023	COSDS	Normal	ES2338893-AE	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
		06/12/2023	COSDS	Normal	ES2342516	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
		19/01/2024	COSDS	Normal	ES2401980	<0.05	<0.02	<0.01	<0.01	<2	<0.01	<0.05	<0.02	<0.1	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<10	<0.005	<0.01	<0.5	<0.5	<0.01	<0.5	<0.02	<20	<0.02	<0.02	<0.02	<0.005	<5	<5	<5	<5	<5	<5								



Transport for NSW

Surface and Groundwater Monitoring Program

EQI	Chlorinated Hydrocarbons												Fungicides	Halogenated Hydrocarbons	PCBs								VOCs																							
	1,3-dichloropropane	1,4-dichlorobenzene	2,2-dichloropropane	2-chlorotoluene	4-chlorobluene	Brombenzene	Carbon tetrachloride	Chlorobenzene	Chloroform	Chloromethane	cis-1,2-dichloroethene	Hexachlorobutadiene	Vinyl chloride	Fosetyl-al	Bromomethane	Dichlorodifluoromethane	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)	1,1-dichloroethane	1,2,3-trichlorobenzene	1,2,3-trichloropropane	1,2-dibromoethane	1,3-dichlorobenzene	Bromodichloromethane	Bromoform	Chlorodibromomethane	Chloroethane	cis-1,3-dichloropropene	cis-1,4-Dichloro-2-butene	Dibromomethane	Iodomethane	Pentachloroethane	Trichloroethene	Tetrachloroethane	trans-1,3-dichloropropene	trans-1,2-dichloroethene	trans-1,4-Dichloro-2-butene	Trichlorofluoromethane		
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
ADWG 2011 Health (v3.7 updated 2022)	5	5	5	5	5	5	5	5	5	50	5		10	50	50		0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	5	5	5	5	5	5	5	50	5	5	5	5	5	5	5	5	5	5	5	50		
ANZECC 2000 - Lowland Rivers (NSW coastal rivers)		40					3	300				0.7	0.3		1													1																		
ANZECC 2000 - Stock Watering																																														
ANZG (2018) - FW - 95% (updated 26 July 2021)		60					240	55	770				100							0.6		0.03				10				260							80	330	70							

[illegible]



Transport for NSW

Surface and Groundwater Monitoring Program



Appendix B
Table B8
Baseline Monitoring Period Field Parameters (April 2021 to June 2023)

Package	Location	Sampling Event	Sample date	Dissolved oxygen (mg/L)	Dissolved Oxygen (%S)	Electrical conductivity (µS/cm)	pH (pH units)	Redox potential (mV)	Corrected redox potential (mV)*	Temperature (°C)	Turbidity (NTU)	Observations
West	BADDS	Event 25 - April 2021	08/04/2021	3.44	37.1	882	7.68	156.4	361.4	19.1	48.55	Brown
West	BADDS	Event 27 - June 2021	10/06/2021	7.71	65.3	686	7.1	93.2	298.2	8.1	7.7	Turbid, brown
West	BADDS	Event 28 - July 2021	09/07/2021	7.2	61.5	432.7	10	90.7	295.7	8.5	25.3	Clear
West	BADDS	Event 29 - August 2021	13/08/2021	6.78	59.6	610	7.41	54.8	259.8	9.7	17.95	Brown
West	BADDS	WW Event 1 - 25 August 2021	25/08/2021	8.6	77.2	1.21	7.24	169.1	374.1	10.6		Brown
West	BADDS	Event 30 - September 2021	03/09/2021	10.8	100.4	2007	8.1	79.7	284.7	12.1	16.8	Clear
West	BADDS	Event 31 - October 2021	13/10/2021	1.81	17.9	649	7.02	145.3	350.3	14.9		Brown, turbid
West	BADDS	Event 32 - November 2021	09/11/2021	5.31	56.5	1256	7.16	68.7	273.7	18.4	13.25	Cloudy pale brown, Moderate turbidity
West	BADDS	WW Event 2 - 29 November 2021	29/11/2021	4.31	44.9	516	7.21	109	314	17.3		Highly turbid, brown
West	BADDS	Event 33 - December 2021	07/12/2021	3.33	35.9	737	7.02	104.9	309.9	19.0	102.2	Very turbid, brown, high sediment load
West	BADDS	WW Event 3 - 14 January 2022	14/01/2022	9.4	111.0	464	7.59	76.8	281.8	23.7	294.31	Brown, murky, high sediment
West	BADDS	Event 34 - February 2022	08/02/2022	-	-	-	-	-	-	-	-	No access to sample location
West	BADDS	Event 35 - March 2022	17/03/2022	-	-	-	-	-	-	-	-	No access to sample location
West	BADDS	Event 36 - April 2022	12/04/2022	-	-	-	-	-	-	-	-	No access to sample location
West	BADDS	Event 37 - May 2022	27/05/2022	-	-	-	-	-	-	-	-	No access to sample location
West	BADDS	Event 38 - June 2022	28/06/2022	8.78	75.76	956	7.00	74.1	279.1	8.9	19.50	Yellow/brown, very cloudy
West	BADDS	WW Event 4 - 5-6 July 2022	5/07/2022	9.38	88.79	258	6.95	248.0	453.0	12.9	123.00	Brown, very cloudy, no sheen, no odour
West	BADDS	Event 39 - July 2022	21/07/2022	9.25	83.47	1164	7.04	62.3	267.3	10.8	-	Green/brown, turbid, no sheen, no odour
West	BADMS	Event 31 - October 2021	13/10/2021	4.05	39.8	685	7.19	143.5	348.5	14.6		Green, slightly turbid
West	BADMS	Event 32 - November 2021	09/11/2021	5.42	57.6	1263	7.15	74.6	279.6	18.3	11.31	Pale brown, very cloudy
West	BADMS	WW Event 2 - 29 November 2021	29/11/2021	6.24	64.9	521	7.26	112.3	317.3	17.3		Highly turbid, light brown
West	BADMS	Event 33 - December 2021	07/12/2021	5.76	61.9	766	7.13	106.2	311.2	18.9	97.95	Very turbid, brown, high sediment load
West	BADMS	WW Event 3 - 14 January 2022	14/01/2022	8	95.2	489.7	7.97	70.4	275.4	24.1	230.56	Brown, turbid
West	BADMS	Event 34 - February 2022	08/02/2022	-	-	-	-	-	-	-	-	No access to sample location
West	BADMS	Event 35 - March 2022	17/03/2022	-	-	-	-	-	-	-	-	No access to sample location
West	BADMS	Event 36 - April 2022	12/04/2022	-	-	-	-	-	-	-	-	No access to sample location
West	BADMS	Event 37 - May 2022	27/05/2022	-	-	-	-	-	-	-	-	No access to sample location
West	BADMS	Event 38 - June 2022	28/06/2022	7.73	67.2	1108	6.86	70.2	275.2	9.2	11.1	Brown, very cloudy
West	BADMS	WW Event 4 - 5-6 July 2022	5/07/2022	9.59	90.4	247	7.07	239	444	12.7	484	Brown, very cloudy, no sheen, no odour
West	BADMS	Event 39 - July 2022	21/07/2022	9.73	87.6	1079	7.03	122	327	10.7	78.85	Green/brown, turbid, no sheen, no odour
West	BADUS	Event 25 - April 2021	07/04/2021	4.23	46.1	809	8.04	21.33	226.33	19.6	21.33	Brown
West	BADUS	Event 26 - May 2021	10/05/2021	5.13	52.4	1388	7.24	132.3	337.3	16.4	90.1	Brown
West	BADUS	Event 27 - June 2021	10/06/2021	6.05	51.3	928	7.23	92	297	8.2	13.5	Turbid, brown
West	BADUS	Event 28 - July 2021	09/07/2021	8.21	72.5	417.3	9.65	104.3	309.3	9.9	9.49	Turbid, brown
West	BADUS	Event 29 - August 2021	12/08/2021	11.76	118.1	675	7.69	101.4	306.4	15.6	6.96	Slightly green
West	BADUS	WW Event 1 - 25 August 2021	25/08/2021	7.19	63.7	1471	7.21	141.2	346.2	10.0		Brown
West	BADUS	Event 30 - September 2021	03/09/2021	10.1	94.5	1057	7.75	119.1	324.1	12.4	28.9	Green to brown tinge
West	BADUS	Event 31 - October 2021	13/10/2021	2.97	29.4	1081	8.99	-75.4	129.6	15.0		Green, sooty, high turbidity
West	BADUS	Event 32 - November 2021	09/11/2021	5.02	53.2	1254	7.14	144.2	349.2	18.2	12.22	Turbid, brown, high sediment
West	BADUS	WW Event 2 - 29 November 2021	29/11/2021	5.99	63.4	516	7.26	60.1	265.1	18.1		Highly turbid, brown
West	BADUS	Event 33 - December 2021	07/12/2021	3.51	39.7	912	7.12	126.1	331.1	21.4	65.6	Brown, turbid, low sediment
West	BADUS	WW Event 3 - 14 January 2022	14/01/2022	9.24	109.6	440.7	7.58	111	316	23.9	322	Brown, murky, high sediment
West	BADUS	Event 34 - February 2022	08/02/2022	6.66	77.6	1546	7.15	111.2	316.2	23.0	24.15	Brown, murky, high sediment
West	BADUS	Event 35 - March 2022	17/03/2022	2.01	22.1	834	7.79	110.9	315.9	20.1	7.72	Green, brown water, moderatley turbid
West	BADUS	Event 36 - April 2022	12/04/2022	6.45	71.5	514	7.13	77.9	282.9	20.4	189.8	Light brown, turbid, no odour, no sheen
West	BADUS	Event 37 - May 2022	27/05/2022	9.62	92.7	983	7.1	101.9	306.9	13.7	15.19	Brown, cloudy, no odour, no sheen
West	BADUS	Event 38 - June 2022	28/06/2022	12.6	112.9	2253	7.27	144	349	10.5	8.6	Brown/green colour
West	BADUS	WW Event 4 - 5-6 July 2022	5/07/2022	9.57	90.0	128.4	7	142	347	12.6	945	
West	BADUS	Event 39 - July 2022	21/07/2022	9.82	88.0	1280	6.9	132	337	10.5	36.45	
West	COSDS	Event 25 - April 2021	08/04/2021	6.7	73.7	494	8.72	85	290	20.0	85.21	Brown
West	COSDS	Event 26 - May 2021	10/05/2021	6.33	64.4	645	7.49	105.6	310.6	16.2	125.3	Light brown
West	COSDS	Event 27 - June 2021	10/06/2021	9.68	84.1	590	7.31	50.5	255.5	9.2	45.7	Turbid, brown
West	COSDS	Event 28 - July 2021	09/07/2021	8.1	68.6	826	10.3	107.6	312.6	8.1	27.1	Brown
West	COSDS	Event 29 - August 2021	12/08/2021	11.61	105.5	1448	7.75	95.9	300.9	11.1	6.6	Clear
West	COSDS	WW Event 1 - 25 August 2021	25/08/2021	8.3	74.7	489.5	7.46	1480	1685	10.7		Brown
West	COSDS	Event 30 - September 2021	03/09/2021	9.46	94.2	1293	8.26	93.3	298.3	15.2	23.8	Green tinge
West	COSDS	Event 31 - October 2021	13/10/2021	7.1	69.9	1154	6.46	-20.2	184.8	14.7	-	Green/brown, turbid
West	COSDS	Event 32 - November 2021	09/11/2021	7.04	74.0	905	7.34	83	288	17.8	152.39	Pale brown, high turbidity
West	COSDS	WW Event 2 - 29 November 2021	29/11/2021	6.06	63.2	555	7.2	83.7	288.7	17.4		Very turbid, light brown
West	COSDS	Event 33 - December 2021	07/12/2021	5.92	65.0	738	7.27	117.9	322.9	19.9	63.53	Brown, turbid, high sediment load
West	COSDS	WW Event 3 - 14 January 2022	14/01/2022	10.89	129.1	485.4	7.75	88.7	293.7	23.9	234.17	Brown, turbid, high sediment load
West	COSDS	Event 34 - February 2022	08/02/2022	6.28	68.8	1028	7.27	132.9	337.9	19.8	11.35	Green tinge, low sediment
West	COSDS	Event 35 - March 2022	17/03/2022	2.07	22.4	586	7.87	97.7	302.7	19.2	29.67	Brown water, no odour or sheen, moderatley turbid
West	COSDS	Event 36 - April 2022	12/04/2022	-	-	-	-	-	-	-	-	No access to sample location
West	COSDS	Event 37 - May 2022	27/05/2022	9.55	92.42	671	7.29	76.3	281.3	13.9	23.43	Brown, very cloudy, no sheen, no odour
West	COSDS	Event 38 - June 2022	28/06/2022	8.04	69.21	1413	7.24	177.0	382.0	8.8	15.14	Yellow/green/brown, very cloudy
West	COSDS	WW Event 4 - 5-6 July 2022	5/07/2022	9.86	92.92	133	7.20	133.0	338.0	12.7	421.00	
West	COSDS	Event 39 - July 2022	21/07/2022	10.19	91.96	605	6.76	103.2	308.2	10.8	38.73	Green/brown, turbid, no sheen, no odour
West	COSUS	Event 25 - April 2021	08/04/2021	5.88	64.9	473.9	7.77	125.4	330.4	20.2	75.04	Brown
West	COSUS	Event 26 - May 2021	10/05/2021	6.42	65.4	674	7.41	158.7	363.7	16.3	135.28	Turbid, brown
West	COSUS	Event 27 - June 2021	10/06/2021	9.93	87.3	602	7.55	69.5	274.5	9.7	42.2	Turbid, brown
West	COSUS	Event 28 - July 2021	09/07/2021	7.98	68.5	895	10.12	101.8	306.8	8.7	31.58	Green
West	COSUS	Event 29 - August 2021	12/08/2021	7.91	70.7	1491	7.61	89.5	294.5	10.4	5.46	Clear
West	COSUS	WW Event 1 - 25 August 2021	25/08/2021	7.69	69.2	539	7.54	148.9	353.9	10.7		Brown
West	COSUS	Event 30 - September 2021	03/09/2021	9.29	93.5	1492	8.52	85.4	290.4	15.7	25.21	Green tinge
West	COSUS	Event 31 - October 2021	13/10/2021	5.38	53.6	981	8.67	-70.7	134.3	15.2	-	Green, turbid
West	COSUS	Event 32 - November 2021	09/11/2021	5.87	62.1	942	7.33	75.8	280.8	18.1	139.78	Pale creamy brown, very cloudy



Appendix B
Table B8
Baseline Monitoring Period Field Parameters (April 2021 to June 2023)

Package	Location	Sampling Event	Sample date	Dissolved oxygen (mg/L)	Dissolved Oxygen (%S)	Electrical conductivity (µS/cm)	pH (pH units)	Redox potential (mV)	Corrected redox potential (mV)*	Temperature (°C)	Turbidity (NTU)	Observations
West	COSUS	WW Event 2 - 29 November 2021	29/11/2021	4.71	49.3	580	7.57	60.8	265.8	17.6	-	Highly turbid, light brown
West	COSUS	Event 33 - December 2021	07/12/2021	4.3	46.8	774	7.18	96.7	301.7	19.5	51.3	Brown, very turbid, high sediment load
West	COSUS	WW Event 3 - 14 January 2022	14/01/2022	10.55	124.6	495.4	7.94	81.4	286.4	23.7	243.48	Brown, turbid, high sediment load
West	COSUS	Event 34 - February 2022	08/02/2022	3.67	40.0	927	7.09	103.1	308.1	19.6	19.23	Green tinge, no sediment
West	COSUS	Event 35 - March 2022	17/03/2022	2.14	23.5	649	7.98	87.1	292.1	19.9	44.95	Brown, turbid water, no odour or sheen, low sediment load
West	COSUS	Event 36 - April 2022	12/04/2022	-	-	-	-	-	-	-	-	No access to sample location
West	COSUS	Event 37 - May 2022	27/05/2022	8.99	87.96	692	7.27	92.2	297.2	14.4	28.52	Brown, very cloudy, no sheen, no odour
West	COSUS	Event 38 - June 2022	28/06/2022	7.02	60.14	1516	7.44	183.0	388.0	8.6	10.00	Dark green/brown, very cloudy
West	COSUS	WW Event 4 - 5-6 July 2022	5/07/2022	9.78	92.16	146	7.20	127.0	332.0	12.7	445.00	
West	COSUS	Event 39 - July 2022	21/07/2022	10.28	92.13	529	6.72	115.6	320.6	10.5	26.98	Green/grey, turbid, no sheen, no odour
East	HINDS	Event 25 - April 2021	08/04/2021	3.14	36.3	137.2	7.28	84.2	289.2	22.6	35.14	Light brown
East	HINDS	Event 26 - May 2021	10/05/2021	4.17	45.4	140.1	7.61	131.3	336.3	19.5	78.69	Clear
East	HINDS	Event 27 - June 2021	10/06/2021	6.72	59.4	127.7	8.33	50.5	255.5	9.9	30.4	Clear
East	HINDS	Event 28 - July 2021	09/07/2021	7.05	63.8	135.2	8.95	30.2	235.2	10.9	45.29	Brown
East	HINDS	WW Event 1 - 25 August 2021	25/08/2021	11.1	101.6	147.8	7.67	197	402	11.4	-	Turbid, brown
East	HINDS	Event 30 - September 2021	03/09/2021	9.71	97.7	300.7	9.05	-4.2	200.8	15.7	20.4	Clear
East	HINDS	Event 31 - October 2021	13/10/2021	6.6	68.1	214.2	7.37	134.4	339.4	16.9	-	Brown, mostly clear
East	HINDS	Event 32 - November 2021	09/11/2021	6.64	74.6	244	7.38	14.9	219.9	21.1	11.52	Slightly cloudy, slime on surface
East	HINDS	WW Event 2 - 29 November 2021	29/11/2021	3.03	33.2	226.3	7.2	78.5	283.5	19.8	-	Light brown, moderate turbidity
East	HINDS	Event 33 - December 2021	07/12/2021	10.41	116.5	249.3	7.63	107.4	312.4	20.9	106.55	Slight brown tinge
East	HINDS	WW Event 3 - 14 January 2022	14/01/2022	3.93	47.1	290	8.05	-77.4	127.6	24.5	33.47	Brown
East	HINDS	Event 34 - February 2022	08/02/2022	2.6	29.0	269.4	6.98	-13	192	20.7	19.01	Green, fairly clear, no sediment
East	HINDS	Event 35 - March 2022	17/03/2022	2.47	25.5	158.1	7.94	-176.7	28.3	16.9	56.76	Fairly clear, slight brown colour
East	HINDS	Event 36 - April 2022	12/04/2022	8.50	96.45	137	7.48	55.2	260.2	21.6	80.60	Green/light brown water, low sediment, no sheen, no odour
East	HINDS	Event 37 - May 2022	27/05/2022	2.67	26.35	238	6.71	143.6	348.6	14.8	21.87	Brown, very cloudy, no sheen, no odour
East	HINDS	Event 38 - June 2022	28/06/2022	9.18	80.93	243	7.62	192.0	397.0	9.8	33.56	Brown, very cloudy
East	HINDS	WW Event 4 - 5-6 July 2022	5/07/2022	9.51	90.42	66	6.90	156.0	361.0	13.1	108.00	
East	HINDS	Event 39 - July 2022	21/07/2022	8.99	84.53	173	7.00	94.2	299.2	12.6	69.90	
East	HINDS	Event 40 - August 2022	15/08/2022	8.63	83.70	223	6.80	101.3	306.3	14.0	1908.42	Green tinge, no odour or sheen
East	HINDS	Event 41 - September 2022	20/09/2022	5.86	40.07	293	7.08	101.2	306.2	16.5	39.00	Brown, very cloudy, no sediment, no odour/sheen
East	HINDS	Event 42 - October 2022	19/10/2022	5.18	54.90	188	7.04	116.4	321.4	18.2	84.11	Pale brown, very cloudy, no sediment, no odour/sheen.
East	HINDS	WW Event 5 - 14-15 November 2022	14/11/2022	6.23	74.15	358	7.63	85.4	290.4	24.1	81.60	Brown, turbid, no odour/sheen.
East	HINDS	Event 43 - December 2022	13/12/2022	10.06	118.6	279	8.01	111	316	23.6	13.37	Green-brown, very cloudy, no odour/sheen.
East	HINDS	Event 44 - January 2023	17/01/2023	8.62	106.7	272	8.18	79.7	284.7	26.2	3.8	Brown, somewhat cloudy, no odour/sheen.
East	HINDS	Event 45 - February 2023	07/02/2023	9.91	126.0	403	8.77	66.8	271.8	27.7	3.73	Pale brown tinge, mostly clear, no odour/sheen.
East	HINDS	Event 46 - March 2023	02/03/2023	9.35	114.0	585	8	-696.8	-491.8	25.4	2.19	Clear, no sediment, no odour/sheen.
East	HINDS	Event 47 - April 2023	4/04/2023	7.23	79.7	358	8	126.4	331.4	20.0	22.25	Brown, turbid, no odour/sheen.
East	HINDS	Event 48 - May 2023	1/05/2023	7.88	83.6	402.7	7.1	130.8	335.8	18.1	207.26	Pale yellow tinge, no odour, no sheen, scum on surface of pond.
East	HINDS	Event 49 - June 2023	6/06/2023	432	8.5	9.63	96.1	68.1	273.1	15.3	3.38	Pale yellow-tinge, mostly clear, no odour, no sheen
East	HINUS	Event 25 - April 2021	07/04/2021	3.09	34.4	133.7	7.76	-40.3	164.7	20.7	12.83	Light brown
East	HINUS	Event 26 - May 2021	10/05/2021	5.43	57.3	175.5	7.24	76.6	281.6	18.0	52.15	Clear to green
East	HINUS	Event 27 - June 2021	10/06/2021	8.48	73.2	156.1	7.78	-5.2	199.8	8.9	34	Clear
East	HINUS	Event 28 - July 2021	09/07/2021	5.23	44.3	193.1	10.46	-63.2	141.8	8.1	13.53	Clear
East	HINUS	WW Event 1 - 25 August 2021	25/08/2021	7.28	64.0	352	7.14	220	425	9.7	-	Turbid, brown
East	HINUS	Event 31 - October 2021	13/10/2021	3.78	38.4	311.9	6.9	104	309	16.2	-	Slight green tinge, fairly clear
East	HINUS	Event 32 - November 2021	09/11/2021	8.33	99.0	1364	7.46	59.8	264.8	24.0	27.57	Brown tinge, silty sediment
East	HINUS	WW Event 2 - 29 November 2021	29/11/2021	3.65	42.6	520	7.23	-7	198	23.1	-	Light brown, moderate turbidity
East	HINUS	Event 33 - December 2021	07/12/2021	7.67	85.3	515	7.02	0.1	205.1	20.6	228.79	Slight brown tinge, low sediment
East	HINUS	WW Event 3 - 14 January 2022	14/01/2022	2.13	24.9	281.6	7.19	-27.3	177.7	23.2	283.96	Brown, very turbid, muddy
East	HINUS	Event 34 - February 2022	08/02/2022	7.62	86.5	359.5	7.1	24.4	229.4	21.6	81.7	Fairly clear
East	HINUS	Event 35 - March 2022	17/03/2022	2.22	25.0	140.9	7.6	-6.9	198.1	21.3	64.42	Brown water, turbid, heavily eroded banks
East	HINUS	Event 36 - April 2022	12/04/2022	-	-	-	-	-	-	-	-	No access to sample location
East	HINUS	Event 37 - May 2022	27/05/2022	5.12	48.36	285	6.70	31.0	236.0	12.8	27.38	Dark brown, very cloudy, no sheen, no odour
East	HINUS	Event 38 - June 2022	28/06/2022	9.86	84.07	303	7.06	15.2	220.2	8.4	49.86	Brown/green, very cloudy
East	HINUS	WW Event 4 - 5-6 July 2022	5/07/2022	9.49	90.43	62	6.70	158.0	363.0	13.2	178.00	Cloudy, brown, non-transparent, no sheen, no odour
East	HINUS	Event 39 - July 2022	21/07/2022	9.80	86.40	187	6.64	55.2	260.2	9.8	1980.00	
East	HINUS	Event 40 - August 2022	15/08/2022	9.55	89.99	261	6.64	-6.2	198.8	12.7	2788.91	Green/brown, slightly turbid, no odour or sheen
East	HINUS	Event 41 - September 2022	20/09/2022	16.02	109.54	361	8.82	46.6	251.6	17.5	62.02	Green-brown, no sediment, very cloudy, no odour/sheen
East	HINUS	Event 42 - October 2022	19/10/2022	1.75	17.90	136	6.87	5.1	210.07	16.6	267.45	Pale brown, very cloudy, non-transparent, no sediment, no odour/sheen.
East	HINUS	WW Event 5 - 14-15 November 2022	14/11/2022	1.13	12.65	274	6.85	-42.9	162.1	20.9	254.00	Green-brown, very turbid, no odour/sheen.
East	HINUS	Event 43 - December 2022	13/12/2022	15.71	189.8	248	8.89	136.8	341.8	24.9	7.72	Green-brown, turbid, no odour/sheen
East	HINUS	Event 44 - January 2023	17/01/2023	11.22	144.2	285	7.68	1.4	206.4	28.3	100.97	Green-brown, very turbid, no odour/sheen.
East	HINUS	Event 45 - February 2023	07/02/2023	7.33	90.7	433	7.42	46.7	251.7	26.2	40.61	Green-brown, turbid, no odour/sheen.
East	HINUS	Event 46 - March 2023	02/03/2023	8.38	104.8	703	7.95	272.6	477.6	26.8	3.92	Clear, no sediment, no odour/sheen.
East	HINUS	Event 47 - April 2023	4/04/2023	12.58	151.4	471.4	9.08	110.1	315.1	24.4	63.52	Green-brown, turbid, no odour/sheen.
East	HINUS	Event 48 - May 2023	1/05/2023	6.49	67.1	466	6.98	117.4	322.4	16.9	75.07	Pale yellow tinge, no odour, no sheen.
East	HINUS	Event 49 - June 2023	6/06/2023	604	8.5	9.75	96.5	8.7	213.7	15.2	91.81	Pale yellow-tinge, no odour, no sheen, no sediment
Central	KEMDS	Event 25 - April 2021	08/04/2021	0.5	5.3	225.2	6.88	-72.4	132.6	18.4	32.54	Brown
Central	KEMDS	Event 26 - May 2021	10/05/2021	8.8	87.2	218.5	6.82	-120.3	84.7	15.0	28.53	Turbid
Central	KEMDS	Event 27 - June 2021	10/06/2021	1.04	8.5	187.6	6.83	110.3	315.3	6.9	11	Clear
Central	KEMDS	Event 28 - July 2021	09/07/2021	0.52	4.5	170.5	9.09	-73.6	131.4	8.7	41.5	Clear
Central	KEMDS	WW Event 1 - 25 August 2021	25/08/2021	2.9	26.8	176.4	7.39	143.9	348.9	11.8	-	
Central	KEMDS	Event 30 - September 2021	03/09/2021	0.8	7.7	174	6.83	89.1	294.1	13.6	35.1	Organic odour
Central	KEMDS	Event 31 - October 2021	13/10/2021	0.26	2.5	148.5	9.69	159.9	364.9	14.5	-	Green tinge
Central	KEMDS	Event 32 - November 2021	09/11/2021	5.69	60.3	1181	7.36	78	283	18.2	22.6	Pale brown, cloudy
Central	KEMDS	WW Event 2 - 29 November 2021	29/11/2021	5.69	59.0	793	7.45	108.5	313.5	17.1	-	Highly turbid, Small foam patches, brown



Appendix B
Table B8
Baseline Monitoring Period Field Parameters (April 2021 to June 2023)

Package	Location	Sampling Event	Sample date	Dissolved oxygen (mg/L)	Dissolved Oxygen (%S)	Electrical conductivity (µS/cm)	pH (pH units)	Redox potential (mV)	Corrected redox potential (mV)*	Temperature (°C)	Turbidity (NTU)	Observations
Central	KEMDS	Event 33 - December 2021	07/12/2021	5.8	63.9	1634	7.3	126.3	331.3	20.1	14.61	Brown, turbid, low sediment
Central	KEMDS	WW Event 3 - 14 January 2022	14/01/2022	8.29	97.0	523	7.68	122	327	23.2	64.33	Brown, turbid
Central	KEMDS	Event 34 - February 2022	08/02/2022	5.86	65.3	2481	7.39	134.7	339.7	20.7	4.9	Brown, turbid
Central	KEMDS	Event 35 - March 2022	17/03/2022	1.9	20.8	1118	7.9	109.4	314.4	19.7	13.39	Brown, turbid, no odour or sheen
Central	KEMDS	Event 36 - April 2022	12/04/2022	-	-	-	-	-	-	-	-	No access to sample location
Central	KEMDS	Event 37 - May 2022	27/05/2022	8.18	79.51	1144	7.24	117.0	322.0	14.1	4.27	Brown, very cloudy, no sheen, no odour
Central	KEMDS	Event 38 - June 2022	28/06/2022	10.34	89.65	2322	7.52	149.0	354.0	9.1	1.63	Dark green/brown
Central	KEMDS	WW Event 4 - 5-6 July 2022	5/07/2022	9.16	86.71	161	7.17	144.0	349.0	12.9	213.00	
Central	KEMDS	Event 39 - July 2022	21/07/2022	9.60	84.43	1466	7.02	118.3	323.3	9.7	19.25	
Central	KEMUS	Event 25 - April 2021	07/04/2021	4.09	44.6	1726	7.49	135.6	340.6	19.6	8.06	Clear
Central	KEMUS	Event 26 - May 2021	10/05/2021	4.94	51.0	885	7.41	128.6	333.6	16.9	123.25	Brown, organic odour
Central	KEMUS	Event 27 - June 2021	10/06/2021	7.2	61.4	1996	7.29	120.4	325.4	8.4	2.8	Clear
Central	KEMUS	Event 28 - July 2021	09/07/2021	6.79	57.8	1230	9.96	60.4	265.4	8.3	12.5	Clear
Central	KEMUS	WW Event 1 - 25 August 2021	25/08/2021	10.69	94.0	477	7.1	175.4	380.4	9.7		Turbid, brown
Central	KEMUS	Event 30 - September 2021	03/09/2021	6.54	60.3	1207	7.8	56.9	261.9	11.7	38.4	Clear
Central	KEMUS	Event 31 - October 2021	13/10/2021	3.4	33.6	1801	7.37	131.6	336.6	14.8	-	Brown/green colour
Central	KEMUS	Event 32 - November 2021	09/11/2021	0.8	8.5	141.9	6.5	-81.1	123.9	18.1	148.5	Duck weed, pale brown, murky
Central	KEMUS	WW Event 2 - 29 November 2021	29/11/2021	5.03	52.8	838	7.54	60.3	265.3	17.7		Highly turbid, Brown
Central	KEMUS	Event 33 - December 2021	07/12/2021	5.26	57.4	1644	7.15	96.4	301.4	19.6	13.99	Brown, fairly turbid
Central	KEMUS	WW Event 3 - 14 January 2022	14/01/2022	8.12	93.9	487.2	7.36	59.9	264.9	22.6	69.05	Brown, very turbid, high sediment load, foamy sheen
Central	KEMUS	Event 34 - February 2022	08/02/2022	5.16	56.7	2286	7.4	100.2	305.2	20.0	5.84	Clear, slight green tinge
Central	KEMUS	Event 35 - March 2022	17/03/2022	2.27	24.3	1077	7.62	74.2	279.2	18.7	17.22	Brown, turbid, no odour or sheen
Central	KEMUS	Event 36 - April 2022	12/04/2022	6.67	73.2	768	7.32	55.2	260.2	19.9	38	Yellow tinge/clear, no sediment, no sheen, no odour
Central	KEMUS	Event 37 - May 2022	27/05/2022	8.24	79.22	1146	7.17	76.7	281.7	13.6	5.12	Dark brown/green, very cloudy, no sheen, no odour
Central	KEMUS	Event 38 - June 2022	28/06/2022	10.41	90.26	2100	7.53	143.0	348.0	9.1	1.45	Dark green/brown, cloudy
Central	KEMUS	WW Event 4 - 5-6 July 2022	5/07/2022	7.08	67.47	229	7.01	172.0	377.0	13.2	203.00	Cloudy, brown, non-transparent, no sheen, no odour
Central	KEMUS	Event 39 - July 2022	21/07/2022	9.80	86.60	1532	7.00	104.0	309.0	9.9	17.00	
East	ROPDS	Event 25 - April 2021	07/04/2021	6.97	76.9	6757	7.01	80.9	285.9	20.2	12.8	Brown
East	ROPDS	Event 26 - May 2021	10/05/2021	4.55	46.3	2410	7.38	142.5	347.5	16.2	112.33	Clear, biological sheen
East	ROPDS	Event 27 - June 2021	10/06/2021	6.97	61.3	2966	7.46	93.7	298.7	9.7	9.3	Clear
East	ROPDS	Event 28 - July 2021	10/07/2021	9.5	83.4	4093	9.56	84.4	289.4	9.6	282.7	Clear to brown
East	ROPDS	WW Event 1 - 25 August 2021	25/08/2021	0.75	6.9	564	7.15	148.4	353.4	11.8		Brown
East	ROPDS	Event 30 - September 2021	03/09/2021	10.48	102.1	4537	7.66	125.9	330.9	14.2	176.8	Green
East	ROPDS	Event 31 - October 2021	13/10/2021	6.46	65.3	392.2	9.63	48.7	253.7	15.9	-	Biological sheen, grey tinge
East	ROPDS	Event 32 - November 2021	09/11/2021	8.77	91.5	696	7.34	92.1	297.1	17.4	20.46	Green tinge, heavy algae
East	ROPDS	WW Event 2 - 29 November 2021	29/11/2021	5.45	57.1	807	7.75	97.1	302.1	17.6		Light brown, slightly turbid, light sheen (potentially organic)
East	ROPDS	Event 33 - December 2021	07/12/2021	2.93	31.6	5336	7.07	100.7	305.7	19.0	17.73	Brown tinge, fairly clear
East	ROPDS	WW Event 3 - 14 January 2022	14/01/2022	9.07	103.9	330.8	8.11	52.6	257.6	22.1	33.4	Brown, swampy odour, foamy sheen
East	ROPDS	Event 34 - February 2022	08/02/2022	4.26	45.3	980	7.36	13.2	218.2	18.3	42.2	Fairly clear
East	ROPDS	Event 35 - March 2022	17/03/2022	2.42	25.2	1150	7.72	44.5	249.5	17.3	2.68	Brown, low sediment
East	ROPDS	Event 36 - April 2022	12/04/2022	4.56	48.84	724	7.32	49.3	254.3	18.7	72.50	Brown, black sediment no odour, no sheen
East	ROPDS	Event 37 - May 2022	27/05/2022	1.68	16.22	2967	6.65	-23.1	181.9	13.8	0.93	Brown, cloudy, no odour, no sheen
East	ROPDS	Event 38 - June 2022	28/06/2022	9.56	84.08	5710	7.49	220.1	425.1	9.7	0.22	Brown, mostly clear
East	ROPDS	WW Event 4 - 5-6 July 2022	5/07/2022	9.82	93.99	111	7.28	134.0	339.0	13.4	111.00	
East	ROPDS	Event 39 - July 2022	21/07/2022	8.62	76.89	2943	7.09	193.4	398.4	10.3	3.36	Clear, no sheen, no odour
East	ROPDS	Event 40 - August 2022	15/08/2022	14.60	135.12	5067	7.25	111.0	316.0	11.9	6.22	Green/brown, turbid, green algae on surface, no odour or sheen
East	ROPDS	Event 41 - September 2022	21/09/2022	8.83	60.37	2735	7.74	112.9	317.9	13.5	1.43	Clear, no odour or sheen, some algae
East	ROPDS	Event 42 - October 2022	18/10/2022	7.39	75.80	3328	7.54	219.9	424.9	16.6	0.74	Brown-green, transparent, no sediment, no odour/sheen
East	ROPDS	WW Event 5 - 14-15 November 2022	14/11/2022	6.33	69.04	1044	7.73	79.2	284.2	19.6	255.09	Dark grey, turbid, no odour/sheen.
East	ROPDS	Event 43 - December 2022	13/12/2022	4.27	43.7	895	7.72	133.3	338.3	16.5	11.09	Green-brown, turbid, no odour/sheen.
East	ROPDS	Event 44 - January 2023	17/01/2023	3.35	37.4	1363	7.33	75.8	280.8	20.8	0.54	Brown, mostly clear, no odour/sheen.
East	ROPDS	Event 45 - February 2023	07/02/2023	6.07	69.4	1294	7.52	106	311	22.0	0.94	Brown tinge, mostly clear, black on bottom, no odour, very slight sheen.
East	ROPDS	Event 46 - March 2023	02/03/2023	5.43	61.6	2270	7.33	176.5	381.5	21.6	-1.7	Clear, slightly cloudy, no sediment, no odour/sheen.
East	ROPDS	Event 47 - April 2023	4/04/2023	6.44	69.7	1063	7.5	95	300	19.1	25.57	Slight yellow tinge, mostly clear, no odour/sheen.
East	ROPDS	Event 48 - May 2023	1/05/2023	7.82	74.3	518	7.1	122.3	327.3	13.0	205.29	Clear, no odour, no sheen.
East	ROPDS	Event 49 - June 2023	6/06/2023	4357	7.6	5.97	56.9	204.5	409.5	12.6	-5.2	Pale yellow tinge, slightly turbid, no odour, no sheen, no sediment
East	ROPUS	Event 25 - April 2021	07/04/2021	5.06	57.2	127.8	8.14	92.9	297.9	21.4	9.93	Orange to brown
East	ROPUS	Event 26 - May 2021	10/05/2021	4.28	44.7	135.4	7.12	130.8	335.8	17.5	89.28	Red to brown, biological sheen
East	ROPUS	Event 27 - June 2021	10/06/2021	7.15	61.7	108	7.71	67.1	272.1	8.9	5.3	Clear
East	ROPUS	Event 28 - July 2021	09/07/2021	8.21	73.9	122.7	10.66	24.3	229.3	10.7	35.3	Green
East	ROPUS	Event 32 - November 2021	09/11/2021	8.22	97.8	186.6	9.84	30.6	235.6	24.1	39.93	Turbid, brown
East	ROPUS	WW Event 2 - 29 November 2021	29/11/2021	2.8	29.8	127	6.69	80.9	285.9	18.4		Slightly turbid, light brown
East	ROPUS	Event 33 - December 2021	07/12/2021	8.75	97.0	175.4	8.75	24.1	229.1	20.4	28.73	Brown, fairly clear, high sediment load
East	ROPUS	WW Event 3 - 14 January 2022	14/01/2022	3.13	36.6	153.4	7.5	-107.4	97.6	23.2	1753.58	Very turbid, brown, high sediment load
East	ROPUS	Event 34 - February 2022	08/02/2022	4.09	45.1	201.1	6.74	89.6	294.6	20.2	18.33	Brown, slightly turbid
East	ROPUS	Event 35 - March 2022	17/03/2022	2.32	25.6	90.1	7.78	42.1	247.1	20.1	67.54	Brown, turbid, no odour or sheen
East	ROPUS	Event 36 - April 2022	12/04/2022	-	-	-	-	-	-	-	-	No access to sample location
East	ROPUS	Event 37 - May 2022	27/05/2022	4.82	46.75	143	6.78	-18.4	186.6	14.0	29.85	Brown, cloudy, no odour, no sheen
East	ROPUS	Event 38 - June 2022	28/06/2022	6.20	52.99	167	7.01	81.9	286.9	8.5	121.30	Green/brown, very cloudy
East	ROPUS	WW Event 4 - 5-6 July 2022	5/07/2022	8.43	80.33	35	6.69	122.0	327.0	13.2	78.30	
East	ROPUS	Event 39 - July 2022	21/07/2022	6.77	60.25	124	6.57	45.3	250.3	10.2	48.44	Grey, turbid, no sheen, no odour
East	ROPUS	Event 40 - August 2022	15/08/2022	12.61	125.26	204	6.94	-24.5	180.5	15.1	12515.40	Green/brown, turbid, green algae on surface, no odour or sheen
East	ROPUS	Event 41 - September 2022	21/09/2022	7.28	49.78	237	7.26	-45.9	159.1	16.4	95.66	Brown, cloudy, no odour or sheen, some algae
East	ROPUS	Event 42 - October 2022	19/10/2022	2.91	30.90	142	6.86	-12.9	192.1	18.3	113.64	Pale brown-green, very cloudy, no odour/sheen
East	ROPUS	WW Event 5 - 14-15 November 2022	15/11/2022	12.94	154.30	255	9.16	47.3	252.3	24.2	150.00	Pale brown tinge, mostly clear, no odour/sheen.
East	ROPUS	Event 43 - December 2022	13/12/2022	13.45	156.2	217.7	8.73	93	298	22.8	6.16	Green-brown, clear with visible thick sediment layer on bottom, no odour/sheen.
East	ROPUS	Event 44 - January 2023	17/01/2023	10.15	118.1	218	7.57	53.2	258.2	22.9	10.86	Brown, mostly clear, no odour/sheen.



Appendix B
Table B8
Baseline Monitoring Period Field Parameters (April 2021 to June 2023)

Package	Location	Sampling Event	Sample date	Dissolved oxygen (mg/L)	Dissolved Oxygen (%S)	Electrical conductivity (µS/cm)	pH (pH units)	Redox potential (mV)	Corrected redox potential (mV)*	Temperature (°C)	Turbidity (NTU)	Observations
East	ROPUS	Event 45 - February 2023	07/02/2023	14.02	173.8	316.3	7.92	73.6	278.6	26.3	52.3	Brown, turbid, no odour/sheen.
East	ROPUS	Event 46 - March 2023	02/03/2023	15.2	182.3	415	7.84	-394.6	-189.6	24.5	16.82	Light brown/yellow tinge, cloudy, no sediment, no odour/sheen.
East	ROPUS	Event 47 - April 2023	4/04/2023	10.12	120.9	270	8.07	105.5	310.5	24.1	201.5	Green-brown, turbid, no odour/sheen.
East	ROPUS	Event 48 - May 2023	1/05/2023	10.52	102.3	229.5	7.02	114.6	319.6	14.1	203.08	Light brown, mostly clear, no odour, no sheen.
East	ROPUS	Event 49 - June 2023	6/06/2023	306.6	8.0	7.06	67.3	108.9	313.9	13.2	40.44	Pale yellow tinge, slightly turbid, no odour, no sheen, some sediment
Central	SOU DS	Event 25 - April 2021	08/04/2021	7.6	83.6	855	7.8	168.2	373.2	20.0	50.31	Brown
Central	SOU DS	Event 26 - May 2021	10/05/2021	5.19	53.8	988	7.17	109.3	314.3	17.1	113.55	Turbid, brown
Central	SOU DS	Event 27 - June 2021	10/06/2021	8.13	69.7	742	7.32	87.1	292.1	8.6	17	Brown
Central	SOU DS	Event 28 - July 2021	09/07/2021	6.66	57.1	1168	10.07	102.6	307.6	8.6	11	Clear
Central	SOU DS	Event 29 - August 2021	13/08/2021	2.18	20.7	1224	8.97	74.9	279.9	13.0	13.4	Green to brown
Central	SOU DS	WW Event 1 - 25 August 2021	25/08/2021	8.66	76.7	696	7.23	161.9	366.9	10.0		
Central	SOU DS	Event 30 - September 2021	03/09/2021	8.85	82.5	924	7.89	89.8	294.8	12.2	62.1	Brown
Central	SOU DS	Event 31 - October 2021	13/10/2021	6.52	65.7	1014	7.47	128.9	333.9	15.8	-	Brown, turbid
Central	SOU DS	Event 32 - November 2021	09/11/2021	5.03	53.2	888	7.21	83.3	288.3	18.1	26.81	Pale brown, cloudy, moderate turbidity
Central	SOU DS	WW Event 2 - 29 November 2021	29/11/2021	3.95	41.6	484.3	7.35	110.3	315.3	17.9		Highly turbid, light brown
Central	SOU DS	Event 33 - December 2021	07/12/2021	5.32	58.6	753	7.14	114	319	20.1	79.34	Brown, low sediment
Central	SOU DS	WW Event 3 - 14 January 2022	14/01/2022	5.34	62.8	340.2	7.28	86.2	291.2	23.5	125.74	Brown, turbid, high sediment load
Central	SOU DS	Event 34 - February 2022	08/02/2022	4.53	51.4	987	7.3	105.5	310.5	21.6	44.64	Slight green tinge, fairly clear
Central	SOU DS	Event 35 - March 2022	17/03/2022	2.26	24.8	694	8	78.3	283.3	19.8	100.87	Brown, turbid, high sediment load
Central	SOU DS	Event 36 - April 2022	12/04/2022	-	-	-	-	-	-	-	-	No access to sample location
Central	SOU DS	Event 37 - May 2022	27/05/2022	-	-	-	-	-	-	-	-	No access to sample location
Central	SOU DS	Event 38 - June 2022	28/06/2022	10.74	92.01	1084	7.26	118.9	323.9	8.6	34.45	Dark green/brown, very cloudy
Central	SOU DS	WW Event 4 - 5-6 July 2022	6/07/2022	8.80	83.67	240	7.08	222.0	427.0	13.1	355.00	
Central	SOU DS	Event 39 - July 2022	21/07/2022	11.00	99.73	870	6.78	112.3	317.3	11.0	-	Green/brown, turbid, no sheen, no odour
Central	SOU US	Event 25 - April 2021	08/04/2021	5.7	62.0	858	7.5	168.5	373.5	19.5	40.64	Brown
Central	SOU US	Event 26 - May 2021	10/05/2021	5.06	52.3	984	7.23	110.2	315.2	17	120.33	Turbid, brown
Central	SOU US	Event 27 - June 2021	10/06/2021	8.69	74.4	738	7.41	83.5	288.5	8.6	16.6	Brown
Central	SOU US	Event 28 - July 2021	09/07/2021	6.64	56.6	1161	9.98	96.6	301.6	8.4	13.26	Clear
Central	SOU US	Event 29 - August 2021	13/08/2021	2.04	18.5	1155	8.5	84.7	289.7	11	12.34	Green
Central	SOU US	WW Event 1 - 25 August 2021	25/08/2021	8.25	73.6	703	7.23	172.4	377.4	10.3		Brown
Central	SOU US	Event 30 - September 2021	03/09/2021	9.55	90.4	974	7.92	90.6	295.6	12.9	86.3	
Central	SOU US	Event 31 - October 2021	13/10/2021	5.75	58.0	1003	7.51	118.4	323.4	15.8	-	Brown, turbid
Central	SOU US	Event 32 - November 2021	09/11/2021	5.1	54.0	887	7.19	70.7	275.7	18.1	26.85	Pale brown, cloudy, moderate turbidity
Central	SOU US	WW Event 2 - 29 November 2021	29/11/2021	4.2	44.3	486	7.37	107.2	312.2	17.9		Very turbid, light brown
Central	SOU US	Event 33 - December 2021	07/12/2021	5.33	58.8	760	7.17	115.4	320.4	20.2	41.46	Brown, turbid, high sediment load
Central	SOU US	WW Event 3 - 14 January 2022	14/01/2022	6.67	78.8	344.6	7.49	77.7	282.7	23.7	155.17	Brown, turbid, high sediment load
Central	SOU US	Event 34 - February 2022	08/02/2022	5.48	61.9	994	7.41	85.9	290.9	21.4	21.63	Slightly green
Central	SOU US	Event 35 - March 2022	17/03/2022	2.21	24.2	689	7.62	82.6	287.6	19.8	83.92	Brown, turbid, high sediment load
Central	SOU US	Event 36 - April 2022	12/04/2022	-	-	-	-	-	-	-	-	No access to sample location
Central	SOU US	Event 37 - May 2022	27/05/2022	-	-	-	-	-	-	-	-	No access to sample location
Central	SOU US	Event 38 - June 2022	28/06/2022	9.90	84.00	1077	7.26	122.7	327.7	8.2	24.45	Dark green/brown, very cloudy
Central	SOU US	WW Event 4 - 5-6 July 2022	6/07/2022	8.89	84.34	240	7.09	223.0	428	13.0	366.00	Cloudy, brown, non-transparent, no sheen, no odour
Central	SOU US	Event 39 - July 2022	21/07/2022	8.64	76.71	859	6.73	99.7	304.7	10.1	-	Green/brown, turbid, no sheen, no odour

*Corrected for standard hydrogen electrode (SHE) by adding 205 mV to YSI redox potential reading
Note: Baseline period for West and Central Package ended in July 2022, Baseline period for East package ended in June 2023



Package	Location	Sampling Event	Sample date	Dissolved oxygen (mg/L)	Dissolved Oxygen (%S)	Electrical conductivity (µS/cm)	pH (pH units)	Redox potential (mV)	Corrected redox potential (mV)*	Temperature (°C)	Turbidity (NTU)	Observations
West	BADDS	Event 40 - August 2022	16/08/2022	9.60	87.84	964	6.61	88.6	293.6	11.4	43.78	Brown, cloudy, no odour, no sheen
West	BADDS	Event 41 - September 2022	20/09/2022	7.91	54.08	872	7.13	105.8	310.8	13.5	18.11	Green-brown, very cloudy, no sediment, no odour/sheen
West	BADDS	Event 42 - October 2022	18/10/2022	7.14	73.40	683	6.98	145.8	350.8	16.7	144.72	Pale brown, very cloudy, no sediment, no odour/sheen.
West	BADDS	WW Event 5 - 14-15 November 2022	15/11/2022	6.22	68.10	1027	7.30	83.5	288.5	19.8	1700.00	Pale brown, very turbid, no odour/sheen.
West	BADDS	Event 43 - December 2022	15/12/2022	6.04	65.0	1717	7.42	186.6	391.6	18.9	6.09	Green-brown, turbid, no odour/sheen.
West	BADDS	Event 44 - January 2023	18/01/2023	4.87	57.4	828	7.17	98.2	303.2	23.6	192.7	Green-brown, turbid, no odour/sheen.
West	BADDS	Event 45 - February 2023	08/02/2023	7.53	89.1	1952	7.47	104.1	309.1	23.8	32.6	Green-brown, turbid, no odour
West	BADDS	Event 46 - March 2023	03/03/2023	1.03	11.8	1936	7.09	-2.9	202.1	22.0	93.49	Light green/brown tinge, cloudy, no sediment, no odour/sheen.
West	BADDS	Event 47 - April 2023	4/04/2023	4.27	44.5	1329	7.62	100.1	305.1	17.1	183.95	Green-brown, turbid, no odour/sheen.
West	BADDS	Event 48 - May 2023	2/05/2023	8.26	85.8	1053	6.93	148.3	353.3	16.9	339.8	Light brown/grey tinge, partly cloudy, no odour, no sheen.
West	BADDS	Event 49 - June 2023	7/06/2023	7	67.1	1568	7.6	123.9	328.9	13.4	47.59	Pale yellow-tinge, slightly turbid, no odour, no sheen, no sediment
West	BADDS	Event 50 - July 2023	7/07/2023	8.26	27.4	700	7.48	294.4	499.4	9.4	40.33	Pale yellow green-tinge, mostly clear, no odour, no sheen, no sediment
West	BADDS	Event 51 - August 2023	9/08/2023	7.9	71.9	1188	7.37	105.5	310.5	11.3	36.63	Pale yellow tinge, mostly clear, no odour, no sheen, location moved slightly downstream.
West	BADDS	WW Event 6 - 31 August 2023	31/08/2023	7.17	69.7	999	7.38	84	289	13.7	165.28	Pale brown, highly turbid, no odour or sheen.
West	BADDS	Event 52 - September 2023	5/09/2023	5.99	57.2	914	7.23	178.3	383.3	13.3	127.46	Brown, highly turbid, no odour or sheen.
West	BADDS	Event 53 - October 2023	6/10/2023	5.1	52	1535	7.21	96.2	301.2	17.1	38.55	Pale yellow-brown tinge, slightly turbid, no odour or sheen.
West	BADDS	Event 54 - November 2023	8/11/2023	3.72	41.4	720	7.19	127.9	332.9	20.4	446	Pale yellow-brown, turbid, no odour, no sheen.
West	BADDS	Event 55 - December 2023	6/12/2023	6.57	81.3	1038	7.53	101.6	306.6	26.2	52.53	Pale yellow-tinge, mostly clear, green organic sheen, no odour.
West	BADDS	Event 56 - January 2024	19/01/2024	6	76.1	1959	7.61	112.9	317.9	27.2	577	Pale yellow, slightly turbid, no odour or sheen.
West	BADDS	Event 57 - February 2024	13/02/2024	3.11	36.4	1060	7.03	116.7	321.7	23.2	237.4	Light brown tinge, cloudy, no odour, slight green organic scum on surface
West	BADDS	Event 58 - March 2024	15/03/2024	4.52	50.7	903	7.17	92.2	297.2	21.3	38.88	
West	BADMS	Event 40 - August 2022	16/08/2022	8.85	81.2	1168	6.49	118.9	323.9	11.5	29.25	Green/brown, cloudy, no odour or sheen
West	BADMS	Event 41 - September 2022	20/09/2022	8.19	56.0	903	7.03	105.8	310.8	14.0	21.32	Yellow-brown, very cloudy, no sediment, no odour/sheen.
West	BADMS	Event 42 - October 2022	18/10/2022	6.78	70.30	835	6.95	145.6	350.6	17.1	80.70	Pale brown, very cloudy, no sediment, no odour/sheen.
West	BADMS	WW Event 5 - 14-15 November 2022	15/11/2022	6.12	67.02	993	7.68	42.3	247.3	19.8	1500.00	Pale brown, very turbid, no odour/sheen.
West	BADMS	Event 43 - December 2022	15/12/2022	3.5	37.1	1697	7.28	191.3	396.3	18.2	8.62	Green-brown, very cloudy, no odour/sheen.
West	BADMS	Event 44 - January 2023	18/01/2023	2.71	31.8	785	7.06	78.7	283.7	23.3	5.33	Clear, no odour/sheen.
West	BADMS	Event 45 - February 2023	08/02/2023	4.06	46.6	1849	7.21	101.3	306.3	22.2	36.92	Green-brown, turbid, no odour, slight sheen.
West	BADMS	Event 46 - March 2023	03/03/2023	1.96	22.2	1820	7.26	113.8	318.8	21.5	19.18	Slight yellow tinge, cloudy, no sediment, organic sheen, no odour.
West	BADMS	Event 47 - April 2023	4/04/2023	3.23	33.7	1350	7.48	95	300	17.4	153.87	Green-yellow tinge, mostly clear, no odour/sheen
West	BADMS	Event 48 - May 2023	2/05/2023	7	68.4	977	6.81	142	347	14.2	232.41	Light brown, cloudy, no odour, no shee, light sediment load on surface of creek.
West	BADMS	Event 49 - June 2023	7/06/2023	6	58.3	1539	7.5	125.4	330.4	13.0	53.43	Pale yellow-green tinge, slightly turbid, no odour, no sheen, no sediment
West	BADMS	Event 50 - July 2023	7/07/2023	7.81	69.1	665	7.37	279.4	484.4	9.8	42.34	Green-brown tinge, mostly clear, no odour, no sheen, no sediment
West	BADMS	Event 51 - August 2023	9/08/2023	7.48	68.4	1227	8.4	90.7	295.7	11.7	46.11	Pale yellow tinge, mostly clear, no odour, no sheen, location moved slightly upstream.
West	BADMS	WW Event 6 - 31 August 2023	31/08/2023	7.1	68.8	772	7.73	71.3	276.3	13.6	168.29	Pale brown, highly turbid, no odour or sheen.
West	BADMS	Event 52 - September 2023	5/09/2023	6.47	62.3	995	7.23	146.7	351.7	13.5	103.48	Brown, highly turbid, no odour or sheen.
West	BADMS	Event 53 - October 2023	6/10/2023	4.3	44	1285	7.27	92	297	16.8	40.28	Pale yellow tinge, slightly turbid, no odour or sheen.
West	BADMS	Event 54 - November 2023	8/11/2023	3.84	3.62	726	7.32			18.1	630	Pale yellow-brown, highly turbid, no odour or sheen.
West	BADMS	Event 55 - December 2023	6/12/2023	5.48	65.8	895	7.43	83.1	288.1	24.5	36.22	Green, slightly turbid, no odour or sheen.
West	BADMS	Event 56 - January 2024	19/01/2024	5.49	66.7	1698	7.57	115	320	24.8	517	Pale brown, slightly cloudy, no odour, no sheen.
West	BADMS	Event 57 - February 2024	13/02/2024	3.38	38.9	1040	6.98	57.3	262.3	22.6	184.8	Light brown tinge, cloudy, no odour, slight green scum on surface
West	BADMS	Event 58 - March 2025	15/03/2024	4.31	48.7	992	7.18	71.1	276.1	21.5	50.27	Pale yellow-brown, mostly clear, no odour
West	BADUS	Event 40 - August 2022	16/08/2022	10.34	92.2	1487	6.66	97.6	302.6	10.3	32.32	Light brown, cloudy, some algae, no odour
West	BADUS	Event 41 - September 2022	20/09/2022	13.54	92.6	1940	7.62	13.55	218.55	15.7	22.56	Green-brown, very cloudy, no sediment, no odour/sheen
West	BADUS	Event 42 - October 2022	19/10/2022	6.23	68.20	1013	6.94	181.0	386	19.8	45.85	Green-brown, very cloudy, no sediment, odour/sheen
West	BADUS	WW Event 5 - 14-15 November 2022	14/11/2022	2.90	31.31	2180	6.92	8.7	213.68	19.1	101.20	Dark brown, turbid, no odour/sheen.
West	BADUS	Event 43 - December 2022	15/12/2022	6.29	69.2	1163	7.29	121.2	326.2	20.0	11.14	Green-brown, cloudy, no odour/sheen.
West	BADUS	Event 44 - January 2023	18/01/2023	5.11	57.4	797	7.2	2.1	207.1	21.1	5.3	Brown tinge, clear, no odour/sheen.
West	BADUS	Event 45 - February 2023	08/02/2023	8.81	106.8	1698	7.72	88	293	25.1	48.57	Green-brown, turbid, no odour/sheen.
West	BADUS	Event 46 - March 2023	03/03/2023	3.38	38.2	1317	7.37	72.8	277.8	21.4	13.78	Slightly cloudy, no sediment, no odour/sheen.
West	BADUS	Event 47 - April 2023	4/04/2023	4.75	49.5	1477	7.81	112.4	317.4	17.1	150.86	Green-brown, turbid, no odour/sheen
West	BADUS	Event 48 - May 2023	2/05/2023	8.24	84.2	1040	6.95	150.1	355.1	16.2	370.94	Pale yellow tinge, no odour, no sheen.
West	BADUS	Event 49 - June 2023	6/06/2023	5.26	48.0	1064	7.71	98.5	303.5	11.1	17.24	Pale yellow tinge, mostly clear, no odour, brittle sheen, no sediment, scum on surface
West	BADUS	Event 50 - July 2023	7/07/2023	13.42	122.2	1158	8.74	272.4	477.4	11.0	20.47	Pale yellow-tinge, no odour, no sheen, no sediment
West	BADUS	Event 51 - August 2023	8/08/2023	9.72	90.7	997	7.4	114.6	319.6	12.4	94.25	Clear, no odour, no sheen.
West	BADUS	WW Event 6 - 31 August 2023	31/08/2023	7.11	70.6	864	7.36	77.1	282.1	14.7	152	Green-brown, turbid,, no odour or sheen.
West	BADUS	Event 52 - September 2023	5/09/2023	9.48	96.8	743	7.37	170.2	375.2	16.4	62.74	Brown, moderately turbid, no odour. sludgy rust coloured sheen
West	BADUS	Event 53 - October 2023	6/10/2023	5.8	60	969	7.25	110.1	315.1	16.6	119.13	Pale yellow-brown, slightly turbid, no odour or sheen.
West	BADUS	Event 54 - November 2023	8/11/2023	5.4	60.2	796	7.3	139.4	344.4	20.2	179.24	Pale yellow-brown tinge, turbid, no odour, organic sheen.
West	BADUS	Event 55 - December 2023	6/12/2023	7.06	83.5	1916	7.62	37.2	242.2	23.6	72.29	Yellow-tinge, mostly clear, no odour, no sheen.
West	BADUS	Event 56 - January 2024	19/01/2024	4.77	58.4	1563	7.27	125.3	330.3	25.3	301	Pale brown tinge, mostly clear, very slight organic odour or sheen.
West	BADUS	Event 57 - February 2024	13/02/2024	10.9	141.5	1136	7.49	97.3	302.3	28.5	152.76	Light brown, cloudy, no odour, very slight organic scum on surface
West	BADUS	Event 58 - March 2026	15/03/2024	7.08	81.4	864	7.3	75.7	280.7	22.1	17	Pale green tinge, no odour, no sheen, green algae within channel.



Appendix B
Table B9
Construction Monitoring Period Field Parameters August 2022 to March 2024)

Package	Location	Sampling Event	Sample date	Dissolved oxygen (mg/L)	Dissolved Oxygen (%S)	Electrical conductivity (µS/cm)	pH (pH units)	Redox potential (mV)	Corrected redox potential (mV)*	Temperature (°C)	Turbidity (NTU)	Observations
West	COSDS	Event 40 - August 2022	16/08/2022	9.14	84.01	608	6.64	98.6	303.6	11.6	133.25	Brown, cloudy, slight organic sheen, no odour
West	COSDS	Event 41 - September 2022	19/09/2022	9.01	61.61	511	7.50	76.1	281.1	15.1	30.74	Pale yellow-brown, very cloudy, no sediment, no odour/sheen.
West	COSDS	Event 42 - October 2022	21/10/2022	7.52	80.70	472	8.43	57.9	262.9	18.8	46.80	Green-light-brown , no odour/sheen.
West	COSDS	WW Event 5 - 14-15 November 2022	14/11/2022	5.35	59.06	1075	7.30	78.4	283.4	20.2	196.00	Brown, very turbid, no odour/sheen.
West	COSDS	Event 43 - December 2022	15/12/2022	5.68	62.8	1542	7.41	125.3	330.3	20.3	17.11	Green-brown, very cloudy, no odour/sheen.
West	COSDS	Event 44 - January 2023	18/01/2023	7.85	105.5	910	7.36	62	267	30.9	33.4	Green-brown, turbid, no odour/sheen.
West	COSDS	Event 45 - February 2023	08/02/2023	6.47	75.4	1315	7.41	107.7	312.7	23.0	36.2	Green-brown, turbid, no odour/sheen.
West	COSDS	Event 46 - March 2023	03/03/2023	3.33	38.2	1485	7.47	99.5	304.5	22.1	51.01	Slightly cloudy, no sediment, no odour, slight organic sheen.
West	COSDS	Event 47 - April 2023	4/04/2023	4.23	44.3	1478	8.01	112.8	317.8	17.3	198.57	Green-brown, turbid, no odour, slight organic sheen.
West	COSDS	Event 48 - May 2023	2/05/2023	8.21	84.6	809	7.02	116.2	321.2	16.6	296.55	Pale yellow tinge, no odour, no sheen.
West	COSDS	Event 49 - June 2023	7/06/2023	8.39	83.5	1012	7.92	77.3	282.3	15.1	20.4	Clear, no odour, no sheen, no sediment
West	COSDS	Event 50 - July 2023	7/07/2023									No access. Exclusion zone in place around Cosgroves Creek since 26-06-23. Crane lifting super Ts for bridge construction.
West	COSDS	Event 51 - August 2023	9/08/2023	7.79	71.2	1797	7.68	58.3	263.3	11.8	28.74	Mostly clear, oily sheen, slight unidentifiable odour, location moved slightly downstream.
West	COSDS	WW Event 6 - 31 August 2023	31/08/2023	3.94	37.2	513	8.06	51.9	256.9	12.5	789	Green-brown, turbid, no odour or sheen.
West	COSDS	Event 52 - September 2023	5/09/2023	6.49	61.2	867	7.56	104.3	309.3	12.8	212.06	Brown, highly turbid, no odour or sheen.
West	COSDS	Event 53 - October 2023	6/10/2023	9	94	12.6	7.1	92.7	297.7	17.4	147.19	Pale brown-yellow, highly turbid, no odour or sheen
West	COSDS	Event 54 - November 2023	8/11/2023	6.1	67.3	3417	7.49	68.1	273.1	20.1	117.77	Pale yellow tinge, slightly cloudy, no odour, slight organic sheen.
West	COSDS	Event 55 - December 2023	6/12/2023	3.87	45.4	2495	7.43	65.8	270.8	22.8	59.26	Yellow-brown tinge, slightly turbid, no odour, no sheen.,
West	COSDS	Event 56 - January 2024	19/01/2024	6.18	74.7	923	7.91	73.8	278.8	24.8	412.81	Pale brown, slightly turbid, no odour, no sheen.
West	COSDS	Event 57 - February 2024	13/02/2024	5.24	61.1	1231	7.22	91.4	296.4	22.9	71.72	Light brown tinge, slightly cloudy, no odour, no sheen
West	COSDS	Event 58 - March 2027	15/03/2024	6.34	72.4	963	7.58	80.9	285.9	21.8	21.18	Mostly clear, pale yellow tinge, slight organic/earthy odour, no sheen.
West	COSUS	Event 40 - August 2022	16/08/2022	6.70	60.46	927	6.60	102.9	307.9	10.8	29.77	Brown, cloudy, no odour, no sheen
West	COSUS	Event 41 - September 2022	19/09/2022	8.70	59.49	590	7.43	161.3	366.3	15.0	40.50	Yellow-brown, very cloudy, no sediment, no odour/sheen
West	COSUS	Event 42 - October 2022	21/10/2022	7.97	86.90	445	8.45	68.1	273.1	19.0	34.02	Green-light-brown, very cloudy, no odour/sheen
West	COSUS	WW Event 5 - 14-15 November 2022	14/11/2022	6.22	67.30	1937	7.33	99.8	304.8	19.2	1230.00	Brown, turbid, no odour/sheen.
West	COSUS	Event 43 - December 2022	15/12/2022	4.55	49.4	1742	7.3	112.6	317.6	19.4	3.98	Brown, clear, no odour/sheen.
West	COSUS	Event 44 - January 2023	18/01/2023	1.41	16.1	2073	7.13	-69.1	135.9	22.0	92.83	Pale yellow-tinge, clear, no odour/sheen.
West	COSUS	Event 45 - February 2023	08/02/2023	6.26	73.7	1300	7.39	82.4	287.4	23.5	28.55	Green-brown, turbid, no odour/sheen.
West	COSUS	Event 46 - March 2023	03/03/2023	3.26	37.4	1317	7.42	95.5	300.5	22.1	18.58	Mostly clear, no sediment, no odour/sheen.
West	COSUS	Event 47 - April 2023	4/04/2023	3.26	32.5	1640	7.97	119.2	324.2	16.7	528	Brown, turbid, no odour/sheen.
West	COSUS	Event 48 - May 2023	2/05/2023	7.52	74.9	772	7.01	94.9	299.9	15.1	58.91	Pale yellow tinge, no odour, no sheen.
West	COSUS	Event 49 - June 2023	7/06/2023	6.65	64.2	1002	7.9	58.4	263.4	13.7	11.92	Clear, no odour, no sheen, no sediment
West	COSUS	Event 50 - July 2023	7/07/2023									No access. Exclusion zone in place around Cosgroves Creek since 26-06-23. Crane lifting super Ts for bridge construction.
West	COSUS	Event 51 - August 2023	9/08/2023	3.19	30.1	4902	6.74	-24.8	180.2	12.5	20.98	Pale yellow-tinge, mostly clear, no odour, no sheen, location moved further upstream.
West	COSUS	WW Event 6 - 31 August 2023	31/08/2023	2.98	28.2	2428	7.36	64.5	269.5	12.6	771	Green-brown, turbid, no odour or sheen.
West	COSUS	Event 52 - September 2023	5/09/2023	3.15	30.6	4120	7.01	116.2	321.2	12.5	25.09	Green-brown, slightly turbid, no odour or sheen.
West	COSUS	Event 53 - October 2023	6/10/2023	3.2	31	3007	7.1	76.3	281.3	15.4	13.93	Pale yellow tinge, clear, no odour, patches of organic sheen.
West	COSUS	Event 54 - November 2023	8/11/2023	1.56	16.3	3636	7.12	-32.7	172.3	17.3	12.38	Pale yellow tinge, clear, no odour or sheen.
West	COSUS	Event 55 - December 2023	6/12/2023	4.83	56.8	2537	7.58	27.7	232.7	23	5.48	Pale yellow tinge, clear, no odour or sheen.
West	COSUS	Event 56 - January 2024	19/01/2024	6.14	78.7	1001	8.02	46.3	251.3	26.6	290	Pale brown, slightly turbid, no odour, no sheen.
West	COSUS	Event 57 - February 2024	13/02/2024	6.26	74.2	1271	7.36	72	277	23.8	26.55	Clear, slightly cloudy, no odour, no sheen
West	COSUS	Event 58 - March 2028	15/03/2024	5.74	65	1071	7.37	52.1	257.1	21.4	2.45	Mostly clear, pale yellow tinge, no odour, no sheen.
Central	KEMDS	Event 40 - August 2022	16/08/2022	8.87	79.67	2093	6.88	114.0	319.0	10.6	5.41	Light brown, cloudy, no odour/sheen
Central	KEMDS	Event 41 - September 2022	20/09/2022	7.47	51.08	1071	7.27	727.0	932.0	14.2	36.78	Green-brown, very cloudy, no sediment, no odour/sheen
Central	KEMDS	Event 42 - October 2022	19/10/2022	6.21	64.50	1533	7.14	207.6	412.6	17.2	19.91	Green-brown, no sediment, no odour/sheen
Central	KEMDS	WW Event 5 - 14-15 November 2022	14/11/2022	5.76	63.46	4427	7.34	103.7	308.7	20.1	214.00	Brown, turbid, no odour/sheen.
Central	KEMDS	Event 43 - December 2022	13/12/2022	5.05	54.7	205	7.5	47.7	252.7	19.3	23.3	Green-brown, very cloudy, no odour/sheen.
Central	KEMDS	Event 44 - January 2023	17/01/2023	3.97	45.7	1200	7.33	45.6	250.6	22.4	3.63	Brown, mostly clear, no odour/sheen.
Central	KEMDS	Event 45 - February 2023	07/02/2023	5.2	62.4	1345	7.53	108	313	24.5	23.23	Green-brown, turbid, no odour/sheen.
Central	KEMDS	Event 46 - March 2023	02/03/2023	4.43	50.7	1982	7.82	172.5	377.5	22.0	4.17	Brown tinge, slightly cloudy, no sediment, no odour/sheen.
Central	KEMDS	Event 47 - April 2023	5/04/2023	4.99	52.4	1072	7.84	130	335	17.5	66.2	Green-brown, turbid, no odour/sheen.
Central	KEMDS	Event 48 - May 2023	1/05/2023	4.77	48.1	709	7.03	95.2	300.2	15.5	93.63	Brown, turbid, no odour, no sheen.
Central	KEMDS	Event 49 - June 2023	6/06/2023	5	47.0	2213	7.15	131.4	336.4	12.3	5.4	Pale yellow-grey tinge, slightly turbid, no odour, no sheen, no sediment
Central	KEMDS	Event 50 - July 2023	4/07/2023	10.67	94.2	2180	7.59	268.9	473.9	9.9	5.89	Mostly clear, no odour, no sheen, no sediment
Central	KEMDS	Event 51 - August 2023	8/08/2023	7.98	72.5	1982	7.35	152.4	357.4	11.4	5.53	Green tinge, mostly clear, no odour, green scum and algae on surface.
Central	KEMDS	WW Event 6 - 31 August 2023	31/08/2023	7.44	70.8	7.44	7.39	70.5	275.5	12.7	82.86	Pale brown, slightly cloudy, no odour or sheen.
Central	KEMDS	Event 52 - September 2023	5/09/2023	6.8	65	939	7.29	203.1	408.1	13.2	33.9	Brown, moderately turbid, no odour. brown sludge caught on dead tree
Central	KEMDS	Event 53 - October 2023	4/10/2023	3.7	41	1637	7.3	112.6	317.6	19.1	4.89	Green-brown tinge, mostly clear, no odour or sheen.
Central	KEMDS	Event 54 - November 2023	9/11/2023	3.94	40.9	1421	7.54	59.6	264.6	18.1	19.29	Pale yellow tinge, mostly clear, no odour, no sheen.
Central	KEMDS	Event 55 - December 2023	5/12/2023	4.02	44.6	645	7.08	68.7	273.7	20.5	98.06	Pale brown tinge, slightly turbid, no odour, no sheen.
Central	KEMDS	Event 56 - January 2024	18/01/2024	5.38	62.1	795	7.17	103.1	308.1	22.4	160.11	Pale yellow-brown, mostly clear, no odour, no sheen.
Central	KEMDS	Event 57 - February 2024	14/02/2024	4.83	56.5	1110	7.24	67.8	272.8	23	104.18	Brown tinge, cloudy, no odour, no sheen
Central	KEMDS	Event 58 - March 2031	14/03/2024	3.34	37.7	1356	7.08	7.07	212.07	21.2	58.7	Pale yellow tinge, mostly clear, no odour, no sheen.
Central	KEMUS	Event 40 - August 2022	16/08/2022	8.72	78.69	2110	6.54	118.3	323.3	10.8	4.98	Light brown, cloudy, slight organic sheen, no odours
Central	KEMUS	Event 41 - September 2022	20/09/2022	7.79	53.26	1054	7.17	86.6	291.6	14.2	44.40	Green-brown, very cloudy, no sediment, no odour/sheen.
Central	KEMUS	Event 42 - October 2022	19/10/2022	6.58	69.60	1669	7.12	167.5	372.5	18.1	16.99	Green-brown, very cloudy, no sediment, no odour/sheen.
Central	KEMUS	WW Event 5 - 14-15 November 2022	14/11/2022	5.74	62.48	1081	7.12	65.4	270.4	19.5	563.00	Brown, very turbid
Central	KEMUS	Event 43 - December 2022	13/12/2022	6.68	73.6	3838	7.61	184	389	20.1	7.26	Green-brown, very cloudy, no odour/sheen.
Central	KEMUS	Event 44 - January 2023	17/01/2023	3.58	41.3	1120	7.06	86.6	291.6	22.5	5.07	Green-brown, cloudy, no odour/sheen.
Central	KEMUS	Event 45 - February 2023	07/02/2023	5.89	70.5	1314	7.24	130.4	335.4	24.4	16.69	Green-brown, turbid, no odour/sheen.
Central	KEMUS	Event 46 - March 2023	02/03/2023	4.96	56.7	1994	7.65	54	259	22.0	9.67	Yellow-green tinge, cloudy, no sediment, organic sheen, no odour.
Central	KEMUS	Event 47 - April 2023	5/04/2023	5.27	55.4	1401	8.35	26.2	231.2	17.8	63.36	Green-brown, turbid, no odour/sheen.
Central	KEMUS	Event 48 - May 2023	1/05/2023	8.01	80.7	758	6.96	142.6	347.6	15.6	78.19	Pale brown tinge, no odour, no sheen.
Central	KEMUS	Event 49 - June 2023	6/06/2023	5.85	55.4	2644	7.53	109.1	314.1	12.6	-0.72	Pale-yellow tinge, clear, no odour, no sheen, some sediment
Central	KEMUS	Event 50 - July 2023	4/07/2023	9.34	92.8	1124	7.61	361.9	566.9	12.5	7.93	Pale yellow tinge, mostly clear, no odour, no sheen, no sediment
Central	KEMUS	Event 51 - August 2023	8/08/2023	8.8	80.3	2252	7.4	66.4	271.4	11.3	18.31	Pale green tinge, mostly clear, oily sheen and algae on surface.
Central	KEMUS	WW Event 6 - 31 August 2023	31/08/2023	7.49	72.2	1152	7.41	68.1	273.1	13.3	61.64	Brown, cloudy, no odour or sheen.
Central	KEMUS	Event 52 - September 2023	5/09/2023	5.97	57.6	935	7.18	217.6	422.6	13.7	34.97	Brown, moderately turbid, no odour. brown sludge caught on dead tree
Central	KEMUS	Event 53 - October 2023	4/10/2023	3.7	40	1517	7.15	124.9	329.9	19.2	20	Yellow tinge, clear, no odour or sheen.
Central	KEMUS	Event 54 - November 2023	9/11/2023	2.92	31.6	1248	7.38	95.4	300.4	19	20.2	Pale yellow tinge, clear, no odour or sheen.
Central	KEMUS	Event 55 - December 2023	5/12/2023	4.56	52.8	723	7.32	41.4	246.4	22.6	108.13	Pale yellow / brown, turbid, no odour or sheen.
Central	KEMUS	Event 56 - January 2024	18/01/2024	5.62	66.5	827	7.43	105.6	310.6	23.7	193	Pale yellow-brown tinge, mostly clear, no odour or sheen.
Central	KEMUS	Event 57 - February 2024	14/02/2024	5.05	55.8	809	7.26	66.2	271.2	23	83.62	Pale brown tinge, mostly clear, no odour, no sheen
Central	KEMUS	Event 58 - March 2032	14/03/2024	4	45.7	1459	7.22	103.9	308.9	21.6	103.9	Very green tinge, mostly clear, no odour, green organic sheen.



Appendix B
Table B9
Construction Monitoring Period Field Parameters August 2022 to March 2024)

Package	Location	Sampling Event	Sample date	Dissolved oxygen (mg/L)	Dissolved Oxygen (%S)	Electrical conductivity (µS/cm)	pH (pH units)	Redox potential (mV)	Corrected redox potential (mV)*	Temperature (°C)	Turbidity (NTU)	Observations
Central	SOU DS	Event 40 - August 2022	16/08/2022	9.27	86.4	1123	6.7	104.4	309.4	12.2	619.39	Brown, cloudy, no odour, no sheen
Central	SOU DS	Event 41 - September 2022	20/09/2022	11.46	78.4	1455	7.57	91.3	296.3	14.1	35.54	Brown, very cloudy, no sediment, no odour/sheen
Central	SOU DS	Event 42 - October 2022	18/10/2022	6.61	67.80	700	7.06	145.3	350.3	16.6	268.50	Brown, very cloudy, non-transparent, no sediment, no odour/sheen.
Central	SOU DS	WW Event 5 - 14-15 November 2022	15/11/2022	5.35	58.47	1159	7.18	90.1	295.1	19.7	355.00	Brown, turbid, no odour/sheen.
Central	SOU DS	Event 43 - December 2022	13/12/2022	4.99	54.3	952	7.28	142.1	347.1	19.5	24	
Central	SOU DS	Event 44 - January 2023	17/01/2023	8.09	96.6	1869	7.77	23.9	228.9	24.3	16.73	Green-brown, turbid, no odour/sheen.
Central	SOU DS	Event 45 - February 2023	07/02/2023	5.97	70.5	736	7.18	86.7	291.7	23.7	99.3	Brown, turbid, no odour/sheen.
Central	SOU DS	Event 46 - March 2023	02/03/2023	6.56	1104	6.67	267.6	472.6	23.0	19.29		Light brown, cloudy, no sediment, no odour/sheen.
Central	SOU DS	Event 47 - April 2023	5/04/2023	5.94	63.2	858	8.05	111.6	316.6	18.3	101.84	Brown, turbid, no odour/sheen.
Central	SOU DS	Event 48 - May 2023	1/05/2023	6.73	68.3	861	6.88	52	257	15.9	47.77	Pale yellow tinge, no odour, no sheen.
Central	SOU DS	Event 49 - June 2023	6/06/2023	8.17	77.3	1049	7.6	223.8	428.8	12.7	26.2	Pale yellow, mostly clear, slight organic odour, no sheen, no sediment
Central	SOU DS	Event 50 - July 2023	4/07/2023	11.25	100.6	862	7.91	265.7	470.7	10.3	18.77	Green-brown tinge, clear, no odour, no sheen, no sediment
Central	SOU DS	Event 51 - August 2023	8/08/2023	9.98	92.6	1080	7.57	90	295	12.4	17.42	Pale green tinge, mostly clear, no odour, no sheen, location moved further downstream.
Central	SOU DS	WW Event 6 - 31 August 2023	31/08/2023	6.69	62.7	698	7.54	76.8	281.8	12.3	182	Brown, highly turbid., no odour or sheen.
Central	SOU DS	Event 52 - September 2023	6/09/2023	11.14	107.3	1201	8.27	106.6	311.6	13.5	76.13	Green-brown, highly turbid, no odour or sheen.
Central	SOU DS	Event 53 - October 2023	4/10/2023	7.4	83	1533	7.79	55.5	260.5	20.4	32.35	Green-brown, mostly clear, no odour or sheen.
Central	SOU DS	Event 54 - November 2023	9/11/2023	10.33	126.02	2098	8.16	96.2	301.2	25.7	44.75	Pale green tinge, clear, no odour, no sheen.
Central	SOU DS	Event 54 - November 2023	9/11/2023	10.33	126.02	2098	8.16	96.2	301.2	25.7	44.75	Pale green tinge, clear, no odour, no sheen.
Central	SOU DS	Event 55 - December 2023	5/12/2023	6.08	72.9	1213	7.42	101.9	306.9	24	32.16	Pale yellow-brown tinge, mostly clear, no odour, no sheen.
Central	SOU DS	Event 56 - January 2024	18/01/2024	5.92	71.2	880	7.37	122.1	327.1	24.7	131.19	Pale brown tinge, mostly clear, no odour, no sheen.
Central	SOU DS	Event 57 - February 2024	14/02/2024	10.42	135	887	7.92	76.4	281.4	28.6	40.48	Pale yellow tinge, clear, no odour, no sheen
Central	SOU DS	Event 58 - March 2035	14/03/2024	10.4	134.9	1109	8.39	110.3	315.3	28.7	33.91	Pale yellow-green tinge, slightly cloudy, no odour or sheen.
Central	SOU US	Event 40 - August 2022	16/08/2022	8.79	86.00	1198	6.70	100.6	305.6	14.4	940.95	Brown, cloudy, no odour, no sheen
Central	SOU US	Event 41 - September 2022	20/09/2022	8.05	77.22	1451	7.35	105.5	310.5	13.5	41.45	Brown, very cloudy, no sediment, no odour/sheen
Central	SOU US	Event 42 - October 2022	18/10/2022	6.32	63.30	709	6.99	137.3	342.3	15.5	290.85	Brown, very cloudy, no sediment, no odour/sheen.
Central	SOU US	WW Event 5 - 14-15 November 2022	15/11/2022	5.33	58.37	1137	7.10	98.2	303.2	19.8	357.00	Brown, very turbid, no odour/sheen.
Central	SOU US	Event 43 - December 2022	13/12/2022	4.99	54.32	952	7.28	142.1	347.1	19.5	24	Green-brown, turbid, no odour/sheen.
Central	SOU US	Event 44 - January 2023	17/01/2023	7.53	88.8	1885	7.66	40.7	245.7	23.6	19.59	Green-brown, turbid, no odour/sheen.
Central	SOU US	Event 45 - February 2023	07/02/2023	5.26	62.0	736	7.04	107.8	312.8	23.6	-	Brown, turbid, no odour/sheen.
Central	SOU US	Event 46 - March 2023	02/03/2023	10.09	118.1	1100	7.25	99.6	304.6	23.2	24.83	Green-brown, cloudy, no sediment, no odour/sheen.
Central	SOU US	Event 47 - April 2023	4/04/2023	5.48	57.9	826	8.03	121.3	326.3	17.9	96.36	Green-brown, turbid, no odour/sheen
Central	SOU US	Event 48 - May 2023	1/05/2023	7.28	76.0	892	6.9	148.2	353.2	17.3	296.25	Pale yellow tinge, no odour, no sheen.
Central	SOU US	Event 49 - June 2023	6/06/2023	8.05	75.5	1059	7.6	181	386	12.3	22.65	Pale yellow tinge, slightly turbid, no odour, no sheen, no sediment
Central	SOU US	Event 50 - July 2023	4/07/2023	10.94	97.1	865	7.61	292.7	497.7	9.9	18.44	Pale-yellow tinge, mostly clear, no odour, no sheen, no sediment
Central	SOU US	Event 51 - August 2023	8/08/2023	9.74	88.6	1028	7.61	92	297	11.6	16.82	Pale green tinge, mostly clear, no odour, no sheen.
Central	SOU US	WW Event 6 - 31 August 2023	31/08/2023	6.8	65.1	710	7.42	74	279	13	142	Brown, cloudy, no odour or sheen
Central	SOU US	Event 52 - September 2023	6/09/2023	10.17	95.8	1227	8.06	92.7	297.7	12.5	36.41	Green-brown, mostly clear, no odour or sheen.
Central	SOU US	Event 53 - October 2023	4/10/2023	8.8	98	1542	7.43	59.1	264.1	20.2	10.64	Green-brown tinge, mostly clear, no odour, brittle sheen.
Central	SOU US	Event 54 - November 2023	9/11/2023	113.9	9.3	2422	7.85	109.4	314.4	25.3	56.31	Pale brown tinge, clear, no odour, no sheen.
Central	SOU US	Event 54 - November 2023	9/11/2023	113.9	9.3	2422	7.85	109.4	314.4	25.3	56.31	Pale brown tinge, clear, no odour, no sheen.
Central	SOU US	Event 55 - December 2023	5/12/2023	4.66	55.6	1022	7.38	69.9	274.9	24.2	36.3	Pale brown tinge, slightly turbid, no odour, no sheen.
Central	SOU US	Event 56 - January 2024	18/01/2024	5.94	71.4	785	7.31	124.4	329.4	24.6	198.3	Pale brown tinge, mostly clear, no odour, no sheen
Central	SOU US	Event 57 - February 2024	14/02/2024	4.53	53.4	725	7.16	71.8	276.8	23.6	41.22	Pale brown tinge, clear, no odour, no sheen, no sediment
Central	SOU US	Event 58 - March 2036	14/03/2024	7.78	98.3	1067	7.6	89.5	294.5	27.1	14.88	Pale yellow tinge, mostly clear, no odour or sheen.
East	HINDS	Event 50 - July 2023	4/07/2023	11.71	111.6	376.9	8.08	245.5	450.5	13.1	18.22	Pale yellow tinge, mostly clear, no odour, no sheen, no sediment
East	HINDS	Event 51 - August 2023	8/08/2023	6.97	67.1	407.2	7.19	111	316	14.7	12.02	Clear, no odour, no sheen.
East	HINDS	WW Event 6 - 31 August 2023	31/08/2023	6.18	62.9	402	7.29	56.3	261.3	15.9	12.98	Green-brown tinge, slightly cloudy, no odour/sheen.
East	HINDS	Event 52 - September 2023	6/09/2023	8.9	91.6	457.3	7.72	67.3	272.3	16.7	10.13	Light green brown, moderately turbid, no odour, no sheen
East	HINDS	Event 53 - October 2023	4/10/2023	6.4	73	485	7.43	141.3	346.3	21.8	8.17	Yellow tinge, no odour or sheen.
East	HINDS	Event 55 - December 2023	5/12/2023	7.35	91.3	687	7.84	94.9	299.9	26.3	12.78	Very pale yellow tinge, no odour, no sheen.
East	HINDS	Event 56 - January 2024	18/01/2024	8.2	107.9	717	7.54	120.3	325.3	29.9	65.5	Pale yellow tinge, mostly clear, no odour or sheen.
East	HINDS	Event 57 - February 2024	14/02/2024	8.65	106.9	731	8.29	74.8	279.8	25.9	11.19	Pale brown tinge, clear, no odour, no sheen
East	HINDS	Event 58 - March 2029	14/03/2024	8.02	99.5	806	8.01	87.7	292.7	26.2	2.9	Green-brown tinge, mostly clear, strong organic odour, organic scum.
East	HINUS	Event 50 - July 2023	4/07/2023	15.64	146.3	435.5	8.81	277.6	482.6	12.3	35.47	Clear, no odour, no sheen, no sediment
East	HINUS	Event 51 - August 2023	8/08/2023	0.6	5.6	529	7.62	105.7	310.7	14.6	45.08	Clear, no odour, slight surface sheen.
East	HINUS	WW Event 6 - 31 August 2023	31/08/2023	7.44	73.8	473.4	7.08	5.4	210.4	14.5	129	Brown, highly turbid, no odour or sheen.
East	HINUS	Event 52 - September 2023	6/09/2023	5.76	56.6	529	7.52	-2.4	202.6	14.5	51.41	Brown, highly turbid, no odour, no sheen
East	HINUS	Event 53 - October 2023	4/10/2023	6.7	78	597	7.46	99.6	304.6	21.9	35.08	Pale yellow tinge, mostly clear, no odour or sheen.
East	HINUS	Event 55 - December 2023	5/12/2023	11.6	161.6	1003	7.86	33.4	238.4	32.8	77.46	
East	HINUS	Event 56 - January 2024	18/01/2024	9.64	124.7	897	7.88	70	275	30.1	114.14	Pale brown tinge, mostly clear, no odour, no sheen.
East	HINUS	Event 57 - February 2024	14/02/2024	8.29	105.5	1010	7.88	18	223	27.4	41.2	Pale brown tinge, mostly clear, no odour, no sheen
East	HINUS	Event 58 - March 2030	14/03/2024	7.51	102.6	1277	7.78	94.2	299.2	31.6	9.06	Yellow brown tinge, mostly clear, no odour, no sheen.
East	ROP DS	Event 50 - July 2023	4/07/2023	10.24	94.4	3295	7.56	321.4	526.4	11.1	10.41	Pale yellow-tinge, mostly clear, no odour, no sheen, no sediment
East	ROP DS	Event 51 - August 2023	8/08/2023	8.88	82.0	4214	7.62	179.5	384.5	11.4	0.44	Mostly clear, no odour, slight sheen.
East	ROP DS	WW Event 6 - 31 August 2023	31/08/2023	4.87	47.2	724	7.14	-109	96	13.6	45.89	Green-brown tinge, slightly cloudy, no odour/sheen.
East	ROP DS	Event 52 - September 2023	6/09/2023	7.41	72.6	3791	7.49	125.3	330.3	13.9	8.77	Green brown, slightly turbid, no odour, no sheen
East	ROP DS	Event 53 - October 2023	4/10/2023	5.2	57	2339	7.38	110.1	315.1	18.4	3.38	Pale yellow, clear, no odour or sheen.
East	ROP DS	Event 54 - November 2023	9/11/2023	6.82	71.6	3166	7.29	103.8	308.8	17.2	155.66	Green-brown tinge, slightly cloudy, no odour no sheen.
East	ROP DS	Event 55 - December 2023	5/12/2023	4.83	51.5	822	7.34	84.5	289.5	18.6	7.41	Pale yellow tinge, clear, no odour or sheen.
East	ROP DS	Event 56 - January 2024	18/01/2024	6.05	70.3	802	7.45	117.1	322.1	22.2	195	Pale brown tinge, mostly clear, no odour, no sheen.
East	ROP DS	Event 57 - February 2024	14/02/2024	2.64	29.6	1705	7.29	90.4	295.4	20.9	28.9	Clear, no odour, no sheen, no sediment
East	ROP DS	Event 58 - March 2033	14/03/2024	3.23	35	2754	7.29	97.5	302.5	19.1	4.55	Pale yellow-green tinge, no odour or sheen.
East	ROP US	Event 50 - July 2023	4/07/2023	10.14	96.6	225.8	7.33	98.9	303.9	13.2	-	Brown, turbid, organic odour, no sheen, no sediment
East	ROP US	Event 51 - August 2023	8/08/2023	3.22	31.4	285.5	6.91	110.4	315.4	14.5	75.85	Pale yellow tinge, mostly clear, no odour, no sheen.
East	ROP US	WW Event 6 - 31 August 2023	31/08/2023	1.41	14.3	219	6.66	-60.5	144.5	15.6	190.95	Brown, turbid, no odour or sheen.
East	ROP US	Event 52 - September 2023	6/09/2023	5.16	54.4	284.9	7.09	66.9	271.9	18.2	130.56	Green brown, highly turbid, no odour, silver sheen. large amount of cow fecal matter
East	ROP US	Event 53 - October 2023	4/10/2023	3.5	39	304.2	7.14	97.6	302.6	21.1	75.87	Pale yellow, cloudy, organic odour, no sheen
East	ROP US	Event 54 - November 2023	9/11/2023	4.79	54.6	417.5	7.2	99.4	304.4	21.7	71.74	Brown tinge, mostly clear, no odour, organic sheen, patch of bright red sediment on edge of pond.
East	ROP US	Event 55 - December 2023	5/12/2023	4.72	56.1	413.2	7.06	95	300	24	40.26	Pale yellow-green tinge, no odour, organic sheen.
East	ROP US	Event 56 - January 2024	18/01/2024	5.1	63	391.7	7.11	129.7	334.7	26.2	192.26	Pale yellow-tinge, mostly clear, no odour, no sheen.
East	ROP US	Event 57 - February 2024	14/02/2024	3.9	47	438.1	6.9	-11.7	193.3	24.3	64.32	Yellow brown tinge, slightly cloudy, no odour, no sheen
East	ROP US	Event 58 - March 2034	14/03/2024	-	-	-	-	-	-	-	-	No access. John Holland earthworks preventing access.

Note: Baseline period for West and Central Package ended in July 2022, Baseline period for East package ended in June 2023



Package	Location	Sampling Event	Sample date	Dissolved oxygen (mg/L)	Dissolved Oxygen (%S)	Electrical conductivity (µS/cm)	pH (pH units)	Redox potential (mV)	Corrected redox potential (mV)*	Temperature (°C)	Turbidity (NTU)	Observations
West	BADDS	Event 53 - October 2023	6/10/2023	5.1	52	1535	7.21	96.2	301.2	17.1	38.55	Pale yellow-brown tinge, slightly turbid, no odour or sheen.
West	BADDS	Event 54 - November 2023	8/11/2023	3.72	41.4	720	7.19	127.9	332.9	20.4	446	Pale yellow-brown, turbid, no odour, no sheen.
West	BADDS	Event 55 - December 2023	6/12/2023	6.57	81.3	1038	7.53	101.6	306.6	26.2	52.53	Pale yellow-tinge, mostly clear, green organic sheen, no odour.
West	BADDS	Event 56 - January 2024	19/01/2024	6	76.1	1959	7.61	112.9	317.9	27.2	577	Pale yellow, slightly turbid, no odour or sheen.
West	BADDS	Event 57 - February 2024	13/02/2024	3.11	36.4	1060	7.03	116.7	321.7	23.2	237.4	Light brown tinge, cloudy, no odour, slight green organic scum on surface
West	BADDS	Event 58 - March 2024	15/03/2024	4.52	50.7	903	7.17	92.2	297.2	21.3	38.88	
West	BADMS	Event 53 - October 2023	6/10/2023	4.3	44	1285	7.27	92	297	16.8	40.28	Pale yellow tinge, slightly turbid, no odour or sheen.
West	BADMS	Event 54 - November 2023	8/11/2023	3.84	3.62	726	7.32			18.1	630	Pale yellow-brown, highly turbid, no odour or sheen.
West	BADMS	Event 55 - December 2023	6/12/2023	5.48	65.8	895	7.43	83.1	288.1	24.5	36.22	Green, slightly turbid, no odour or sheen.
West	BADMS	Event 56 - January 2024	19/01/2024	5.49	66.7	1698	7.57	115	320	24.8	517	Pale brown, slightly cloudy, no odour, no sheen.
West	BADMS	Event 57 - February 2024	13/02/2024	3.38	38.9	1040	6.98	57.3	262.3	22.6	184.8	Light brown tinge, cloudy, no odour, slight green scum on surface
West	BADMS	Event 58 - March 2024	15/03/2024	4.31	48.7	992	7.18	71.1	276.1	21.5	50.27	Pale yellow-brown, mostly clear, no odour
West	BADUS	Event 53 - October 2023	6/10/2023	5.8	60	969	7.25	110.1	315.1	16.6	119.13	Pale yellow-brown, slightly turbid, no odour or sheen.
West	BADUS	Event 54 - November 2023	8/11/2023	5.4	60.2	796	7.3	139.4	344.4	20.2	179.24	Pale yellow-brown tinge, turbid, no odour, organic sheen.
West	BADUS	Event 55 - December 2023	6/12/2023	7.06	83.5	1916	7.62	37.2	242.2	23.6	72.29	Yellow-tinge, mostly clear, no odour, no sheen.
West	BADUS	Event 56 - January 2024	19/01/2024	4.77	58.4	1563	7.27	125.3	330.3	25.3	301	Pale brown tinge, mostly clear, very slight organic odour or sheen.
West	BADUS	Event 57 - February 2024	13/02/2024	10.9	141.5	1136	7.49	97.3	302.3	28.5	152.76	Light brown, cloudy, no odour, very slight organic scum on surface
West	BADUS	Event 58 - March 2024	15/03/2024	7.08	81.4	864	7.3	75.7	280.7	22.1	17	Pale green tinge, no odour, no sheen, green algae within channel.
West	COSDS	Event 53 - October 2023	6/10/2023	9	94	12.6	7.1	92.7	297.7	17.4	147.19	Pale brown-yellow, highly turbid, no odour or sheen
West	COSDS	Event 54 - November 2023	8/11/2023	6.1	67.3	3417	7.49	68.1	273.1	20.1	117.77	Pale yellow tinge, slightly cloudy, no odour, slight organic sheen.
West	COSDS	Event 55 - December 2023	6/12/2023	3.87	45.4	2495	7.43	65.8	270.8	22.8	59.26	Yellow-brown tinge, slightly turbid, no odour, no sheen.,
West	COSDS	Event 56 - January 2024	19/01/2024	6.18	74.7	923	7.91	73.8	278.8	24.8	412.81	Pale brown, slightly turbid, no odour, no sheen.
West	COSDS	Event 57 - February 2024	13/02/2024	5.24	61.1	1231	7.22	91.4	296.4	22.9	71.72	Light brown tinge, slightly cloudy, no odour, no sheen
West	COSDS	Event 58 - March 2024	15/03/2024	6.34	72.4	963	7.58	80.9	285.9	21.8	21.18	Mostly clear, pale yellow tinge, slight organic/earthy odour, no sheen.
West	COSUS	Event 53 - October 2023	6/10/2023	3.2	31	3007	7.1	76.3	281.3	15.4	13.93	Pale yellow tinge, clear, no odour, patches of organic sheen.
West	COSUS	Event 54 - November 2023	8/11/2023	1.56	16.3	3636	7.12	-32.7	172.3	17.3	12.38	Pale yellow tinge, clear, no odour or sheen.
West	COSUS	Event 55 - December 2023	6/12/2023	4.83	56.8	2537	7.58	27.7	232.7	23	5.48	Pale yellow tinge, clear, no odour or sheen.
West	COSUS	Event 56 - January 2024	19/01/2024	6.14	78.7	1001	8.02	46.3	251.3	26.6	290	Pale brown, slightly turbid, no odour, no sheen.
West	COSUS	Event 57 - February 2024	13/02/2024	6.26	74.2	1271	7.36	72	277	23.8	26.55	Clear, slightly cloudy, no odour, no sheen
West	COSUS	Event 58 - March 2024	15/03/2024	5.74	65	1071	7.37	52.1	257.1	21.4	2.45	Mostly clear, pale yellow tinge, no odour, no sheen.
Central	KEMDS	Event 53 - October 2023	4/10/2023	3.7	41	1637	7.3	112.6	317.6	19.1	4.89	Green-brown tinge, mostly clear, no odour or sheen.
Central	KEMDS	Event 54 - November 2023	9/11/2023	3.94	40.9	1421	7.54	59.6	264.6	18.1	19.29	Pale yellow tinge, mostly clear, no odour, no sheen.
Central	KEMDS	Event 55 - December 2023	5/12/2023	4.02	44.6	645	7.08	68.7	273.7	20.5	98.06	Pale brown tinge, slightly turbid, no odour, no sheen.
Central	KEMDS	Event 56 - January 2024	18/01/2024	5.38	62.1	795	7.17	103.1	308.1	22.4	160.11	Pale yellow-brown, mostly clear, no odour, no sheen.
Central	KEMDS	Event 57 - February 2024	14/02/2024	4.83	56.5	1110	7.24	67.8	272.8	23	104.18	Brown tinge, cloudy, no odour, no sheen
Central	KEMDS	Event 58 - March 2024	14/03/2024	3.34	37.7	1356	7.08	7.07	212.07	21.2	58.7	Pale yellow tinge, mostly clear, no odour, no sheen.
Central	KEMUS	Event 53 - October 2023	4/10/2023	3.7	40	1517	7.15	124.9	329.9	19.2	20	Yellow tinge, clear, no odour or sheen.
Central	KEMUS	Event 54 - November 2023	9/11/2023	2.92	31.6	1248	7.38	95.4	300.4	19	20.2	Pale yellow tinge, clear, no odour or sheen.
Central	KEMUS	Event 55 - December 2023	5/12/2023	4.56	52.8	723	7.32	41.4	246.4	22.6	108.13	Pale yellow / brown, turbid, no odour or sheen.
Central	KEMUS	Event 56 - January 2024	18/01/2024	5.62	66.5	827	7.43	105.6	310.6	23.7	193	Pale yellow-brown tinge, mostly clear, no odour or sheen.
Central	KEMUS	Event 57 - February 2024	14/02/2024	5.05	55.8	809	7.26	66.2	271.2	23	83.62	Pale brown tinge, mostly clear, no odour, no sheen
Central	KEMUS	Event 58 - March 2024	14/03/2024	4	45.7	1459	7.22	103.9	308.9	21.6	103.9	Very green tinge, mostly clear, no odour, green organic sheen.
Central	SOU DS	Event 53 - October 2023	4/10/2023	7.4	83	1533	7.79	55.5	260.5	20.4	32.35	Green-brown, mostly clear, no odour or sheen.
Central	SOU DS	Event 54 - November 2023	9/11/2023	10.33	126.02	2098	8.16	96.2	301.2	25.7	44.75	Pale green tinge, clear, no odour, no sheen.
Central	SOU DS	Event 54 - November 2023	9/11/2023	10.33	126.02	2098	8.16	96.2	301.2	25.7	44.75	Pale green tinge, clear, no odour, no sheen.
Central	SOU DS	Event 55 - December 2023	5/12/2023	6.08	72.9	1213	7.42	101.9	306.9	24	32.16	Pale yellow-brown tinge, mostly clear, no odour, no sheen.
Central	SOU DS	Event 56 - January 2024	18/01/2024	5.92	71.2	880	7.37	122.1	327.1	24.7	131.19	Pale brown tinge, mostly clear, no odour, no sheen.
Central	SOU DS	Event 57 - February 2024	14/02/2024	10.42	135	887	7.92	76.4	281.4	28.6	40.48	Pale yellow tinge, clear, no odour, no sheen
Central	SOU DS	Event 58 - March 2024	14/03/2024	10.4	134.9	1109	8.39	110.3	315.3	28.7	33.91	Pale yellow-green tinge, slightly cloudy, no odour or sheen.
Central	SOU US	Event 53 - October 2023	4/10/2023	8.8	98	1542	7.43	59.1	264.1	20.2	10.64	Green-brown tinge, mostly clear, no odour, brittle sheen.
Central	SOU US	Event 54 - November 2023	9/11/2023	113.9	9.3	2422	7.85	109.4	314.4	25.3	56.31	Pale brown tinge, clear, no odour, no sheen.
Central	SOU US	Event 54 - November 2023	9/11/2023	113.9	9.3	2422	7.85	109.4	314.4	25.3	56.31	Pale brown tinge, clear, no odour, no sheen.
Central	SOU US	Event 55 - December 2023	5/12/2023	4.66	55.6	1022	7.38	69.9	274.9	24.2	36.3	Pale brown tinge, slightly turbid, no odour, no sheen.
Central	SOU US	Event 56 - January 2024	18/01/2024	5.94	71.4	785	7.31	124.4	329.4	24.6	198.3	Pale brown tinge, mostly clear, no odour, no sheen
Central	SOU US	Event 57 - February 2024	14/02/2024	4.53	53.4	725	7.16	71.8	276.8	23.6	41.22	Pale brown tinge, clear, no odour, no sheen, no sediment
Central	SOU US	Event 58 - March 2024	14/03/2024	7.78	98.3	1067	7.6	89.5	294.5	27.1	14.88	Pale yellow tinge, mostly clear, no odour or sheen.



Appendix B
Table B10
Current Monitoring Period Field Parameters (October 2023 to March 2024)

Package	Location	Sampling Event	Sample date	Dissolved oxygen (mg/L)	Dissolved Oxygen (%S)	Electrical conductivity (µS/cm)	pH (pH units)	Redox potential (mV)	Corrected redox potential (mV)*	Temperature (°C)	Turbidity (NTU)	Observations
East	HINDS	Event 53 - October 2023	4/10/2023	6.4	73	485	7.43	141.3	346.3	21.8	8.17	Yellow tinge, no odour or sheen.
East	HINDS	Event 55 - December 2023	5/12/2023	7.35	91.3	687	7.84	94.9	299.9	26.3	12.78	Very pale yellow tinge, no odour, no sheen.
East	HINDS	Event 56 - January 2024	18/01/2024	8.2	107.9	717	7.54	120.3	325.3	29.9	65.5	Pale yellow tinge, mostly clear, no odour or sheen.
East	HINDS	Event 57 - February 2024	14/02/2024	8.65	106.9	731	8.29	74.8	279.8	25.9	11.19	Pale brown tinge, clear, no odour, no sheen
East	HINDS	Event 58 - March 2024	14/03/2024	8.02	99.5	806	8.01	87.7	292.7	26.2	2.9	Green-brown tinge, mostly clear, strong organic odour, organic scum.
East	HINUS	Event 53 - October 2023	4/10/2023	6.7	78	597	7.46	99.6	304.6	21.9	35.08	Pale yellow tinge, mostly clear, no odour or sheen.
East	HINUS	Event 55 - December 2023	5/12/2023	11.6	161.6	1003	7.86	33.4	238.4	32.8	77.46	
East	HINUS	Event 56 - January 2024	18/01/2024	9.64	124.7	897	7.88	70	275	30.1	114.14	Pale brown tinge, mostly clear, no odour, no sheen.
East	HINUS	Event 57 - February 2024	14/02/2024	8.29	105.5	1010	7.88	18	223	27.4	41.2	Pale brown tinge, mostly clear, no odour, no sheen
East	HINUS	Event 58 - March 2024	14/03/2024	7.51	102.6	1277	7.78	94.2	299.2	31.6	9.06	Yellow brown tinge, mostly clear, no odour, no sheen.
East	ROPDS	Event 53 - October 2023	4/10/2023	5.2	57	2339	7.38	110.1	315.1	18.4	3.38	Pale yellow, clear, no odour or sheen.
East	ROPDS	Event 54 - November 2023	9/11/2023	6.82	71.6	3166	7.29	103.8	308.8	17.2	155.66	Green-brown tinge, slightly cloudy, no odour no sheen.
East	ROPDS	Event 55 - December 2023	5/12/2023	4.83	51.5	822	7.34	84.5	289.5	18.6	7.41	Pale yellow tinge, clear, no odour or sheen.
East	ROPDS	Event 56 - January 2024	18/01/2024	6.05	70.3	802	7.45	117.1	322.1	22.2	195	Pale brown tinge, mostly clear, no odour, no sheen.
East	ROPDS	Event 57 - February 2024	14/02/2024	2.64	29.6	1705	7.29	90.4	295.4	20.9	28.9	Clear, no odour, no sheen, no sediment
East	ROPDS	Event 58 - March 2024	14/03/2024	3.23	35	2754	7.29	97.5	302.5	19.1	4.55	Pale yellow-green tinge, no odour or sheen.
East	ROPUS	Event 53 - October 2023	4/10/2023	3.5	39	304.2	7.14	97.6	302.6	21.1	75.87	Pale yellow, cloudy, organic odour, no sheen
East	ROPUS	Event 54 - November 2023	9/11/2023	4.79	54.6	417.5	7.2	99.4	304.4	21.7	71.74	Brown tinge, mostly clear, no odour, organic sheen, patch of bright red sediment on edge of pond.
East	ROPUS	Event 55 - December 2023	5/12/2023	4.72	56.1	413.2	7.06	95	300	24	40.26	Pale yellow-green tinge, no odour, organic sheen.
East	ROPUS	Event 56 - January 2024	18/01/2024	5.1	63	391.7	7.11	129.7	334.7	26.2	192.26	Pale yellow-tinge, mostly clear, no odour, no sheen.
East	ROPUS	Event 57 - February 2024	14/02/2024	3.9	47	438.1	6.9	-11.7	193.3	24.3	64.32	Yellow brown tinge, slightly cloudy, no odour, no sheen
East	ROPUS	Event 58 - March 2024	14/03/2024	-	-	-	-	-	-	-	-	No access. John Holland earthworks preventing access.

Note: Baseline period for West and Central Package ended in July 2022, Baseline period for East package ended in June 2023



Appendix B
Table B11

Heavy metal concentrations
and hardness-modified trigger values (HMTV)

Zone	Location	Date	Hardness mg/L	Cadmium µg/L		Chromium µg/L		Lead µg/L		Nickel µg/L		Zinc µg/L	
ANZECC (2000) Freshwater Trigger Value				0.2	HMTV	1.0	HMTV	3.4	HMTV	11	HMTV	8	HMTV
M12 - East	ROPUS	18/01/2024	44	<0.1	0.3	1	1.4	1	6	2	15	<5	11

= Exceeds or equals HMTV

Appendix C

Graphs of recorded field parameters

pH

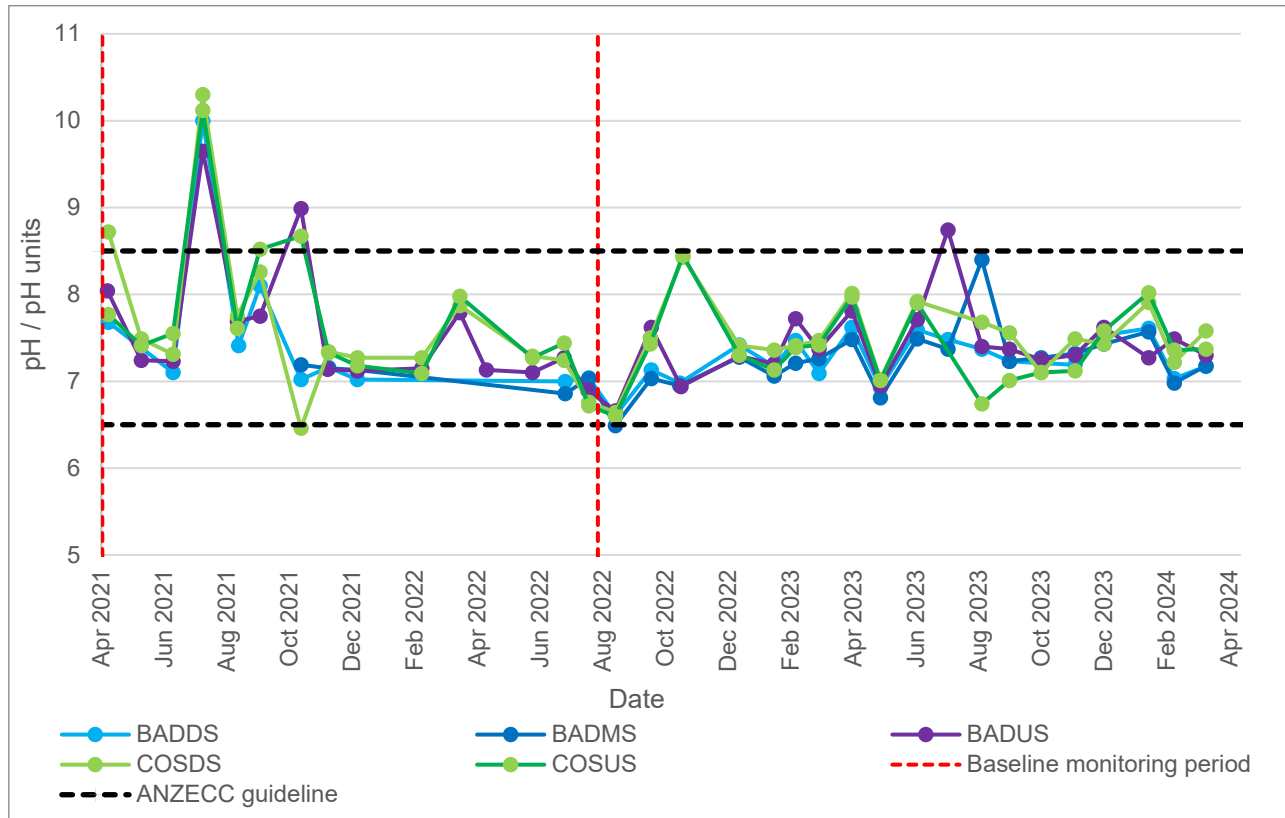


Figure 1 Summary of field recorded pH in the M12 – West package (April 2021 to March 2024)

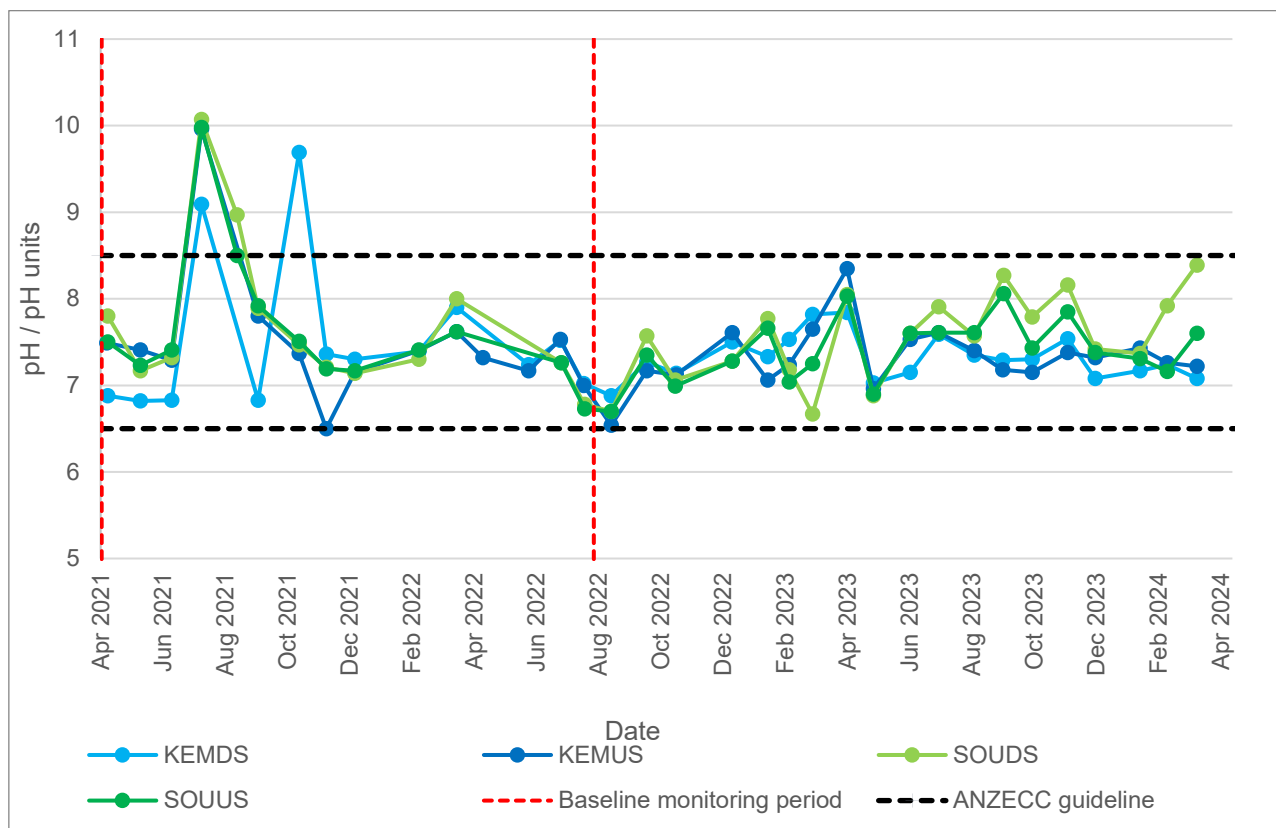


Figure 2 Summary of field recorded pH in the M12 – Central package (April 2021 to March 2024)

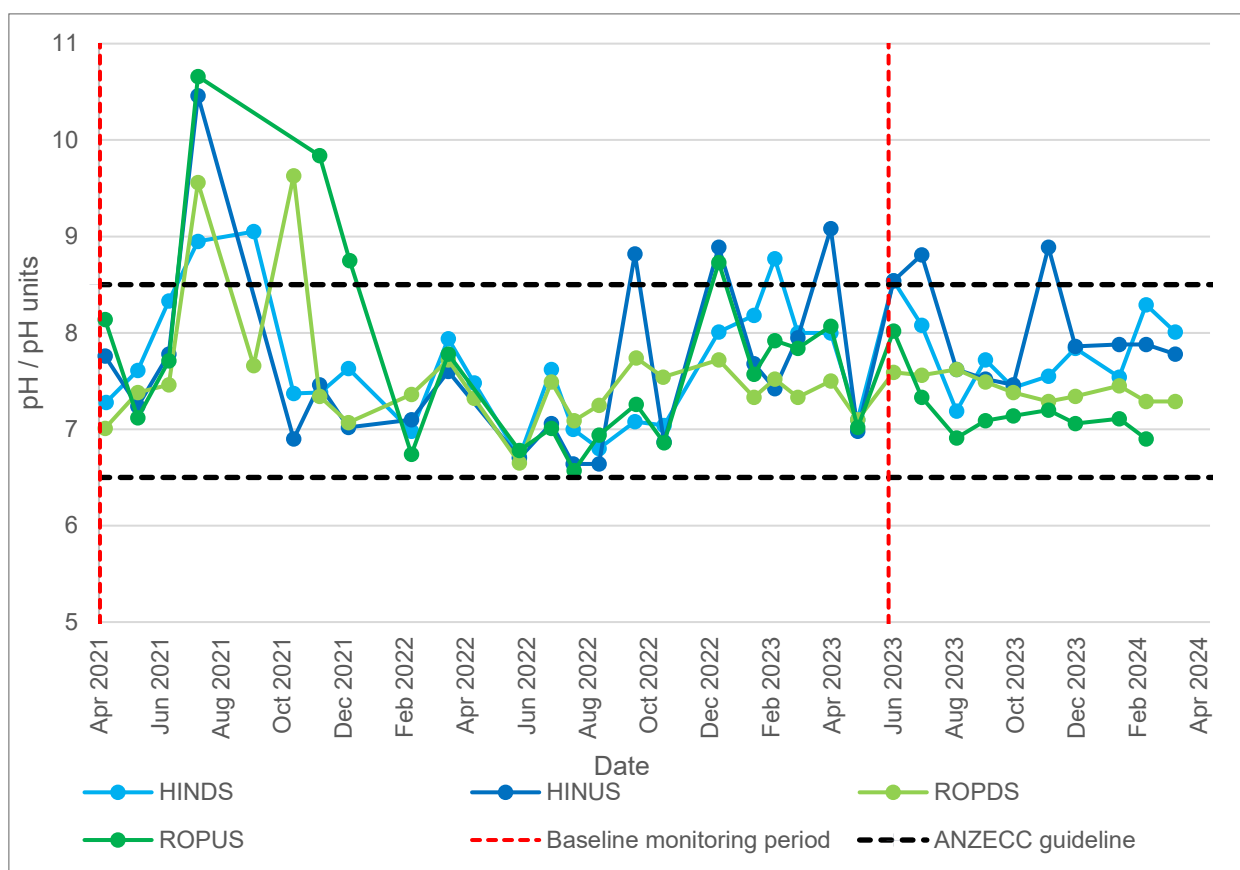


Figure 3 Summary of field recorded pH in the M12 – East package (April 2021 to March 2024)

Electrical Conductivity

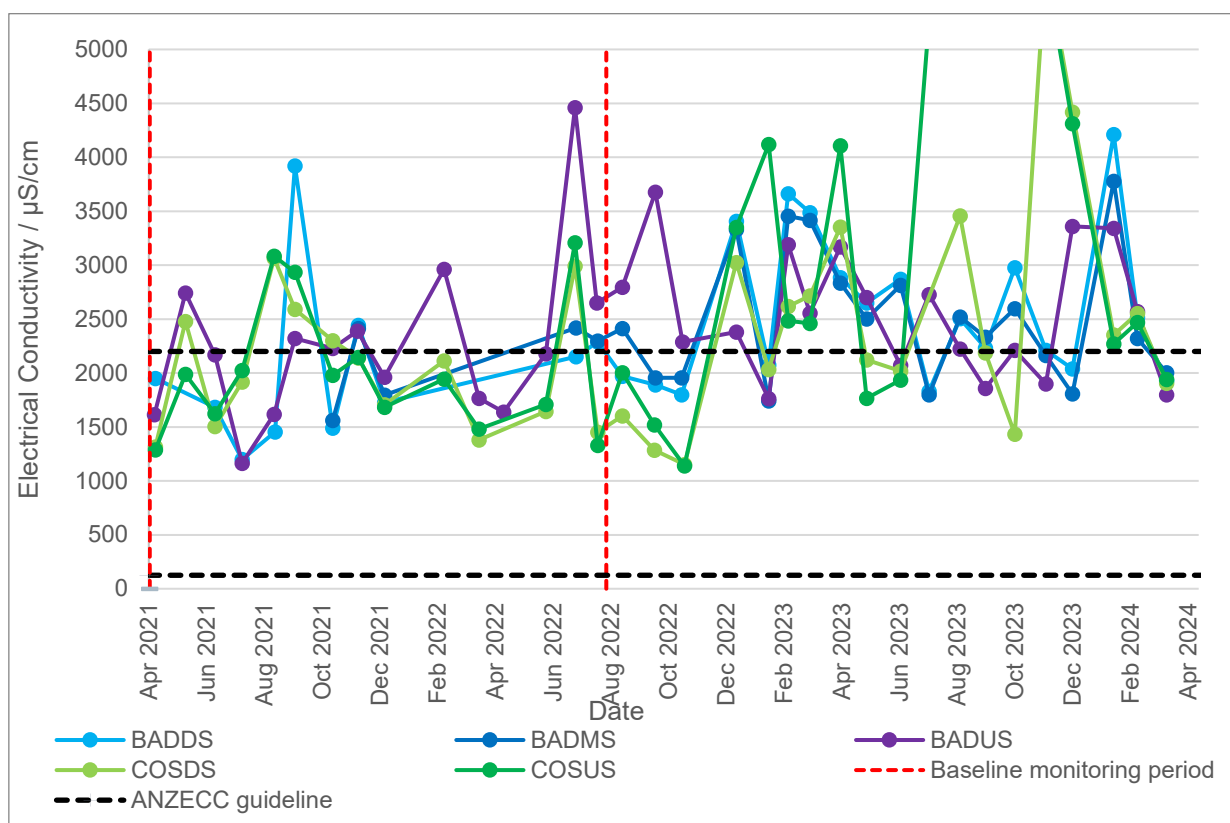


Figure 4 Summary of field recorded electrical conductivity in the M12 – West package (April 2021 to March 2024)

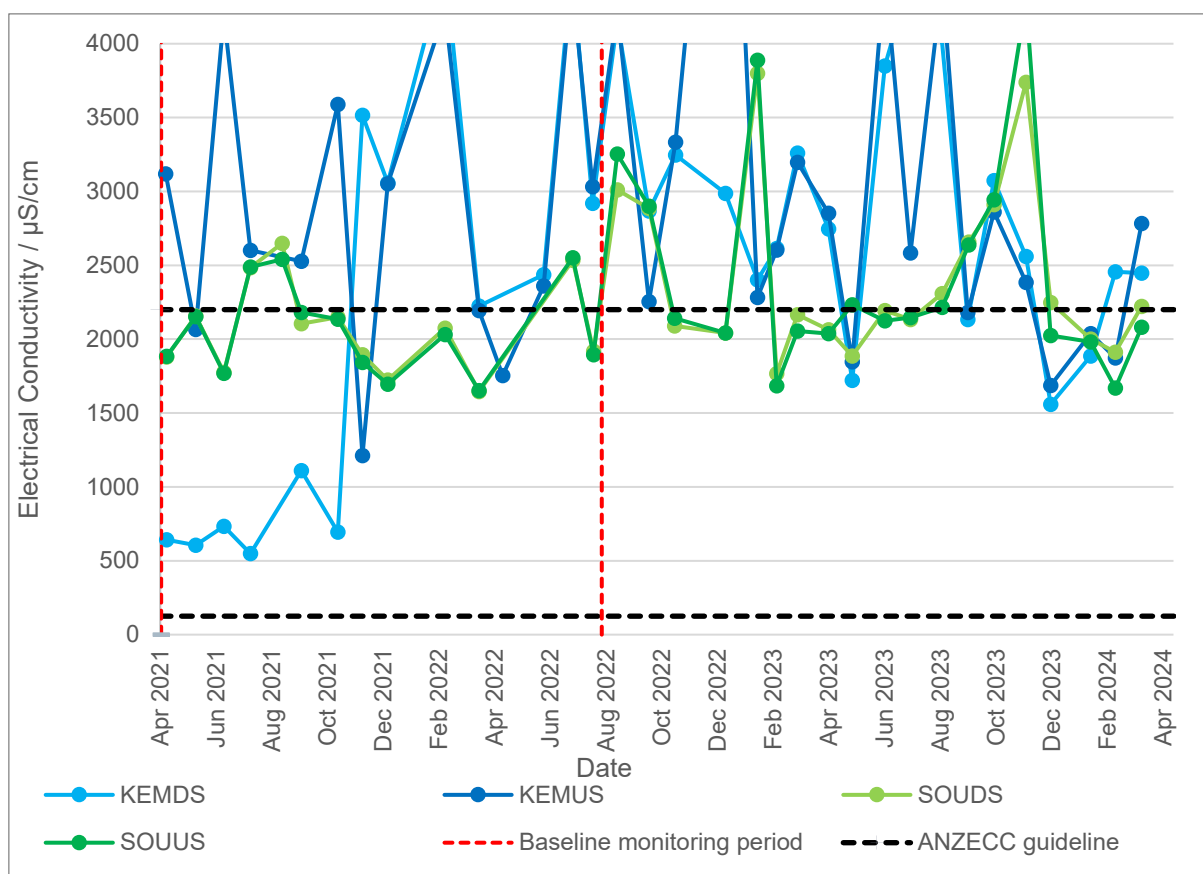


Figure 5 Summary of field recorded electrical conductivity in the M12 – Central package (April 2021 to March 2024)

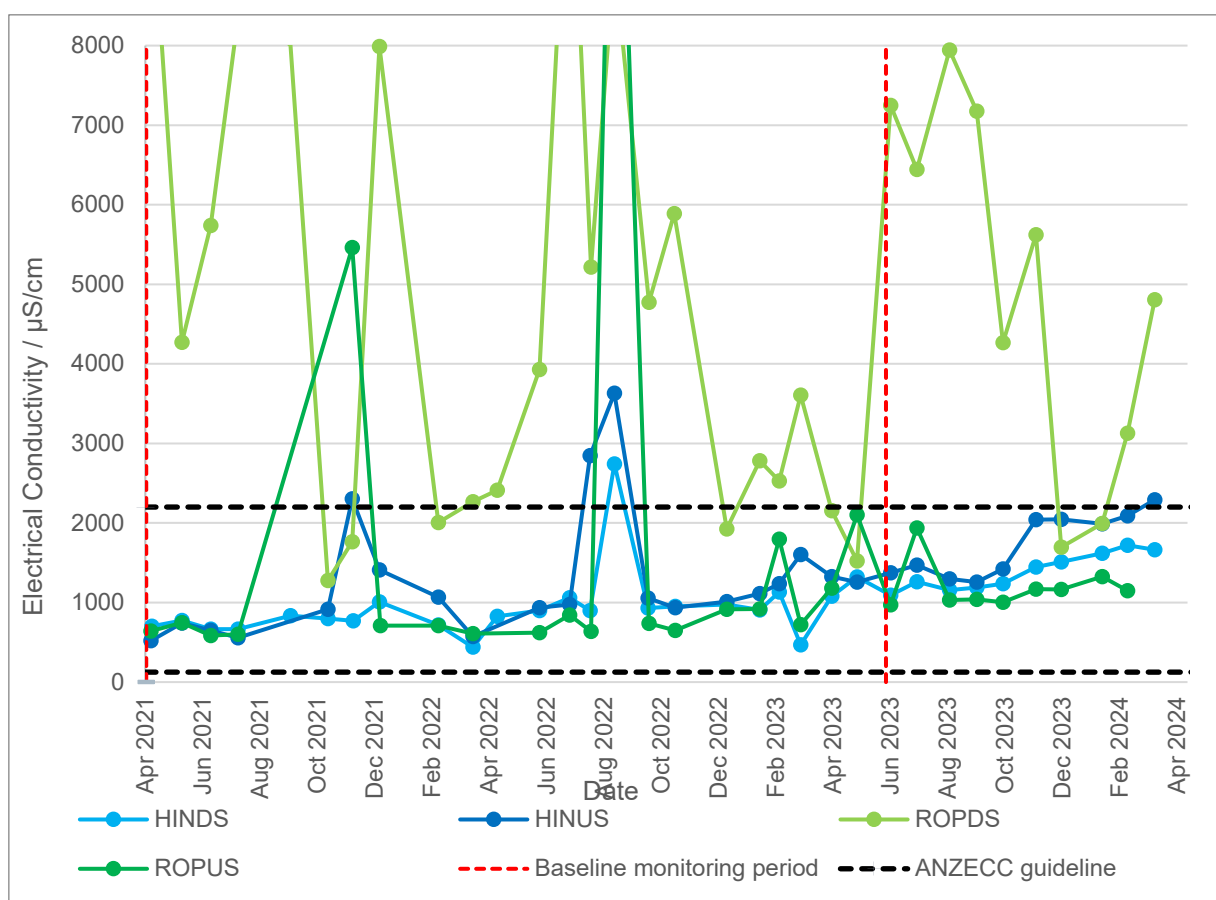


Figure 6 Summary of field recorded electrical conductivity in the M12 – East package (April 2021 to March 2024)

Dissolved Oxygen

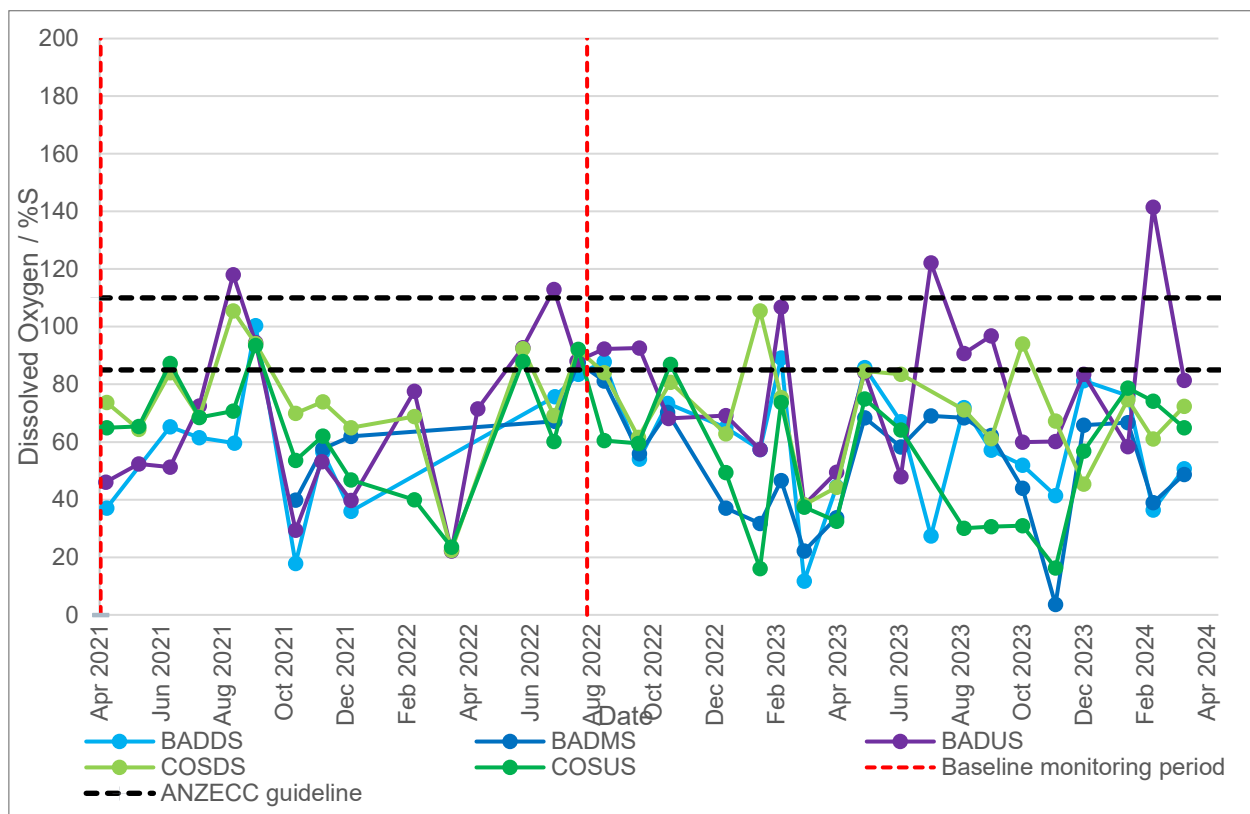


Figure 7 Summary of field recorded dissolved oxygen (% S) in the M12 – West package (April 2021 to March 2024)

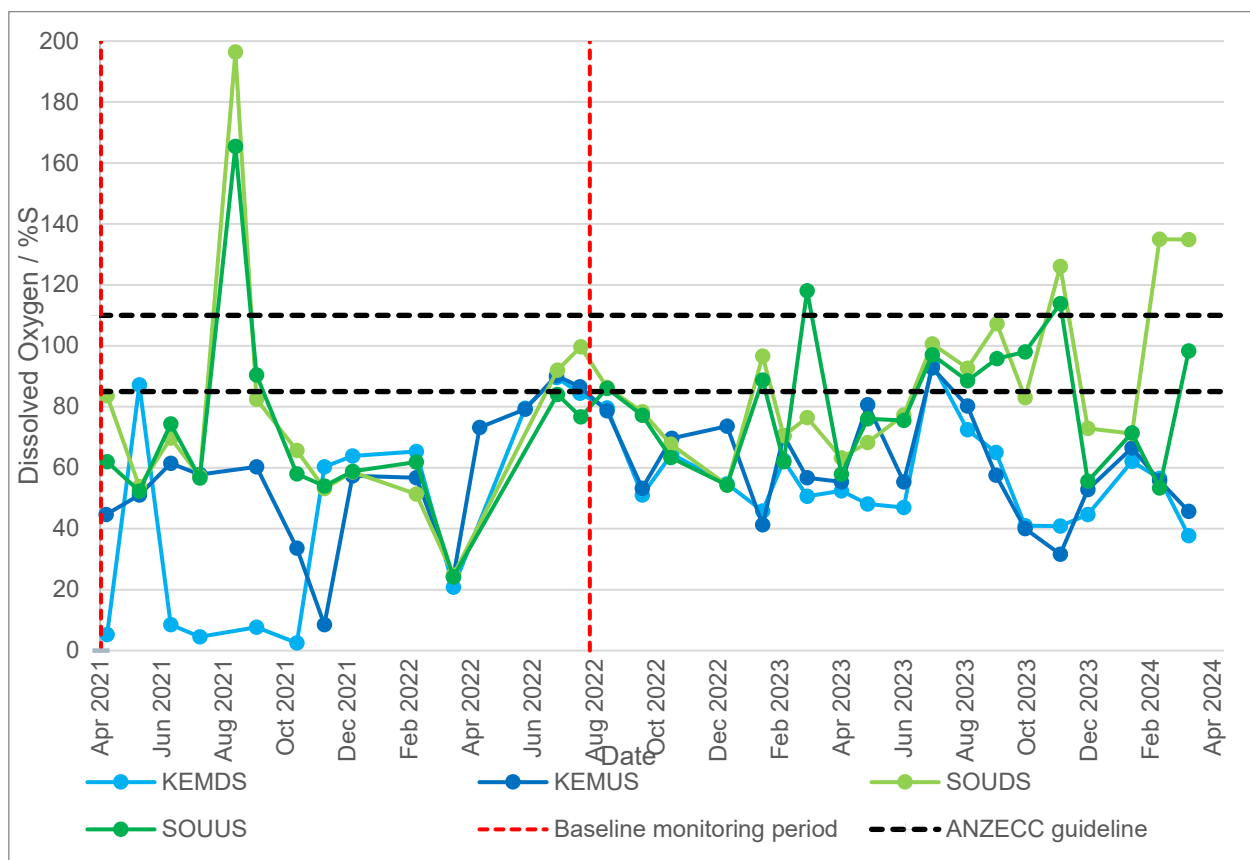


Figure 8 Summary of field recorded dissolved oxygen (% S) in the M12 – Central package (April 2021 to March 2024)

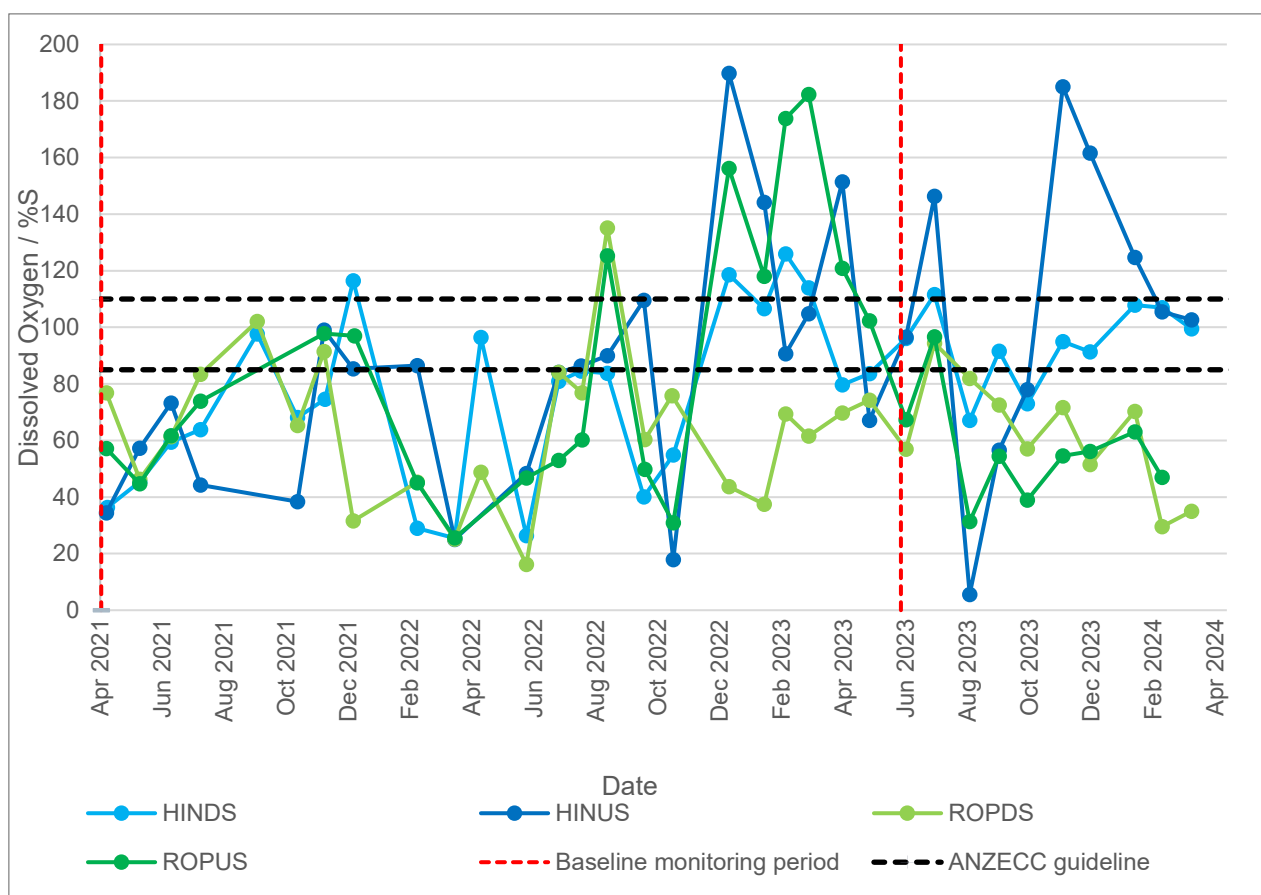


Figure 9 Summary of field recorded dissolved oxygen (% S) in the M12 – East package (April 2021 to March 2024)

Turbidity

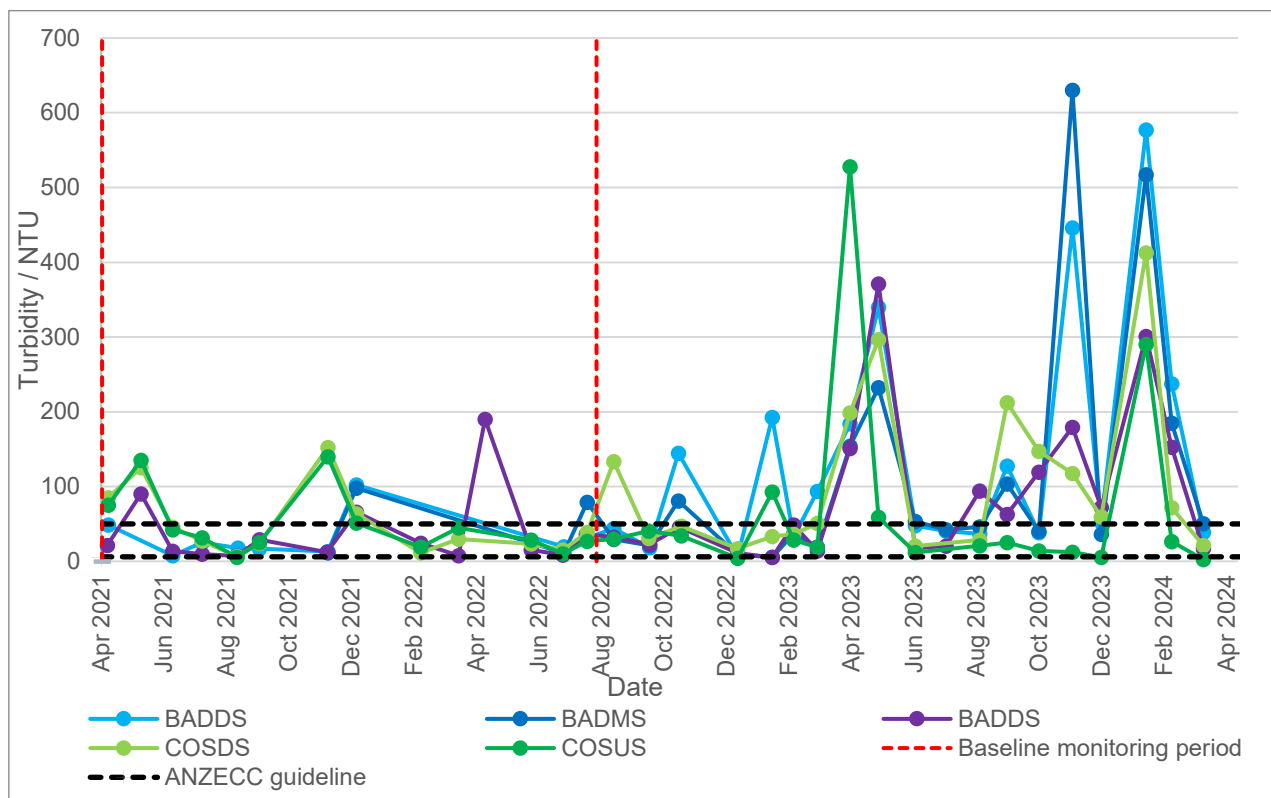


Figure 10 Summary of field recorded turbidity in the M12 – West package (April 2021 to March 2024)

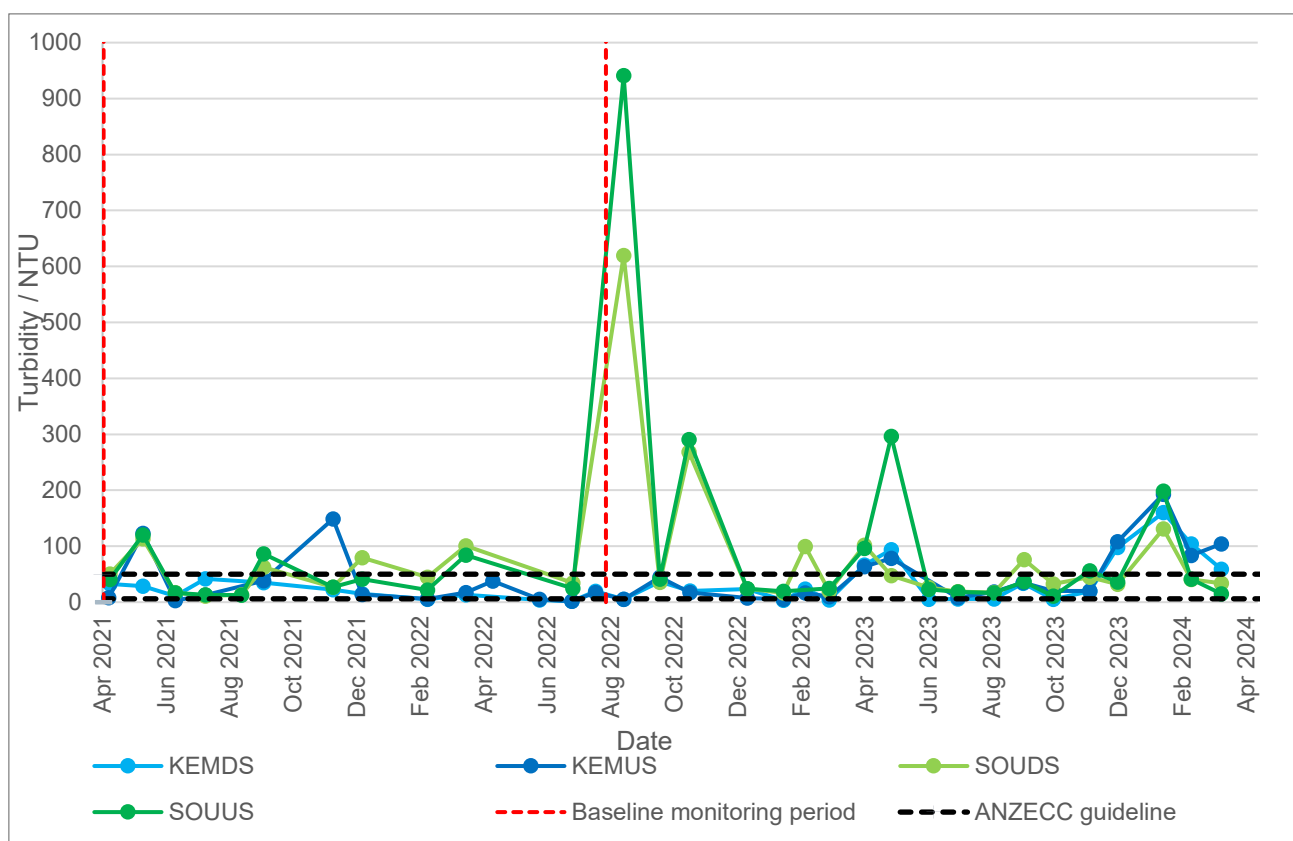


Figure 11 Summary of field recorded turbidity in the M12 – Central package (April 2021 to March 2024)

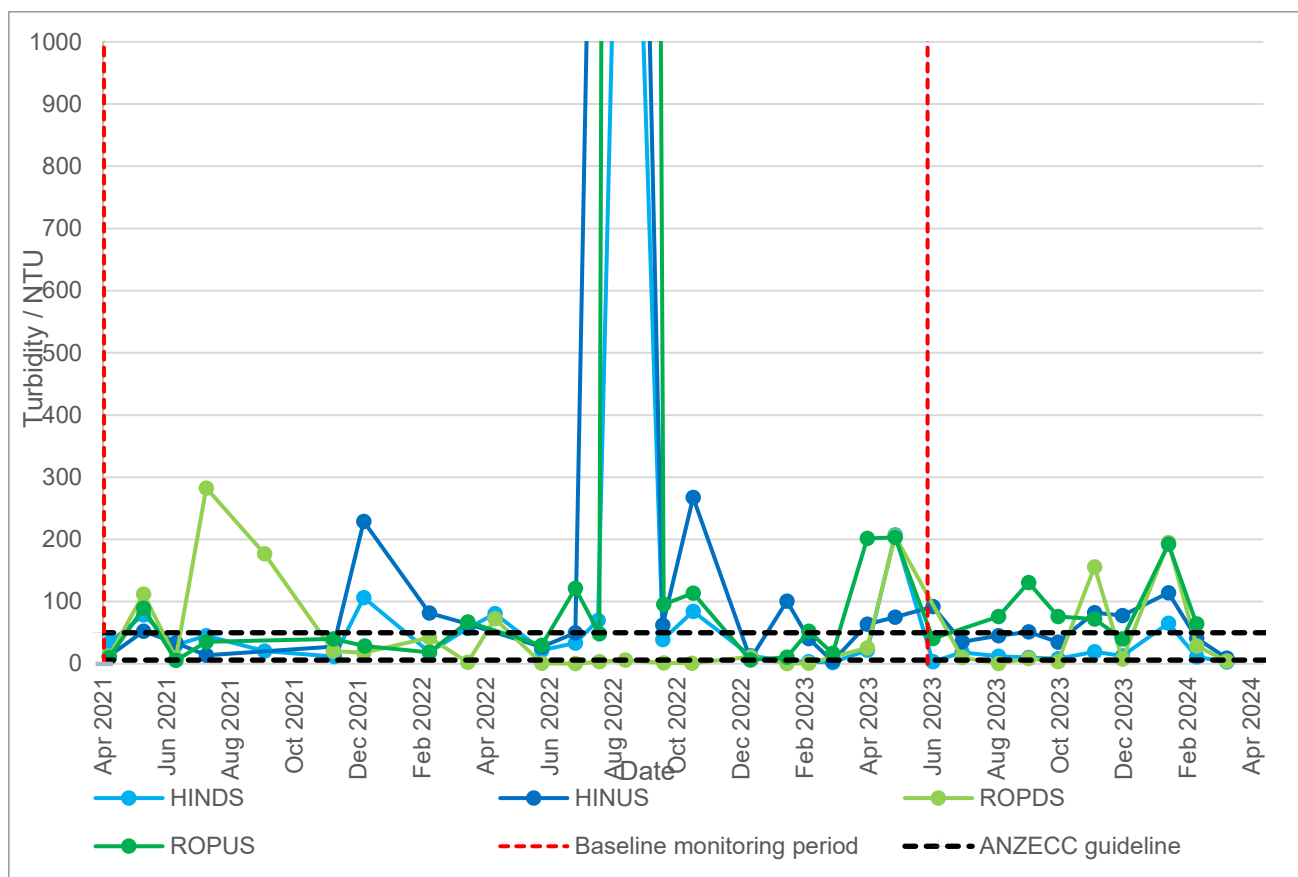


Figure 12 Summary of field recorded turbidity in the M12 – East package (April 2021 to March 2024)

Appendix D

Box and whisker plots

pH

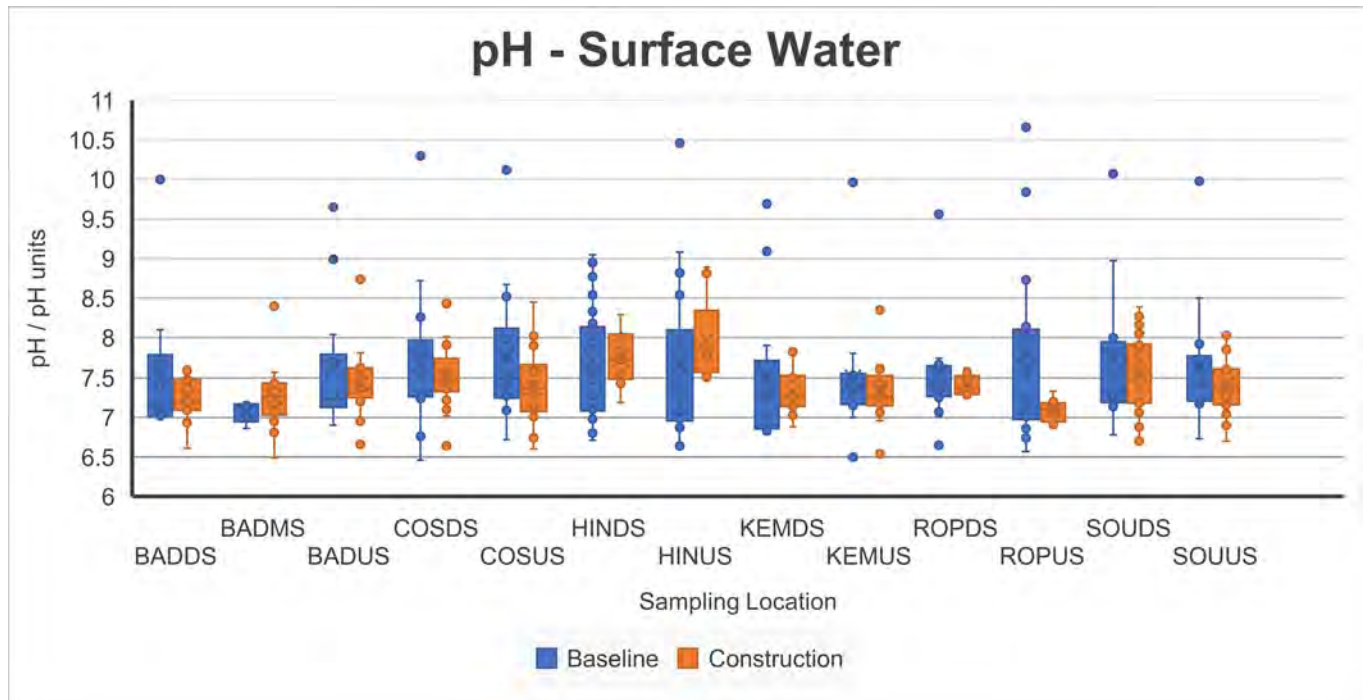


Figure 13 Summary of field recorded pH for the baseline and construction phases to March 2024

Electrical Conductivity

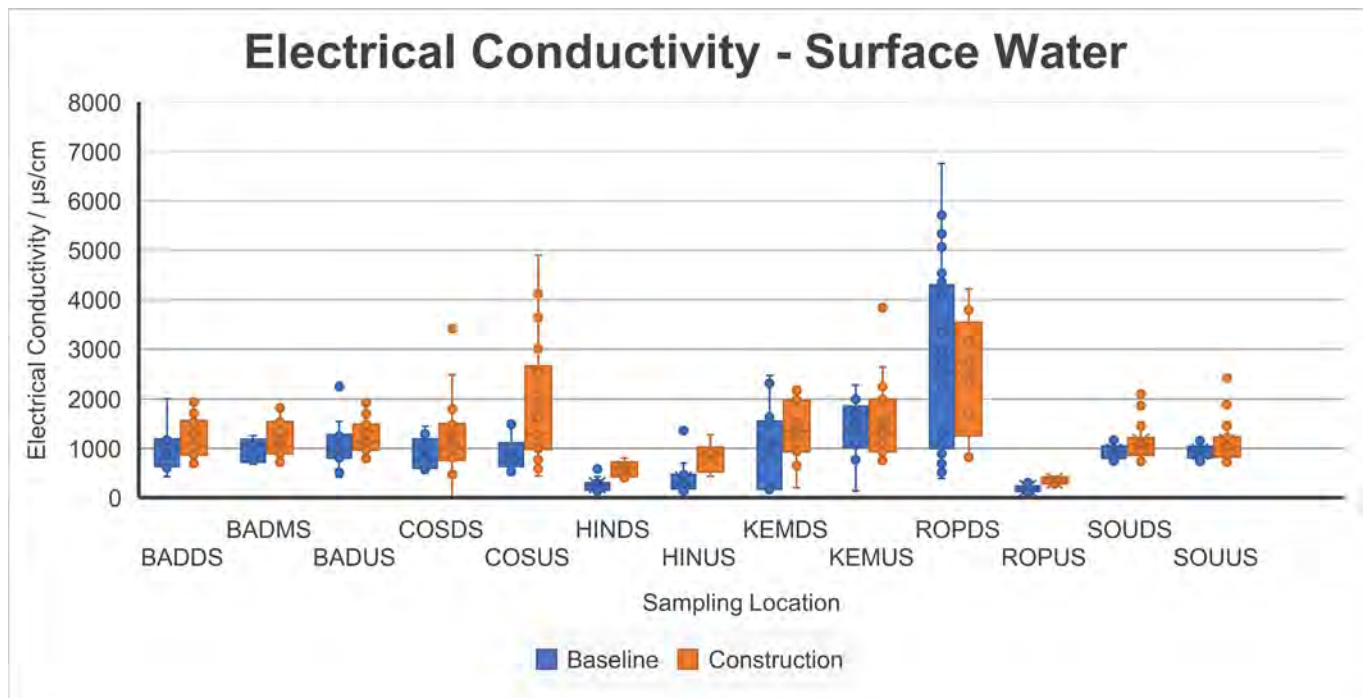


Figure 14 Summary of field recorded electrical conductivity for the baseline and construction phases to March 2024

Dissolved Oxygen

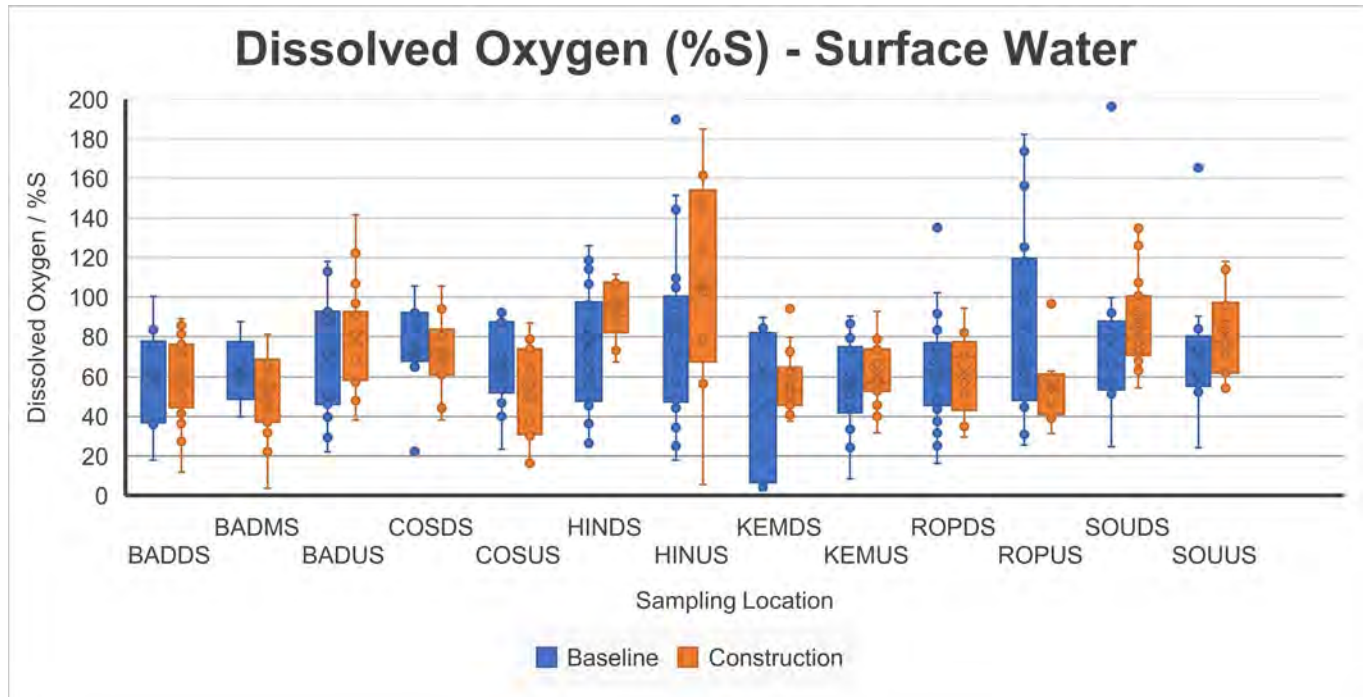


Figure 15 Summary of field recorded dissolved oxygen (% S) for the baseline and construction phases to March 2024

Turbidity

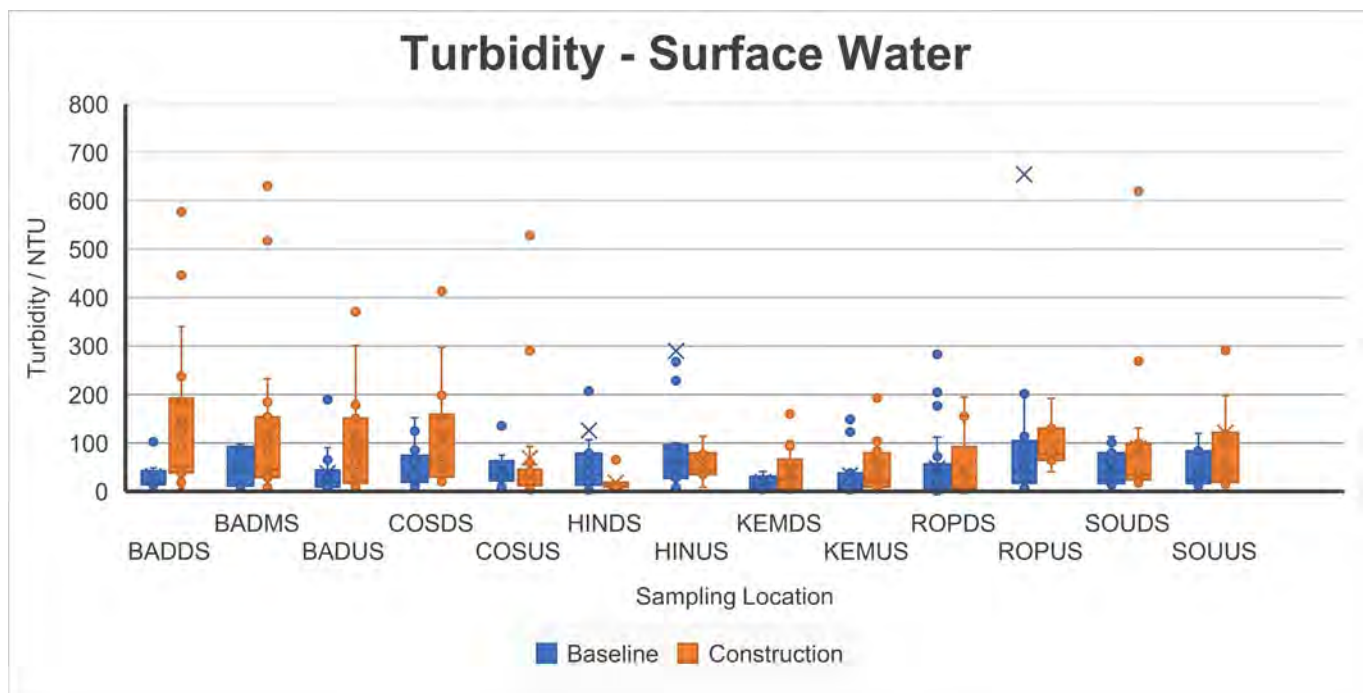


Figure 16 Summary of field recorded turbidity for the baseline and construction phases to March 2024

Total Suspended Solids

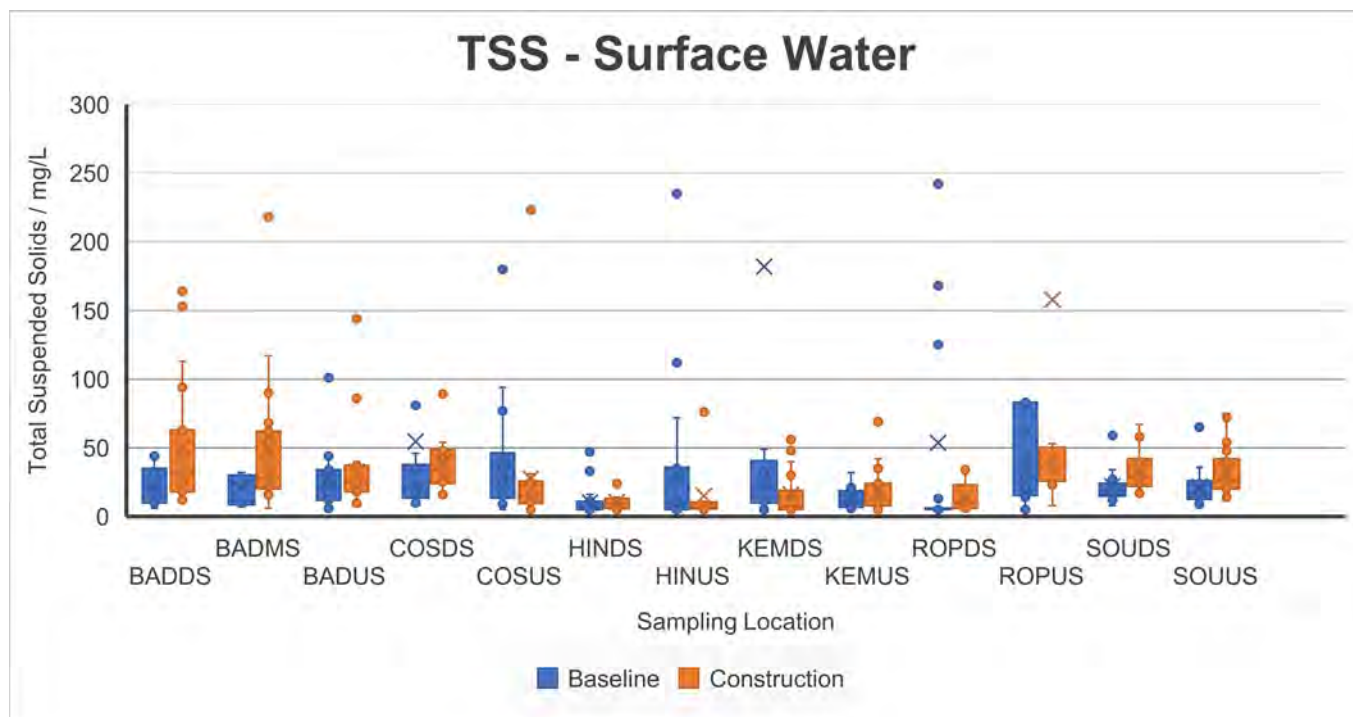


Figure 17 Summary of total suspended solids concentrations for the baseline and construction phases to March 2024

Total Dissolved Solids

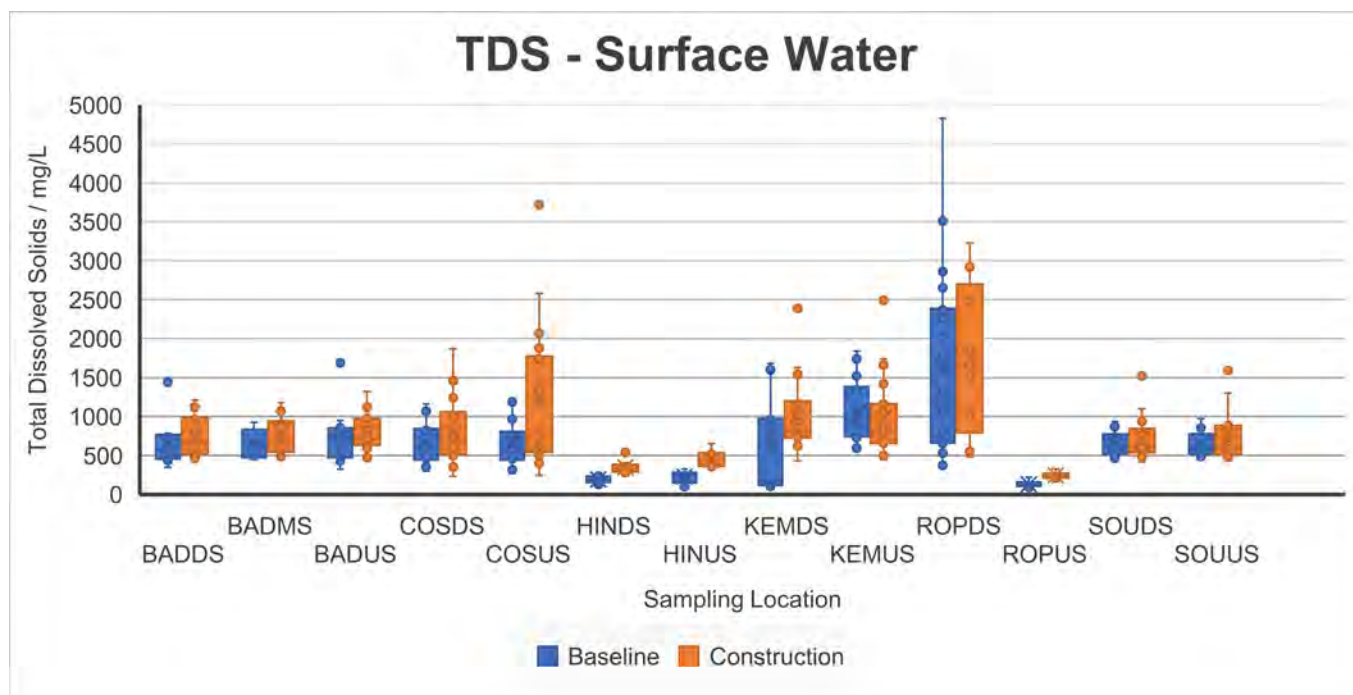


Figure 18 Summary of total dissolved solids concentrations for the baseline and construction phases to March 2024

Ammonia

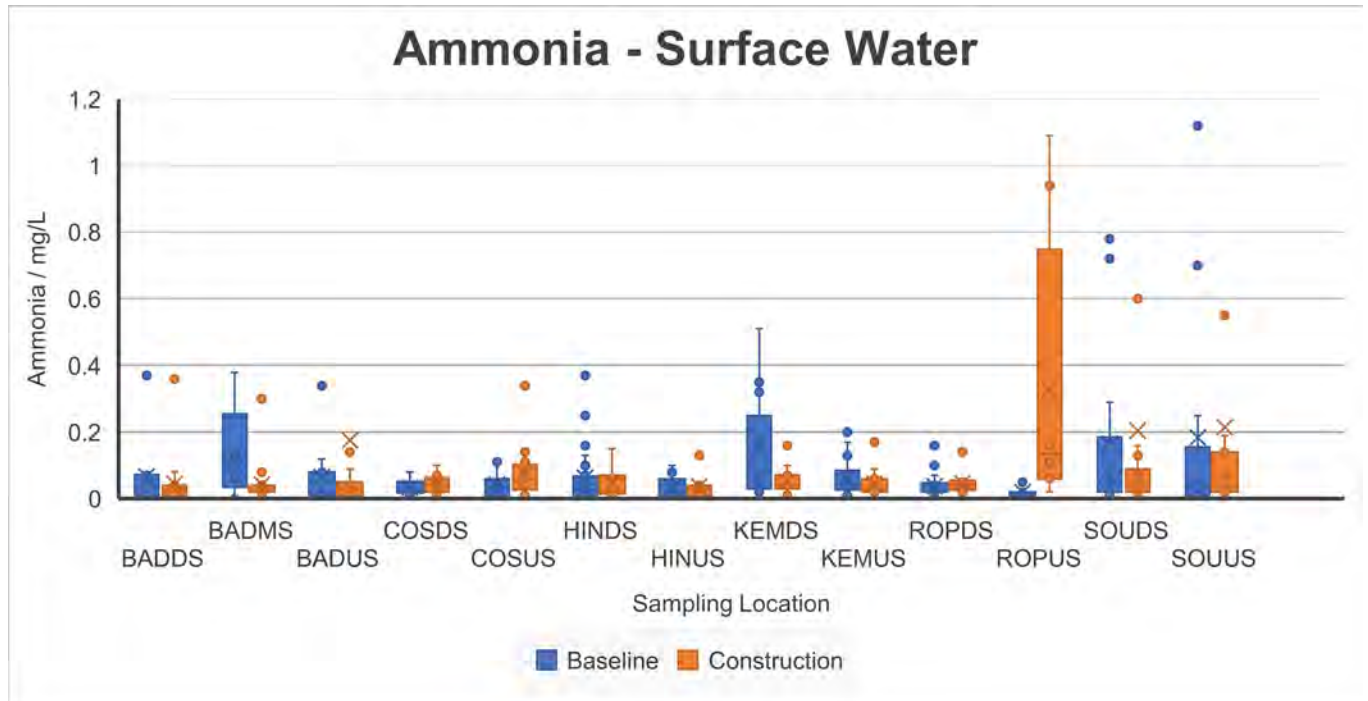


Figure 19 Summary of ammonia concentrations for the baseline and construction phases to March 2024

Total Oxidised Nitrogen

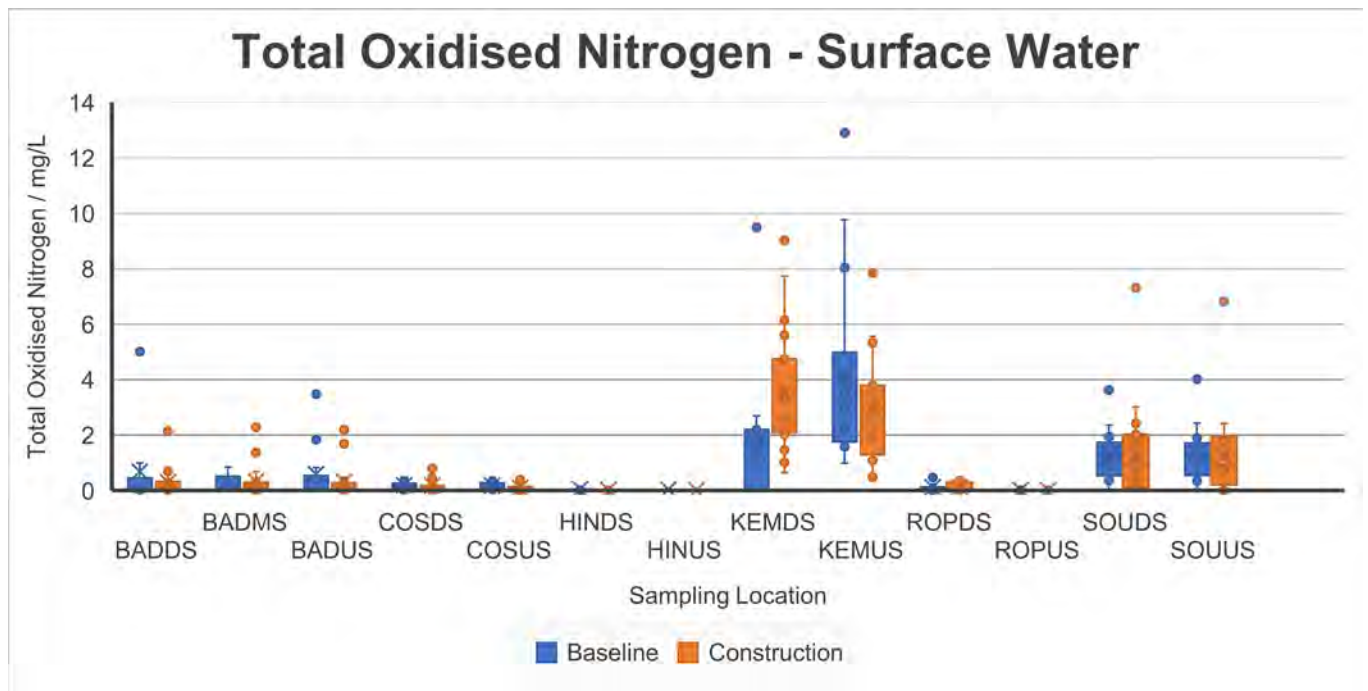


Figure 20 Summary of total oxidised nitrogen concentrations for the baseline and construction phases to March 2024

Total Nitrogen

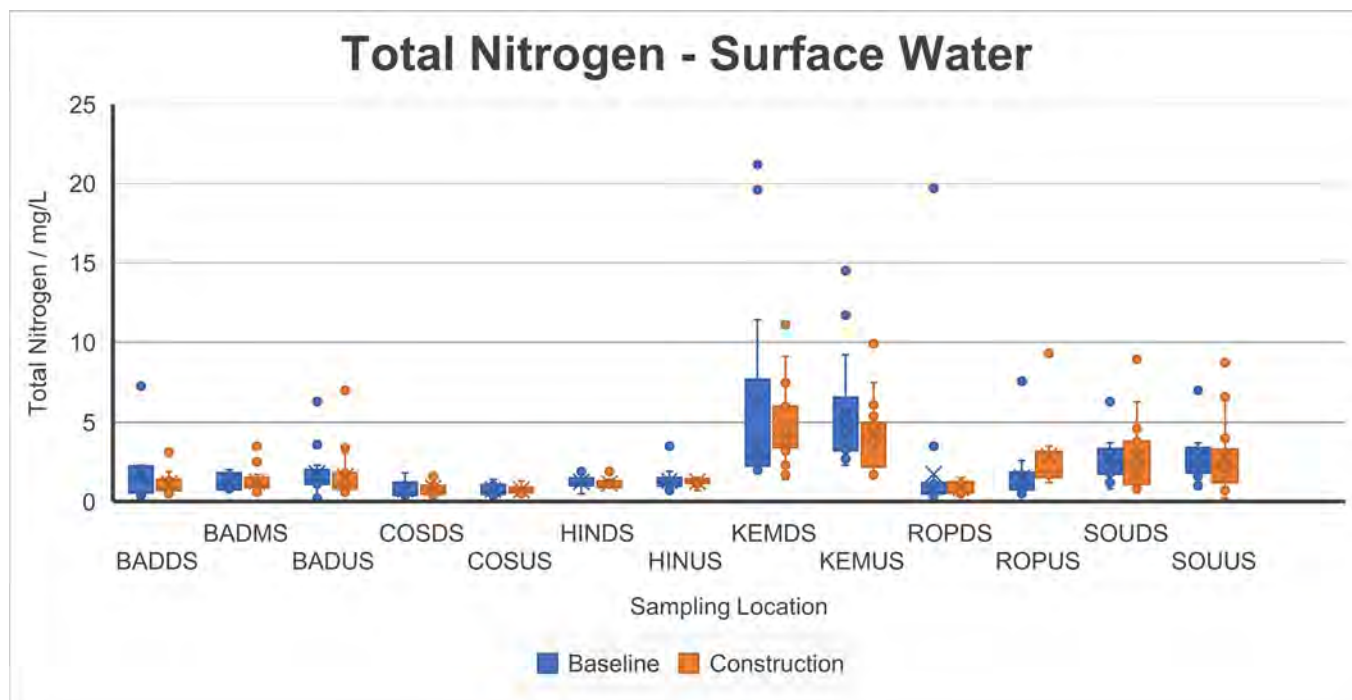


Figure 21 Summary of total nitrogen concentrations for the baseline and construction phases to March 2024

Total Phosphorus

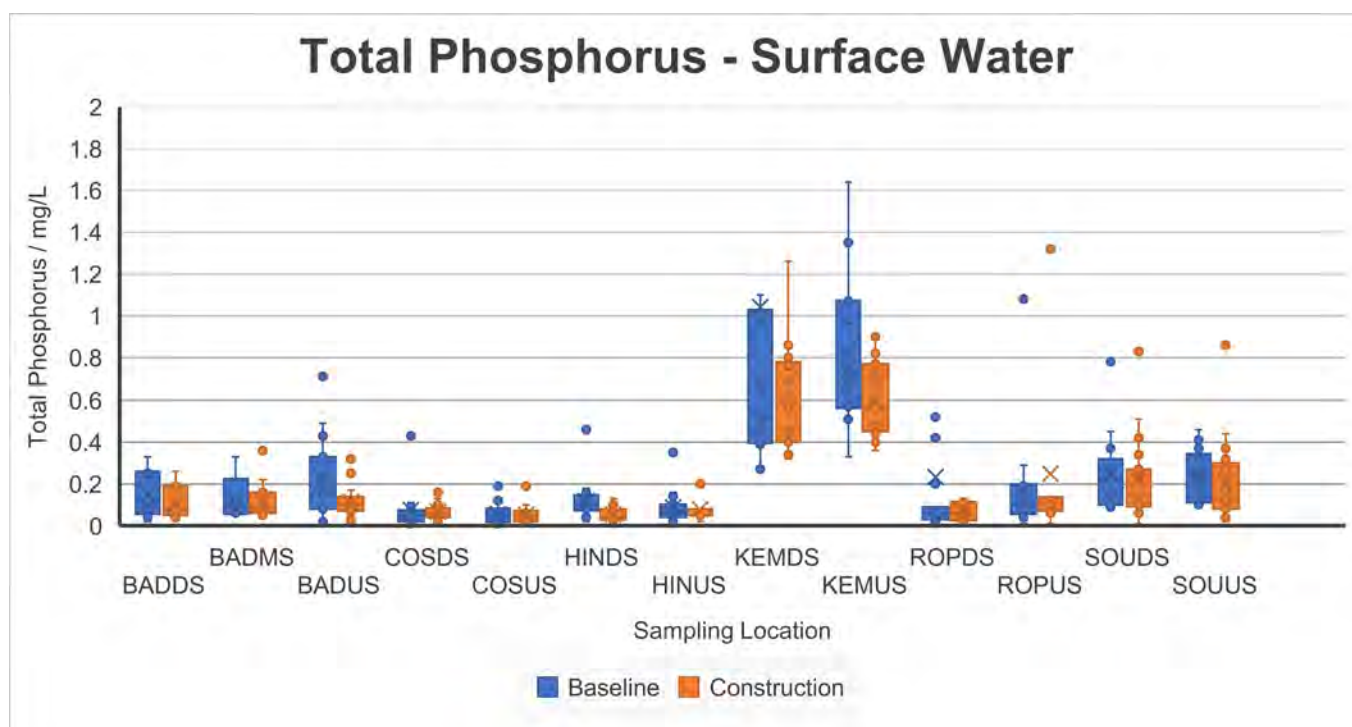


Figure 22 Summary of total phosphorus concentrations for the baseline and construction phases to March 2024

Iron

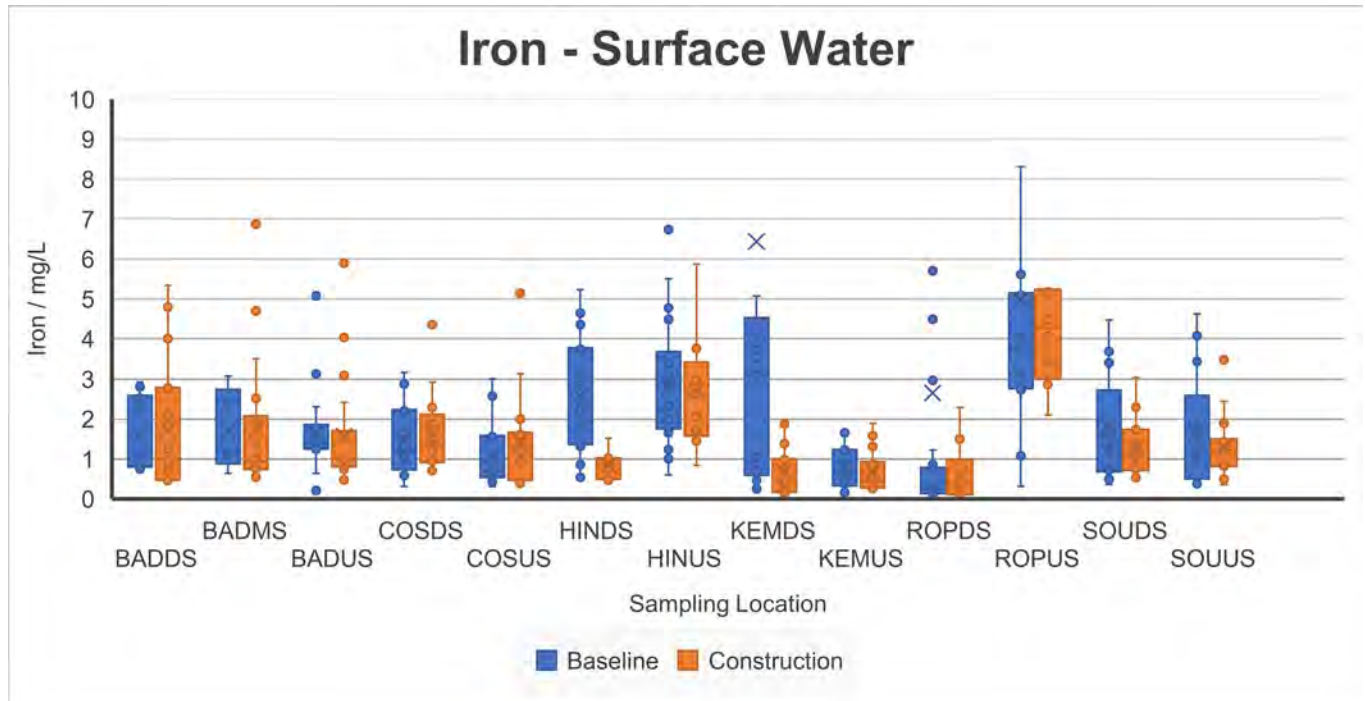


Figure 23 Summary of iron concentrations for the baseline and construction phases to March 2024

Manganese

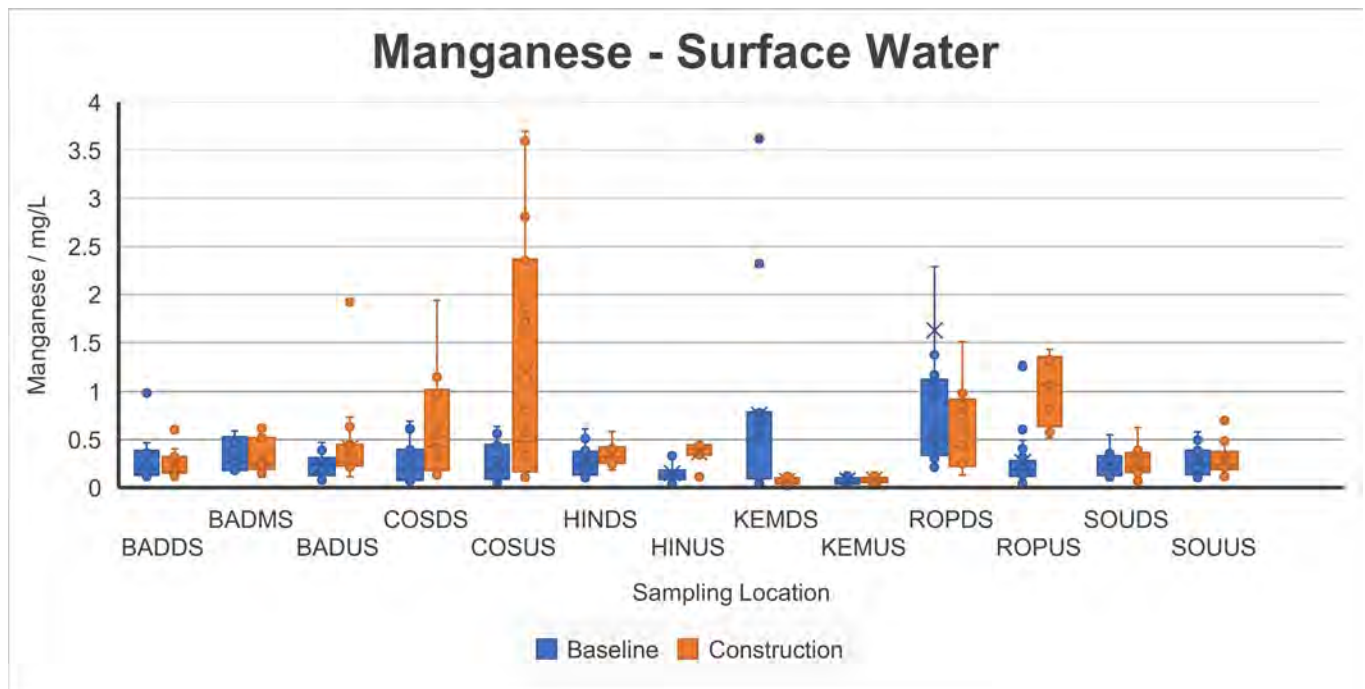


Figure 24 Summary of manganese concentrations for the baseline and construction phases to March 2024

Appendix E

Calibration certificates

Multi Parameter Water Meter

Instrument **YSI Pro DSS**
Serial No. **21K101474**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH/ORP	✓	
	2. Turbidity	✓	
	3. Conductivity	✓	
	4. D.O	✓	
	5. Temp	✓	
	6. Depth	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. EC		2760uS/cm		401089	2769uS/cm
2. Temp		23.6°C		Testo	23.6°C
3. pH 4		pH 4.00		399527	pH 3.99
4. pH 7		pH 7.00		399304	pH 6.95
5. DO		0.0%		12110	-0.1%
6. Turbidity		100 NTU		406442	99.7NTU
7. ORP		232.08mV		A405006/B398193	232.1mV

Calibrated by: Guido Camera

Calibration date: **29/09/2023**

Next calibration due: **29/10/2023**

Multi Parameter Water Meter

Instrument **YSI Pro DSS**
Serial No. **21K101479**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. Turbidity	✓	
	3. Conductivity	✓	
	4. D.O	✓	
	5. Temp	✓	
	6. Depth	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. EC		2760uS/cm		401089	2766uS/cm
2. Temp		20.8°C		Instrument Temp	20.8°C
3. pH 4		pH 4.00		399527	pH 3.97
4. pH 7		pH 7.00		399304	pH 6.97
5. DO		0.00%		399958	-0.3%
6. Turbidity		100NTU		406442	99.3NTU
7. ORP		238.24mV		A393379/B398193	237.6mV

Calibrated by: Guido Camera

Calibration date: **06/11/2023**

Next calibration due: **06/12/2023**

Multi Parameter Water Meter

Instrument **YSI Pro DSS**
Serial No. **15J100066**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. Turbidity	✓	
	3. Conductivity	✓	
	4. D.O	✓	
	5. Temp	✓	
	6. Depth	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
7. Turbidity		100NTU		413978	99.51NTU
1. EC		2760mS		406852	2762mS
3. pH 4		pH 4.00		405966	pH 3.99
4. pH 7		pH 7.00		406263	pH 7.05
5. Temperature		21.3°C		Reading	21.3°C
6. DO		0%		407802	-0.3%
8. mV		237.14mV		A405006/B398193	237.2mV

Calibrated by: Samuel Tanner

Calibration date: **30/11/2023**

Next calibration due: **30/12/2023**

Multi Parameter Water Meter

Instrument **YSI Pro DSS**
Serial No. **21K104041**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH/ORP	✓	
	2. Turbidity	✓	
	3. Conductivity	✓	
	4. D.O	✓	
	5. Temp	✓	
	6. Depth	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. EC		2760 mS		385789	2759mS
2. Temp		21.2°C		Testo	21.2°C
3. pH 4		pH 4.00		394432	pH 4.03
4. pH 7		pH 7.00		393774	pH 7.02
6. DO		0.00%		391223	-0.1%
7. Turbidity		100NTU		396421	99.00NTU
8. mV		237.36mV		395557/398763	237.0mV

Calibrated by: Olivia Hadley

Calibration date: **10/01/2024**

Next calibration due: **9/02/2024**

Multi Parameter Water Meter

Instrument **YSI Pro DSS**
Serial No. **21K101478**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH/ORP	✓	
	2. Turbidity	✓	
	3. Conductivity	✓	
	4. D.O	✓	
	5. Temp	✓	
	6. Depth	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. EC		2760uS		414103	2761uS
2. Temp		23.0°C		MultiTherm	22.7°C
3. pH 4		pH 4.00		414104	pH 3.98
4. pH 7		pH 7.00		413995	pH 7.05
5. DO		0.00%		12265	-0.20
6. Turbidity		100NTU		419749	102.43NTU
7. mV		233.4mV		A:406331/B:402268	233.5mV

Calibrated by: Samuel Tanner

Calibration date: **9/02/2024**

Next calibration due: **10/03/2024**

Multi Parameter Water Meter

Instrument **YSI Pro DSS**
Serial No. **21K104041**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad Display	Operation	✓	
	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH/ORP	✓	
	2. Turbidity	✓	
	3. Conductivity	✓	
	4. D.O	✓	
	5. Temp	✓	
	6. Depth	✓	
Alarms	Beeper Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. EC		2760 mS		414103	2765mS
2. Temp		23.0°C		MultiTherm	22.6°C
3. pH 4		pH 4.00		414104	pH 3.90
4. pH 7		pH 7.00		413995	pH 6.97
6. DO		0.00%		12265	-0.5%
7. Turbidity		100NTU		419749	100.41 NTU
8. mV		233.84mV		406331/402268	233.5mV

Calibrated by: James Osterberg

Calibration date: **6/03/2024**

Next calibration due: **5/04/2024**

Appendix F

Field sheets



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADDS
PROJECT NAME:	M12 Motorway	DATE:	06/10/2023
CLIENT:	Transport for NSW	TIME:	12:46
SITE:	M12 - West	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.8568835914728, 150.758225429572		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	Trees overhanging, grass and weeds on banks
SLOPE	Steep on both sides
EROSION	No
OTHER	Pale yellow-brown tinge, slightly turbid, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	17.1
DO (mg/L)	5.10
DO (%S)	52.0
CONDUCTIVITY (µS/cm)	1535
pH	7.21
REDOX (mV)	96.2
TURBIDITY (NTU)	38.6

HYDROLOGICAL DATA

FLOW MEASUREMENT	Very slight, 0.02 m/s
CROSS SECTION WIDTH (m)	6
DEPTH (m)	<0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 09-10-2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADMS
PROJECT NAME:	M12 Motorway	DATE:	06/10/2023
CLIENT:	Transport for NSW	TIME:	12:30
SITE:	M12 - West	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.859570548753, 150.755008849199		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Midstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	Trees overhanging creek,
SLOPE	Moderate
EROSION	No
OTHER	Pale yellow tinge, slightly turbid, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	16.8
DO (mg/L)	4.30
DO (%S)	44.0
CONDUCTIVITY (µS/cm)	1285
pH	7.27
REDOX (mV)	92.0
TURBIDITY (NTU)	40.3

HYDROLOGICAL DATA

FLOW MEASUREMENT	Slight, 0.05 m/s
CROSS SECTION WIDTH (m)	8
DEPTH (m)	>0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADMS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 09-10-2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADUS
PROJECT NAME:	M12 Motorway	DATE:	06/10/2023
CLIENT:	Transport for NSW	TIME:	13:28
SITE:	M12 - West	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.8737203925534, 150.754842952782		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	Trees overhanging, weeds on banks
SLOPE	Steep
EROSION	No
OTHER	Pale yellow-brown, slightly turbid, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	16.6
DO (mg/L)	5.80
DO (%S)	60.0
CONDUCTIVITY (µS/cm)	969
pH	7.25
REDOX (mV)	110.1
TURBIDITY (NTU)	119.1

HYDROLOGICAL DATA

FLOW MEASUREMENT	Slight, 0.1 m/s
CROSS SECTION WIDTH (m)	6
DEPTH (m)	<0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 09-10-2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSDS
PROJECT NAME:	M12 Motorway	DATE:	06/10/2023
CLIENT:	Transport for NSW	TIME:	12:00
SITE:	M12 - West	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.8577639732644, 150.731566376734		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	Trees overhanging creek, weeds on banks
SLOPE	Steep on both sides
EROSION	No
OTHER	Pale brown-yellow, highly turbid, no odour or sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	17.4
DO (mg/L)	9.00
DO (%S)	94.0
CONDUCTIVITY (µS/cm)	13
pH	7.10
REDOX (mV)	92.7
TURBIDITY (NTU)	147.2

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, no flow
CROSS SECTION WIDTH (m)	3
DEPTH (m)	<0.5
OTHER	COSDS is highly turbid, COSUS is clear.

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 09-10-2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSUS
PROJECT NAME:	M12 Motorway	DATE:	06/10/2023
CLIENT:	Transport for NSW	TIME:	11:45
SITE:	M12 - West	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.8591244435897, 150.730778119769		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	Trees overhanging creek
SLOPE	Steep on both sides
EROSION	No
OTHER	Pale yellow tinge, clear, no odour, patches of organic sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	15.4
DO (mg/L)	3.20
DO (%S)	31.0
CONDUCTIVITY (µS/cm)	3007
pH	7.10
REDOX (mV)	76.3
TURBIDITY (NTU)	13.9

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, no flow.
CROSS SECTION WIDTH (m)	2
DEPTH (m)	<0.5
OTHER	Stagnant water

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 09-10-2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINDS
PROJECT NAME:	M12 Motorway	DATE:	04/10/2023
CLIENT:	Transport for NSW	TIME:	11:15
SITE:	M12 - East	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.8940830508509, 150.841996280799		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	Grass
SLOPE	Moderate
EROSION	No
OTHER	Yellow tinge, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.8
DO (mg/L)	6.40
DO (%S)	73.0
CONDUCTIVITY (µS/cm)	485
pH	7.43
REDOX (mV)	141.3
TURBIDITY (NTU)	8.2

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, no flow.
CROSS SECTION WIDTH (m)	200
DEPTH (m)	>0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 09-10-2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINUS
PROJECT NAME:	M12 Motorway	DATE:	04/10/2023
CLIENT:	Transport for NSW	TIME:	12:45
SITE:	M12 - East	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.8859180110884, 150.822297560835		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	Grass surrounding
SLOPE	None
EROSION	No
OTHER	Pale yellow tinge, mostly clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.9
DO (mg/L)	6.70
DO (%S)	78.0
CONDUCTIVITY (µS/cm)	597
pH	7.46
REDOX (mV)	99.6
TURBIDITY (NTU)	35.1

HYDROLOGICAL DATA

FLOW MEASUREMENT	Pond, no flow
CROSS SECTION WIDTH (m)	40
DEPTH (m)	>0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 09-10-2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMDS
PROJECT NAME:	M12 Motorway	DATE:	04/10/2023
CLIENT:	Transport for NSW	TIME:	9:15
SITE:	M12 - Central	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.8744916131181, 150.798975039418		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	Vegetation on banks, tree debris in water
SLOPE	Slight
EROSION	No
OTHER	Green-brown tinge, mostly clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	19.1
DO (mg/L)	3.70
DO (%S)	41.0
CONDUCTIVITY (µS/cm)	1637
pH	7.30
REDOX (mV)	112.6
TURBIDITY (NTU)	4.9

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant
CROSS SECTION WIDTH (m)	1.5
DEPTH (m)	0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMDS	11	Yes	SWDUP2	EF metals
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 09-10-2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMUS
PROJECT NAME:	M12 Motorway	DATE:	04/10/2023
CLIENT:	Transport for NSW	TIME:	4/10/2023
SITE:	M12 - Central	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.881000984653, 150.798710837019		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	Trees overhanging, low shrubbery skirting the banks
SLOPE	Slight
EROSION	No
OTHER	Yellow tinge, clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	19.2
DO (mg/L)	3.70
DO (%S)	40.0
CONDUCTIVITY (µS/cm)	1517
pH	7.15
REDOX (mV)	124.9
TURBIDITY (NTU)	20.0

HYDROLOGICAL DATA

FLOW MEASUREMENT	Very slight, 0.01 m/s
CROSS SECTION WIDTH (m)	4
DEPTH (m)	0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 09-10-2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPDS
PROJECT NAME:	M12 Motorway	DATE:	04/10/2023
CLIENT:	Transport for NSW	TIME:	9:40am
SITE:	M12 - East	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.8661224552491, 150.846223930042		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	Grass on slope, tall reeds in water
SLOPE	Steep
EROSION	No
OTHER	Pale yellow, clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.4
DO (mg/L)	5.20
DO (%S)	57.0
CONDUCTIVITY (µS/cm)	2339
pH	7.38
REDOX (mV)	110.1
TURBIDITY (NTU)	3.4

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, no flow
CROSS SECTION WIDTH (m)	4
DEPTH (m)	0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPDS	11	Yes	SWDUP1	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 09-10-2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPUS
PROJECT NAME:	M12 Motorway	DATE:	04/10/2023
CLIENT:	Transport for NSW	TIME:	10:14
SITE:	M12 - East	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.8661455977709, 150.849947853536		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	Grass, reeds in water
SLOPE	None
EROSION	No
OTHER	Pale yellow, cloudy, organic odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.1
DO (mg/L)	3.50
DO (%S)	39.0
CONDUCTIVITY (µS/cm)	304
pH	7.14
REDOX (mV)	97.6
TURBIDITY (NTU)	75.9

HYDROLOGICAL DATA

FLOW MEASUREMENT	Pond, no flow.
CROSS SECTION WIDTH (m)	50
DEPTH (m)	0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 09-10-2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUDS
PROJECT NAME:	M12 Motorway	DATE:	04/10/2023
CLIENT:	Transport for NSW	TIME:	8:10
SITE:	M12 - Central	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.8599738161994, 150.768342269711		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	Grass on banks, weeds
SLOPE	Moderate
EROSION	No
OTHER	Green-brown, mostly clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.4
DO (mg/L)	7.40
DO (%S)	83.0
CONDUCTIVITY (µS/cm)	1533
pH	7.79
REDOX (mV)	55.5
TURBIDITY (NTU)	32.4

HYDROLOGICAL DATA

FLOW MEASUREMENT	Very slight, about 0.02m/s, no odour or sheen.
CROSS SECTION WIDTH (m)	18
DEPTH (m)	0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 09-10-2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUUS
PROJECT NAME:	M12 Motorway	DATE:	04/10/2023
CLIENT:	Transport for NSW	TIME:	7:59
SITE:	M12 - Central	LOGGED BY:	E. Smith / T. Nham
COORDINATES/GPS (if applicable)	-33.8615835511328, 150.771191612714		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy, slight rain
VEGETATION	Grass on banks, some algae growths in water
SLOPE	Moderate
EROSION	No
OTHER	Green-brown tinge, mostly clear, no odour, brittle sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.2
DO (mg/L)	8.80
DO (%S)	98.0
CONDUCTIVITY (µS/cm)	1542
pH	7.43
REDOX (mV)	59.1
TURBIDITY (NTU)	10.6

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant,
CROSS SECTION WIDTH (m)	10
DEPTH (m)	0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 09-10-2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADDS
PROJECT NAME:	M12 Motorway	DATE:	08/11/2023
CLIENT:	Transport for NSW	TIME:	14:48
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8568835914728, 150.758225429572		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	Shrubs along creek bank
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale yellow-brown, turbid, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.4
DO (mg/L)	3.72
DO (%S)	41.4
CONDUCTIVITY (µS/cm)	720
pH	7.19
REDOX (mV)	127.9
TURBIDITY (NTU)	446.0

HYDROLOGICAL DATA

FLOW MEASUREMENT	Very slight 0.01m/s, flow is upstream
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 10/11/2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADMS
PROJECT NAME:	M12 Motorway	DATE:	08/11/2023
CLIENT:	Transport for NSW	TIME:	14:20
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.859570548753, 150.755008849199		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Midstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	Trees overhanging, shrubs on banks
SLOPE	Moderate on both sides
EROSION	No
OTHER	Pale yellow-brown, highly turbid, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.1
DO (mg/L)	3.84
DO (%S)	3.6
CONDUCTIVITY (µS/cm)	726
pH	7.32
REDOX (mV)	725 - Identified on data review this is likely an error and not to be used in monitoring results.
TURBIDITY (NTU)	630.0

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, no flow
CROSS SECTION WIDTH (m)	7
DEPTH (m)	<0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADMS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 10/11/2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADUS
PROJECT NAME:	M12 Motorway	DATE:	08/11/2023
CLIENT:	Transport for NSW	TIME:	15:30
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8737203925534, 150.754842952782		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	Shrubs alongside channel
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale yellow-brown tinge, turbid, no odour, organic sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.2
DO (mg/L)	5.40
DO (%S)	60.2
CONDUCTIVITY (µS/cm)	796
pH	7.30
REDOX (mV)	139.4
TURBIDITY (NTU)	179.2

HYDROLOGICAL DATA

FLOW MEASUREMENT	Very slight, 0.01m/s
CROSS SECTION WIDTH (m)	<10
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADUS	11	Yes	SWDUP1	
SWDUP1	1	Yes		ALS Metals
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 10/11/2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSDS
PROJECT NAME:	M12 Motorway	DATE:	08/11/2023
CLIENT:	Transport for NSW	TIME:	13:34
SITE:	M12 - West	LOGGED BY:	E. Smith / A . Duval
COORDINATES/GPS (if applicable)	-33.8577639732644, 150.731566376734		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	Shrubs and small trees along creek bank
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale yellow tinge, slightly cloudy, no odour, slight organic sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.1
DO (mg/L)	6.10
DO (%S)	67.3
CONDUCTIVITY (µS/cm)	3417
pH	7.49
REDOX (mV)	68.1
TURBIDITY (NTU)	117.8

HYDROLOGICAL DATA

FLOW MEASUREMENT	Very slight, 0.01m/s
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	>1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 10/11/2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSUS
PROJECT NAME:	M12 Motorway	DATE:	08/11/2023
CLIENT:	Transport for NSW	TIME:	13:20
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8591244435897, 150.730778119769		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	Trees overhanging creek, shrubs and weeds on banks
SLOPE	Moderate on both sides
EROSION	No
OTHER	Pale yellow tinge, clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	17.3
DO (mg/L)	1.56
DO (%S)	16.3
CONDUCTIVITY (µS/cm)	3636
pH	7.12
REDOX (mV)	-32.7
TURBIDITY (NTU)	12.4

HYDROLOGICAL DATA

FLOW MEASUREMENT	Very slight, 0.01 m/s
CROSS SECTION WIDTH (m)	1
DEPTH (m)	0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 10/11/2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINDS
PROJECT NAME:	M12 Motorway	DATE:	09/11/2023
CLIENT:	Transport for NSW	TIME:	10:13
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8940830508509, 150.841996280799		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	None
SLOPE	None
EROSION	None
OTHER	Pale yellow, clear, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	23.4
DO (mg/L)	8.10
DO (%S)	95.0
CONDUCTIVITY (µS/cm)	608
pH	7.55
REDOX (mV)	144.7
TURBIDITY (NTU)	19.3
Field measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	Pond, no flow
CROSS SECTION WIDTH (m)	>50
DEPTH (m)	>1
OTHER	Water level consistently lower between sampling rounds

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINDS	11	Yes	SWDUP2	
SWDUP2	1	Yes		
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 10/11/2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINUS
PROJECT NAME:	M12 Motorway	DATE:	09/11/2023
CLIENT:	Transport for NSW	TIME:	13:15
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8859180110884, 150.822297560835		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny. Temperature is about 33 degrees ambient air so the water temperature given the low water level could be accurate.
VEGETATION	Grass surrounding pond, patches of large reeds in pond and patches of algae on perimeter of pond.
SLOPE	None
EROSION	None
OTHER	Pale yellow-brown, clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	27.6
DO (mg/L)	13.70
DO (%S)	185.0
CONDUCTIVITY (µS/cm)	1028
pH	8.89
REDOX (mV)	48.0
TURBIDITY (NTU)	82.0

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, pond
CROSS SECTION WIDTH (m)	30
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 10/11/2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMDS
PROJECT NAME:	M12 Motorway	DATE:	09/11/2023
CLIENT:	Transport for NSW	TIME:	7:41
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8744916131181, 150.798975039418		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	Shrubs and trees along channel bank
SLOPE	Gentle bank slope
EROSION	None
OTHER	Pale yellow tinge, mostly clear, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.1
DO (mg/L)	3.94
DO (%S)	40.9
CONDUCTIVITY (µS/cm)	1421
pH	7.54
REDOX (mV)	59.6
TURBIDITY (NTU)	19.3

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant
CROSS SECTION WIDTH (m)	<2
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 10/11/2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMUS
PROJECT NAME:	M12 Motorway	DATE:	09/11/2023
CLIENT:	Transport for NSW	TIME:	13:35
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.881000984653, 150.798710837019		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	Trees overhanging creek, dense shrubs on both sides of bank
SLOPE	Slight
EROSION	None
OTHER	Pale yellow tinge, clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	19.0
DO (mg/L)	2.92
DO (%S)	31.6
CONDUCTIVITY (µS/cm)	1248
pH	7.38
REDOX (mV)	95.4
TURBIDITY (NTU)	20.2

HYDROLOGICAL DATA

FLOW MEASUREMENT	Slight, 0.03 m/s
CROSS SECTION WIDTH (m)	4
DEPTH (m)	<0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 10/11/2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPDS
PROJECT NAME:	M12 Motorway	DATE:	09/11/2023
CLIENT:	Transport for NSW	TIME:	8:12
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8661224552491, 150.846223930042		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	Reeds in channel
SLOPE	Moderate bank slope
EROSION	None
OTHER	Green-brown tinge, slightly cloudy, no odour no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	17.2
DO (mg/L)	6.82
DO (%S)	71.6
CONDUCTIVITY (µS/cm)	3166
pH	7.29
REDOX (mV)	103.8
TURBIDITY (NTU)	155.7
Field measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant
CROSS SECTION WIDTH (m)	<10
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 10/11/2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPUS
PROJECT NAME:	M12 Motorway	DATE:	09/11/2023
CLIENT:	Transport for NSW	TIME:	9:03
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8661455977709, 150.849947853536		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Reeds in pond
SLOPE	None
EROSION	None
OTHER	Brown tinge, mostly clear, no odour, organic sheen, patch of bright red sediment on edge of pond.

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.7
DO (mg/L)	4.79
DO (%S)	54.6
CONDUCTIVITY (µS/cm)	418
pH	7.20
REDOX (mV)	99.4
TURBIDITY (NTU)	71.7
Field measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, pond
CROSS SECTION WIDTH (m)	<50
DEPTH (m)	<1
OTHER	Water level consistently dropping between monitoring rounds

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		esmith 10/11/2023



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUDS
PROJECT NAME:	M12 Motorway	DATE:	09/11/2023
CLIENT:	Transport for NSW	TIME:	14:22
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8599738161994, 150.768342269711		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Grasses and shrubs alongside bank
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale green tinge, clear, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	25.7
DO (mg/L)	10.33
DO (%S)	126.0
CONDUCTIVITY (µS/cm)	2098
pH	8.16
REDOX (mV)	96.2
TURBIDITY (NTU)	44.8
Field measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	Slight, ~0.01m/s
CROSS SECTION WIDTH (m)	<20
DEPTH (m)	>1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 10/11/2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUUS
PROJECT NAME:	M12 Motorway	DATE:	09/11/2023
CLIENT:	Transport for NSW	TIME:	14:10
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8615835511328, 150.771191612714		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Grasses and shrubs alongside channel bank
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale brown tinge, clear, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	25.3
DO (mg/L)	9.30
DO (%S)	113.9
CONDUCTIVITY (µS/cm)	2422
pH	7.85
REDOX (mV)	109.4
TURBIDITY (NTU)	56.3
Field measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	Slight, 0.01m/s
CROSS SECTION WIDTH (m)	<15
DEPTH (m)	>0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	esmith 10/11/2023	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADDS
PROJECT NAME:	M12 Motorway	DATE:	06/12/2023
CLIENT:	Transport for NSW	TIME:	15:18
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8568835914728, 150.758225429572		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs and trees alongside channel
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale yellow-tinge, mostly clear, green organic sheen, no odour.

FIELD MEASUREMENTS

TEMPERATURE (°C)	26.2
DO (mg/L)	6.57
DO (%S)	81.3
CONDUCTIVITY (µS/cm)	1038
pH	7.53
REDOX (mV)	101.6
TURBIDITY (NTU)	52.5

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagant, no flow
CROSS SECTION WIDTH (m)	<10
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADDS	11	Yes	No	
FIELD SUPERVISOR			CHECKED (SIGN & DATE)	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADMS
PROJECT NAME:	M12 Motorway	DATE:	06/12/2023
CLIENT:	Transport for NSW	TIME:	6/12/2023
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.859570548753, 150.755008849199		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Midstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Trees overhanging creek, weeds on banks
SLOPE	Moderate on both sides
EROSION	No
OTHER	Green, slightly turbid, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	24.5
DO (mg/L)	5.48
DO (%S)	65.8
CONDUCTIVITY (µS/cm)	895
pH	7.43
REDOX (mV)	83.1
TURBIDITY (NTU)	36.2

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, no flow
CROSS SECTION WIDTH (m)	7
DEPTH (m)	>0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADMS	11	Yes	No	
FIELD SUPERVISOR			CHECKED (SIGN & DATE)	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADUS
PROJECT NAME:	M12 Motorway	DATE:	06/12/2023
CLIENT:	Transport for NSW	TIME:	13:10
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8737203925534, 150.754842952782		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs alongside channel
SLOPE	Moderate bank slope
EROSION	None
OTHER	Yellow-tinge, mostly clear, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	23.6
DO (mg/L)	7.06
DO (%S)	83.5
CONDUCTIVITY (µS/cm)	1916
pH	7.62
REDOX (mV)	37.2
TURBIDITY (NTU)	72.3

HYDROLOGICAL DATA

FLOW MEASUREMENT	No flow
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	>0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADUS	11	Yes	No	
FIELD SUPERVISOR			CHECKED (SIGN & DATE)	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSDS
PROJECT NAME:	M12 Motorway	DATE:	06/12/2023
CLIENT:	Transport for NSW	TIME:	14:39
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8577639732644, 150.731566376734		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Small trees and shrubs along channel bank
SLOPE	Moderate bank slope
EROSION	None
OTHER	Yellow-brown tinge, slightly turbid, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	22.8
DO (mg/L)	3.87
DO (%S)	45.4
CONDUCTIVITY (µS/cm)	2495
pH	7.43
REDOX (mV)	65.8
TURBIDITY (NTU)	59.3

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, no flow
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	>1
OTHER	Upstream clear, downstream slightly turbid.

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSDS	11	Yes	No	
FIELD SUPERVISOR			CHECKED (SIGN & DATE)	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSUS
PROJECT NAME:	M12 Motorway	DATE:	06/12/2023
CLIENT:	Transport for NSW	TIME:	14:17
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8591244435897, 150.730778119769		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Trees overhanging creek, some tree debris surrounding
SLOPE	Steep on both sides
EROSION	No
OTHER	Pale yellow tinge, clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	23.0
DO (mg/L)	4.83
DO (%S)	56.8
CONDUCTIVITY (µS/cm)	2537
pH	7.58
REDOX (mV)	27.7
TURBIDITY (NTU)	5.5

HYDROLOGICAL DATA

FLOW MEASUREMENT	Slight, 0.03 m/s
CROSS SECTION WIDTH (m)	1.5
DEPTH (m)	0.5 to 1
OTHER	Connecting stream at sampling point. This ingress point is normally dry. Water level higher than usual and flowing, normally is stagnant.

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSUS	11	Yes	No	
FIELD SUPERVISOR			CHECKED (SIGN & DATE)	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINDS
PROJECT NAME:	M12 Motorway	DATE:	05/12/2023
CLIENT:	Transport for NSW	TIME:	9:46
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8940830508509, 150.841996280799		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Grasses surrounding ponds
SLOPE	Gentle pond bank
EROSION	None
OTHER	Very pale yellow tinge, no odour, no sheen, new JH construction works adajacent to pond ~100m from sampling location.

FIELD MEASUREMENTS

TEMPERATURE (°C)	26.3
DO (mg/L)	7.35
DO (%S)	91.3
CONDUCTIVITY (µS/cm)	687
pH	7.84
REDOX (mV)	94.9
TURBIDITY (NTU)	12.8

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, pond
CROSS SECTION WIDTH (m)	>50
DEPTH (m)	>1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINDS	11	Yes	SWDUP1	
SWDUP1	1	Yes		ALS Metals
FIELD SUPERVISOR			CHECKED (SIGN & DATE)	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINUS
PROJECT NAME:	M12 Motorway	DATE:	05/12/2023
CLIENT:	Transport for NSW	TIME:	13:25
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8859180110884, 150.822297560835		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Reeds in pond
SLOPE	Pond, flat
EROSION	None
OTHER	

FIELD MEASUREMENTS

TEMPERATURE (°C)	32.8
DO (mg/L)	11.60
DO (%S)	161.6
CONDUCTIVITY (µS/cm)	1003
pH	7.86
REDOX (mV)	33.4
TURBIDITY (NTU)	77.5
Field measurements taken from cup due to low water level.	

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant pond
CROSS SECTION WIDTH (m)	>20
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINUS	11	Yes	SWDUP2	
SWDUP2	1	Yes		Eurofins Metals
FIELD SUPERVISOR		CHECKED (SIGN & DATE)		



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMDS
PROJECT NAME:	M12 Motorway	DATE:	05/12/2023
CLIENT:	Transport for NSW	TIME:	7:58
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8744916131181, 150.798975039418		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs
SLOPE	Gentle channel slope
EROSION	None
OTHER	Pale brown tinge, slightly turbid, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.5
DO (mg/L)	4.02
DO (%S)	44.6
CONDUCTIVITY (µS/cm)	645
pH	7.08
REDOX (mV)	68.7
TURBIDITY (NTU)	98.1

HYDROLOGICAL DATA

FLOW MEASUREMENT	0.1m/s
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	<0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMDS	11	Yes	No	
FIELD SUPERVISOR		CHECKED (SIGN & DATE)		



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMUS
PROJECT NAME:	M12 Motorway	DATE:	05/12/2023
CLIENT:	Transport for NSW	TIME:	14:15
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.881000984653, 150.798710837019		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Small weeds on banks, trees overhanging creek.
SLOPE	Very slight on either side
EROSION	No
OTHER	Pale yellow / brown, turbid, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	22.6
DO (mg/L)	4.56
DO (%S)	52.8
CONDUCTIVITY (µS/cm)	723
pH	7.32
REDOX (mV)	41.4
TURBIDITY (NTU)	108.1

HYDROLOGICAL DATA

FLOW MEASUREMENT	Slight, 0.03 m/s
CROSS SECTION WIDTH (m)	5
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMUS	11	Yes	No	
FIELD SUPERVISOR			CHECKED (SIGN & DATE)	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPDS
PROJECT NAME:	M12 Motorway	DATE:	05/12/2023
CLIENT:	Transport for NSW	TIME:	8:30
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8661224552491, 150.846223930042		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Tall reeds in water, grass surrounding pond
SLOPE	Steep on eastern side
EROSION	No
OTHER	Pale yellow tinge, clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.6
DO (mg/L)	4.83
DO (%S)	51.5
CONDUCTIVITY (µS/cm)	822
pH	7.34
REDOX (mV)	84.5
TURBIDITY (NTU)	7.4

HYDROLOGICAL DATA

FLOW MEASUREMENT	None
CROSS SECTION WIDTH (m)	5
DEPTH (m)	<0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPDS	11	Yes	No	
FIELD SUPERVISOR		CHECKED (SIGN & DATE)		



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPUS
PROJECT NAME:	M12 Motorway	DATE:	05/12/2023
CLIENT:	Transport for NSW	TIME:	9:10
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8661455977709, 150.849947853536		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Reeds in pond
SLOPE	Flat, pond
EROSION	None
OTHER	Pale yellow-green tinge, no odour, organic sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	24.0
DO (mg/L)	4.72
DO (%S)	56.1
CONDUCTIVITY (µS/cm)	413
pH	7.06
REDOX (mV)	95.0
TURBIDITY (NTU)	40.3

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, pond
CROSS SECTION WIDTH (m)	>50
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPUS	11	Yes	No	
FIELD SUPERVISOR			CHECKED (SIGN & DATE)	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUDS
PROJECT NAME:	M12 Motorway	DATE:	05/12/2023
CLIENT:	Transport for NSW	TIME:	15:25
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8599738161994, 150.768342269711		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs along channel
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale yellow-brown tinge, mostly clear, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	24.0
DO (mg/L)	6.08
DO (%S)	72.9
CONDUCTIVITY (µS/cm)	1213
pH	7.42
REDOX (mV)	101.9
TURBIDITY (NTU)	32.2

HYDROLOGICAL DATA

FLOW MEASUREMENT	~0.01m/s
CROSS SECTION WIDTH (m)	<20
DEPTH (m)	>1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUDS	11	Yes	No	
FIELD SUPERVISOR			CHECKED (SIGN & DATE)	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUUS
PROJECT NAME:	M12 Motorway	DATE:	05/12/2023
CLIENT:	Transport for NSW	TIME:	15:08
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8615835511328, 150.771191612714		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs alongside creek bank
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale brown tinge, slightly turbid, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	24.2
DO (mg/L)	4.66
DO (%S)	55.6
CONDUCTIVITY (µS/cm)	1022
pH	7.38
REDOX (mV)	69.9
TURBIDITY (NTU)	36.3

HYDROLOGICAL DATA

FLOW MEASUREMENT	~0.02m/s
CROSS SECTION WIDTH (m)	<20
DEPTH (m)	>1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUUS	11	Yes	No	
FIELD SUPERVISOR			CHECKED (SIGN & DATE)	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADDS
PROJECT NAME:	M12 Motorway	DATE:	19/01/2024
CLIENT:	Transport for NSW	TIME:	14:45
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8568835914728, 150.758225429572		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny, hot
VEGETATION	Trees overhanging, low shrubs on banks
SLOPE	Moderate on both sides
EROSION	No
OTHER	Pale yellow, slightly turbid, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	27.2
DO (mg/L)	6.00
DO (%S)	76.1
CONDUCTIVITY (µS/cm)	1959
pH	7.61
REDOX (mV)	112.9
TURBIDITY (NTU)	577.0
Field measurements taken from cup, not in water body, confirmed high temperature and turbidity	

HYDROLOGICAL DATA

FLOW MEASUREMENT	Limited to negligible flow
CROSS SECTION WIDTH (m)	6
DEPTH (m)	0.5
OTHER	

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	22/01/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADMS
PROJECT NAME:	M12 Motorway	DATE:	19/01/2024
CLIENT:	Transport for NSW	TIME:	15:08
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.859570548753, 150.755008849199		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Midstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs on channel bank
SLOPE	Shallow slope
EROSION	None
OTHER	Pale brown, slightly cloudy, no odour, no sheen .

FIELD MEASUREMENTS

TEMPERATURE (°C)	24.8
DO (mg/L)	5.49
DO (%S)	66.7
CONDUCTIVITY (µS/cm)	1698
pH	7.57
REDOX (mV)	115.0
TURBIDITY (NTU)	517.0

HYDROLOGICAL DATA

FLOW MEASUREMENT	0.25m/s
CROSS SECTION WIDTH (m)	<10
DEPTH (m)	<1
OTHER	Higher water level than recent events

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADMS	11	Yes	SWDUP2	Eurofins Metals
SWDUP2	1	Yes		
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		22/01/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADUS
PROJECT NAME:	M12 Motorway	DATE:	19/01/2024
CLIENT:	Transport for NSW	TIME:	15:40
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8737203925534, 150.754842952782		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	Trees overhanging, dense weeds and shrub vegetation around sampling location
SLOPE	Steep on both sides
EROSION	No
OTHER	Pale brown tinge, mostly clear, very slight organic odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	25.3
DO (mg/L)	4.77
DO (%S)	58.4
CONDUCTIVITY (µS/cm)	1563
pH	7.27
REDOX (mV)	125.3
TURBIDITY (NTU)	301.0

HYDROLOGICAL DATA

FLOW MEASUREMENT	Slight, 0.1 m/s
CROSS SECTION WIDTH (m)	5
DEPTH (m)	<1
OTHER	

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	22/01/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSDS
PROJECT NAME:	M12 Motorway	DATE:	19/01/2024
CLIENT:	Transport for NSW	TIME:	14:03
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8577639732644, 150.731566376734		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs in channel
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale brown, slightly turbid, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	24.8
DO (mg/L)	6.18
DO (%S)	74.7
CONDUCTIVITY (µS/cm)	923
pH	7.91
REDOX (mV)	73.8
TURBIDITY (NTU)	412.8

HYDROLOGICAL DATA

FLOW MEASUREMENT	0.05m/s
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	>1
OTHER	Water level higher than recent previous events

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	22/01/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSUS
PROJECT NAME:	M12 Motorway	DATE:	19/01/2024
CLIENT:	Transport for NSW	TIME:	13:48
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8591244435897, 150.730778119769		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs along channel bank
SLOPE	Steep bank slope
EROSION	None
OTHER	Pale brown, slightly turbid, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	26.6
DO (mg/L)	6.14
DO (%S)	78.7
CONDUCTIVITY (µS/cm)	1001
pH	8.02
REDOX (mV)	46.3
TURBIDITY (NTU)	290.0

HYDROLOGICAL DATA

FLOW MEASUREMENT	0.25m/s
CROSS SECTION WIDTH (m)	<3
DEPTH (m)	>1
OTHER	Bubbles on surface, flow is faster and higher water level than recent previous events.

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		22/01/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINDS
PROJECT NAME:	M12 Motorway	DATE:	18/01/2024
CLIENT:	Transport for NSW	TIME:	12:00
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8940830508509, 150.841996280799		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	Grass, some algae like substance on surface
SLOPE	Moderate
EROSION	No
OTHER	Pale yellow tinge, mostly clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	29.9
DO (mg/L)	8.20
DO (%S)	107.9
CONDUCTIVITY (µS/cm)	717
pH	7.54
REDOX (mV)	120.3
TURBIDITY (NTU)	65.5
Field measurements taken from cup. High temperature confirmed, seems reasonable, YSI unable to reach water body.	

HYDROLOGICAL DATA

FLOW MEASUREMENT	None, pond
CROSS SECTION WIDTH (m)	200
DEPTH (m)	>0.5
OTHER	Still quite low water level, comparable to recent monitoring rounds.

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINDS	11	Yes	SWDUP1	ALS metals
SWDUP1	1	Yes		
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		22/01/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINUS
PROJECT NAME:	M12 Motorway	DATE:	18/01/2024
CLIENT:	Transport for NSW	TIME:	1:16
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8859180110884, 150.822297560835		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	Reeds in pond
SLOPE	Shallow bank slope
EROSION	None
OTHER	Pale brown tinge, mostly clear, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	30.1
DO (mg/L)	9.64
DO (%S)	124.7
CONDUCTIVITY (µS/cm)	897
pH	7.88
REDOX (mV)	70.0
TURBIDITY (NTU)	114.1
Confirmed temperature of water	was correct and reasonable given hot weather.

HYDROLOGICAL DATA

FLOW MEASUREMENT	None, pond
CROSS SECTION WIDTH (m)	50
DEPTH (m)	<2
OTHER	

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINUS	11	Yes	No	Realised next day one sample container not filled, so filled with half of the chlorophyll bottle.
FIELD SUPERVISOR	E. Smith		CHECKED (SIGN & DATE)	22/01/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMDS
PROJECT NAME:	M12 Motorway	DATE:	18/01/2024
CLIENT:	Transport for NSW	TIME:	8:14
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8744916131181, 150.798975039418		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	Shrubs
SLOPE	Shallow blank slope
EROSION	None
OTHER	Pale yellow-brown, mostly clear, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	22.4
DO (mg/L)	5.38
DO (%S)	62.1
CONDUCTIVITY (µS/cm)	795
pH	7.17
REDOX (mV)	103.1
TURBIDITY (NTU)	160.1

HYDROLOGICAL DATA

FLOW MEASUREMENT	0.5m/s
CROSS SECTION WIDTH (m)	>15
DEPTH (m)	<3
OTHER	Higher water level than usual, faster flow, likely due to 15mm rain recorded yesterday.

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		22/01/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMUS
PROJECT NAME:	M12 Motorway	DATE:	18/01/2024
CLIENT:	Transport for NSW	TIME:	14:00
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.881000984653, 150.798710837019		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny, hot
VEGETATION	Trees overhanging, various weeds on banks and in water
SLOPE	Slight
EROSION	No
OTHER	Pale yellow-brown tinge, mostly clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	23.7
DO (mg/L)	5.62
DO (%S)	66.5
CONDUCTIVITY (µS/cm)	827
pH	7.43
REDOX (mV)	105.6
TURBIDITY (NTU)	193.0

HYDROLOGICAL DATA

FLOW MEASUREMENT	Fast, 0.3 m/s in centre of stream.
CROSS SECTION WIDTH (m)	6.5
DEPTH (m)	<1
OTHER	Higher water level than usual, faster flow, likely due to 15mm rain recorded yesterday.

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		22/01/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPDS
PROJECT NAME:	M12 Motorway	DATE:	18/01/2024
CLIENT:	Transport for NSW	TIME:	8:37
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8661224552491, 150.846223930042		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Reeds in channel
SLOPE	Shallow bank slope
EROSION	None
OTHER	Pale brown tinge, mostly clear, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	22.2
DO (mg/L)	6.05
DO (%S)	70.3
CONDUCTIVITY (µS/cm)	802
pH	7.45
REDOX (mV)	117.1
TURBIDITY (NTU)	195.0

HYDROLOGICAL DATA

FLOW MEASUREMENT	None
CROSS SECTION WIDTH (m)	<10
DEPTH (m)	<2
OTHER	

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)	22/01/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPUS
PROJECT NAME:	M12 Motorway	DATE:	18/01/2024
CLIENT:	Transport for NSW	TIME:	9:25
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8661455977709, 150.849947853536		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Reeds in pond
SLOPE	Shallow bank slope
EROSION	None
OTHER	Pale yellow-tinge, mostly clear, no odour, no sheen,

FIELD MEASUREMENTS

TEMPERATURE (°C)	26.2
DO (mg/L)	5.10
DO (%S)	63.0
CONDUCTIVITY (µS/cm)	392
pH	7.11
REDOX (mV)	129.7
TURBIDITY (NTU)	192.3
Field measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	None, pond
CROSS SECTION WIDTH (m)	>50
DEPTH (m)	<1
OTHER	

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPUS	12	Yes	No	1x Filtered metals
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		22/01/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUDS
PROJECT NAME:	M12 Motorway	DATE:	18/01/2024
CLIENT:	Transport for NSW	TIME:	14:26
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8599738161994, 150.768342269711		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Reeds and shrubs in channel
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale brown tinge, mostly clear, no odour, no sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	24.7
DO (mg/L)	5.92
DO (%S)	71.2
CONDUCTIVITY (µS/cm)	880
pH	7.37
REDOX (mV)	122.1
TURBIDITY (NTU)	131.2

HYDROLOGICAL DATA

FLOW MEASUREMENT	0.1m/s, Surface current appears to flow slightly upstream, possibly due wind
CROSS SECTION WIDTH (m)	
DEPTH (m)	>3
OTHER	Water level higher, volume larger than recent previous events

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUDS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		22/01/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUUS
PROJECT NAME:	M12 Motorway	DATE:	18/01/2024
CLIENT:	Transport for NSW	TIME:	14:12
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8615835511328, 150.771191612714		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale brown tinge, mostly clear, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	24.6
DO (mg/L)	5.94
DO (%S)	71.4
CONDUCTIVITY (µS/cm)	785
pH	7.31
REDOX (mV)	124.4
TURBIDITY (NTU)	198.3

HYDROLOGICAL DATA

FLOW MEASUREMENT	1m/s, very fast
CROSS SECTION WIDTH (m)	<20
DEPTH (m)	>3
OTHER	Higher water level and larger volume than recent previous events Construction vehicles crossing creek upstream with moderate depth

Suspected YSI is sensitive to turbidity, high concentrations reported across locations even though water appears only slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUUS	11	Yes	No	
FIELD SUPERVISOR	E. Smith	CHECKED (SIGN & DATE)		22/01/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADDS
PROJECT NAME:	M12 Motorway	DATE:	13/02/2024
CLIENT:	Transport for NSW	TIME:	13:30
SITE:	M12 - West	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.8568835914728, 150.758225429572		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs alongside channel
SLOPE	Moderate bank slope
EROSION	None
OTHER	Light brown tinge, cloudy, no odour, slight green organic scum on surface

FIELD MEASUREMENTS

TEMPERATURE (°C)	23.2
DO (mg/L)	3.11
DO (%S)	36.4
CONDUCTIVITY (µS/cm)	1060
pH	7.03
REDOX (mV)	116.7
TURBIDITY (NTU)	237.4

HYDROLOGICAL DATA

FLOW MEASUREMENT	None, stagnant
CROSS SECTION WIDTH (m)	<10
DEPTH (m)	<2
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADDS	11	Yes	SWDUP1	
SWDUP1	1	Yes		ALS Metals
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	15/02/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADMS
PROJECT NAME:	M12 Motorway	DATE:	13/02/2024
CLIENT:	Transport for NSW	TIME:	13:14
SITE:	M12 - West	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.859570548753, 150.755008849199		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Midstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs and trees overhanging channel
SLOPE	Moderate bank slope
EROSION	None
OTHER	Light brown tinge, cloudy, no odour, slight green scum on surface

FIELD MEASUREMENTS

TEMPERATURE (°C)	22.6
DO (mg/L)	3.38
DO (%S)	38.9
CONDUCTIVITY (µS/cm)	1040
pH	6.98
REDOX (mV)	57.3
TURBIDITY (NTU)	184.8

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, no flow
CROSS SECTION WIDTH (m)	<10
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADMS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)		15/02/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADUS
PROJECT NAME:	M12 Motorway	DATE:	13/02/2024
CLIENT:	Transport for NSW	TIME:	13:59
SITE:	M12 - West	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.8737203925534, 150.754842952782		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Cleared, vegetation has been cleared in past month and replaced with hessian netting on both bank slopes
SLOPE	Gentle
EROSION	None
OTHER	Light brown, cloudy, no odour, very slight organic scum on surface

FIELD MEASUREMENTS

TEMPERATURE (°C)	28.5
DO (mg/L)	10.90
DO (%S)	141.5
CONDUCTIVITY (µS/cm)	1136
pH	7.49
REDOX (mV)	97.3
TURBIDITY (NTU)	152.8

HYDROLOGICAL DATA

FLOW MEASUREMENT	~0.01m/s, very slight
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADUS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)		15/02/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSDS
PROJECT NAME:	M12 Motorway	DATE:	13/02/2024
CLIENT:	Transport for NSW	TIME:	12:08
SITE:	M12 - West	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.8577639732644, 150.731566376734		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs on channel bank
SLOPE	Moderate bank slope
EROSION	None
OTHER	Light brown tinge, slightly cloudy, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	22.9
DO (mg/L)	5.24
DO (%S)	61.1
CONDUCTIVITY (µS/cm)	1231
pH	7.22
REDOX (mV)	91.4
TURBIDITY (NTU)	71.7

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, no flow
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	<2
OTHER	Large fish visible in channel

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSDS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)		15/02/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSUS
PROJECT NAME:	M12 Motorway	DATE:	13/02/2024
CLIENT:	Transport for NSW	TIME:	11:47
SITE:	M12 - West	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.8591244435897, 150.730778119769		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs on channel bank
SLOPE	Moderate bank slope
EROSION	None
OTHER	Clear, slightly cloudy, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	23.8
DO (mg/L)	6.26
DO (%S)	74.2
CONDUCTIVITY (µS/cm)	1271
pH	7.36
REDOX (mV)	72.0
TURBIDITY (NTU)	26.6
Readings taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	~0.1m/s
CROSS SECTION WIDTH (m)	<3
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSUS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	15/02/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINDS
PROJECT NAME:	M12 Motorway	DATE:	14/02/2024
CLIENT:	Transport for NSW	TIME:	9:27
SITE:	M12 - East	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.8940830508509, 150.841996280799		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Grasses surrounding pond
SLOPE	Gentle surrounding pond
EROSION	None
OTHER	Pale brown tinge, clear, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	25.9
DO (mg/L)	8.65
DO (%S)	106.9
CONDUCTIVITY (µS/cm)	731
pH	8.29
REDOX (mV)	74.8
TURBIDITY (NTU)	11.2

HYDROLOGICAL DATA

FLOW MEASUREMENT	None, pond
CROSS SECTION WIDTH (m)	>50
DEPTH (m)	<2
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINDS	11	Yes	SWDUP2	
SWDUP2	1	Yes		Eurofins Metals
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)		15/02/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINUS
PROJECT NAME:	M12 Motorway	DATE:	14/02/2024
CLIENT:	Transport for NSW	TIME:	12:24
SITE:	M12 - East	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.8859180110884, 150.822297560835		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Reeds in channel
SLOPE	Shallow, pond
EROSION	None
OTHER	Pale brown tinge, mostly clear, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	27.4
DO (mg/L)	8.29
DO (%S)	105.5
CONDUCTIVITY (µS/cm)	1010
pH	7.88
REDOX (mV)	18.0
TURBIDITY (NTU)	41.2

HYDROLOGICAL DATA

FLOW MEASUREMENT	No flow, pond
CROSS SECTION WIDTH (m)	<50
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINUS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	15/02/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMDS
PROJECT NAME:	M12 Motorway	DATE:	14/02/2024
CLIENT:	Transport for NSW	TIME:	7:43
SITE:	M12 - Central	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.8744916131181, 150.798975039418		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs and trees within channel
SLOPE	Shallow bank slope
EROSION	None
OTHER	Brown tinge, cloudy, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	23.0
DO (mg/L)	4.83
DO (%S)	56.5
CONDUCTIVITY (µS/cm)	1110
pH	7.24
REDOX (mV)	67.8
TURBIDITY (NTU)	104.2

HYDROLOGICAL DATA

FLOW MEASUREMENT	~0.2m/s
CROSS SECTION WIDTH (m)	<10
DEPTH (m)	<2
OTHER	Flow rate faster and volume larger than normal, similar to last month

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMDS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)		15/02/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMUS
PROJECT NAME:	M12 Motorway	DATE:	14/02/2024
CLIENT:	Transport for NSW	TIME:	12:43
SITE:	M12 - Central	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.881000984653, 150.798710837019		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs and tress in channel
SLOPE	Gentle bank slope
EROSION	None
OTHER	Pale brown tinge, mostly clear, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	23.0
DO (mg/L)	5.05
DO (%S)	55.8
CONDUCTIVITY (µS/cm)	809
pH	7.26
REDOX (mV)	66.2
TURBIDITY (NTU)	83.6

HYDROLOGICAL DATA

FLOW MEASUREMENT	~0.1m/s
CROSS SECTION WIDTH (m)	<10
DEPTH (m)	<2
OTHER	Water flow faster and volume larger than normal

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMUS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)		15/02/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPDS
PROJECT NAME:	M12 Motorway	DATE:	14/02/2024
CLIENT:	Transport for NSW	TIME:	8:11
SITE:	M12 - East	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.8661224552491, 150.846223930042		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Reeds in channel
SLOPE	Shallow bank slope
EROSION	None
OTHER	Clear, no odour, no sheen, no sediment

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.9
DO (mg/L)	2.64
DO (%S)	29.6
CONDUCTIVITY (µS/cm)	1705
pH	7.29
REDOX (mV)	90.4
TURBIDITY (NTU)	28.9
Measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	No flow
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	<2
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPDS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)		15/02/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPUS
PROJECT NAME:	M12 Motorway	DATE:	14/02/2024
CLIENT:	Transport for NSW	TIME:	8:49
SITE:	M12 - East	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.8661455977709, 150.849947853536		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Reeds in pond
SLOPE	Gentle surrounding pond
EROSION	None
OTHER	Yellow brown tinge, slightly cloudy, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	24.3
DO (mg/L)	3.90
DO (%S)	47.0
CONDUCTIVITY (µS/cm)	438
pH	6.90
REDOX (mV)	-11.7
TURBIDITY (NTU)	64.3

HYDROLOGICAL DATA

FLOW MEASUREMENT	None, pond
CROSS SECTION WIDTH (m)	<50, pond
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPUS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)		15/02/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUDS
PROJECT NAME:	M12 Motorway	DATE:	14/02/2024
CLIENT:	Transport for NSW	TIME:	13:19
SITE:	M12 - Central	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.8599738161994, 150.768342269711		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Reeds and grasses on channel bank
SLOPE	Gentle bank slope
EROSION	None
OTHER	Pale yellow tinge, clear, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	28.6
DO (mg/L)	10.42
DO (%S)	135.0
CONDUCTIVITY (µS/cm)	887
pH	7.92
REDOX (mV)	76.4
TURBIDITY (NTU)	40.5
Measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	None to very slight
CROSS SECTION WIDTH (m)	<15
DEPTH (m)	<2
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUDS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)		15/02/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUUS
PROJECT NAME:	M12 Motorway	DATE:	14/02/2024
CLIENT:	Transport for NSW	TIME:	13:03
SITE:	M12 - Central	LOGGED BY:	A. Duval, J. Miller
COORDINATES/GPS (if applicable)	-33.8615835511328, 150.771191612714		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Grasses and shrubs on channel bank
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale brown tinge, clear, no odour, no sheen, no sediment

FIELD MEASUREMENTS

TEMPERATURE (°C)	23.6
DO (mg/L)	4.53
DO (%S)	53.4
CONDUCTIVITY (µS/cm)	725
pH	7.16
REDOX (mV)	71.8
TURBIDITY (NTU)	41.2

HYDROLOGICAL DATA

FLOW MEASUREMENT	0.05m/s
CROSS SECTION WIDTH (m)	<15
DEPTH (m)	<2
OTHER	Sampled from left bank due to access constraints on right bank

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUUS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)		15/02/2024



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADDS
PROJECT NAME:	M12 Motorway	DATE:	15/03/2024
CLIENT:	Transport for NSW	TIME:	12:16
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8568835914728, 150.758225429572		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs
SLOPE	Shallow bank slope
EROSION	None
OTHER	

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.3
DO (mg/L)	4.52
DO (%S)	50.7
CONDUCTIVITY (µS/cm)	903
pH	7.17
REDOX (mV)	92.2
TURBIDITY (NTU)	38.9

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	<1
OTHER	Volume and level appears lower than previous round

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADDS	11	Yes	SWDUP1	
SWDUP1	1	Yes		ALS Metals
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADMS
PROJECT NAME:	M12 Motorway	DATE:	15/03/2024
CLIENT:	Transport for NSW	TIME:	12:00
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.859570548753, 150.755008849199		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Midstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Trees overhanging creek, some weeds in water
SLOPE	Moderate on both sides
EROSION	No
OTHER	Pale yellow-brown, mostly clear, no odour

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.5
DO (mg/L)	4.31
DO (%S)	48.7
CONDUCTIVITY (µS/cm)	992
pH	7.18
REDOX (mV)	71.1
TURBIDITY (NTU)	50.3

HYDROLOGICAL DATA

FLOW MEASUREMENT	Extremely slight, <0.01 m/s
CROSS SECTION WIDTH (m)	6
DEPTH (m)	<1
OTHER	Water looks slightly turbid

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADMS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	BADUS
PROJECT NAME:	M12 Motorway	DATE:	15/03/2024
CLIENT:	Transport for NSW	TIME:	16:45
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8737203925534, 150.754842952782		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Badgery's Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	None on bank slope
SLOPE	Moderate bank slope
EROSION	None
OTHER	Pale green tinge, no odour, no sheen, green algae within channel

FIELD MEASUREMENTS

TEMPERATURE (°C)	22.1
DO (mg/L)	7.08
DO (%S)	81.4
CONDUCTIVITY (µS/cm)	864
pH	7.30
REDOX (mV)	75.7
TURBIDITY (NTU)	17.0

HYDROLOGICAL DATA

FLOW MEASUREMENT	0.05m/s
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	<0.2
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
BADUS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSDS
PROJECT NAME:	M12 Motorway	DATE:	15/03/2024
CLIENT:	Transport for NSW	TIME:	16:04
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8577639732644, 150.731566376734		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs overhanging
SLOPE	Steep bank slope
EROSION	None
OTHER	Mostly clear, pale yellow tinge, slight organic/earthy odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.8
DO (mg/L)	6.34
DO (%S)	72.4
CONDUCTIVITY (µS/cm)	963
pH	7.58
REDOX (mV)	80.9
TURBIDITY (NTU)	21.2
Measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	0.02m/s
CROSS SECTION WIDTH (m)	<5
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSDS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	COSUS
PROJECT NAME:	M12 Motorway	DATE:	15/03/2024
CLIENT:	Transport for NSW	TIME:	15:52
SITE:	M12 - West	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8591244435897, 150.730778119769		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Cosgroves Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	None
SLOPE	Steep bank slope
EROSION	Shrubs
OTHER	Mostly clear, pale yellow tinge, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.4
DO (mg/L)	5.74
DO (%S)	65.0
CONDUCTIVITY (µS/cm)	1071
pH	7.37
REDOX (mV)	52.1
TURBIDITY (NTU)	2.5
Measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	Slight, 0.01m/s
CROSS SECTION WIDTH (m)	<3
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
COSUS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINDS
PROJECT NAME:	M12 Motorway	DATE:	14/03/2024
CLIENT:	Transport for NSW	TIME:	10:41
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8940830508509, 150.841996280799		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Grasses on pond bank
SLOPE	Moderate bank slope
EROSION	None
OTHER	Green-brown tinge, mostly clear, strong organic odour, organic scum

FIELD MEASUREMENTS

TEMPERATURE (°C)	26.2
DO (mg/L)	8.02
DO (%S)	99.5
CONDUCTIVITY (µS/cm)	806
pH	8.01
REDOX (mV)	87.7
TURBIDITY (NTU)	2.9

HYDROLOGICAL DATA

FLOW MEASUREMENT	Pond, stagnant
CROSS SECTION WIDTH (m)	>50
DEPTH (m)	>1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINDS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	HINUS
PROJECT NAME:	M12 Motorway	DATE:	14/03/2024
CLIENT:	Transport for NSW	TIME:	13:03
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8859180110884, 150.822297560835		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Hinchinbrook Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs surrounding pond
SLOPE	Shallow pond bank slope
EROSION	None
OTHER	Yellow brown tinge, mostly clear, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	31.6
DO (mg/L)	7.51
DO (%S)	102.6
CONDUCTIVITY (µS/cm)	1277
pH	7.78
REDOX (mV)	94.2
TURBIDITY (NTU)	9.1
Measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	None, pond
CROSS SECTION WIDTH (m)	>30
DEPTH (m)	<0.5
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
HINUS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMDS
PROJECT NAME:	M12 Motorway	DATE:	14/03/2024
CLIENT:	Transport for NSW	TIME:	8:25
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8744916131181, 150.798975039418		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs alongside channel bank
SLOPE	Shallow to moderate bank slope
EROSION	None
OTHER	Pale yellow tinge, mostly clear, no odour, no sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.2
DO (mg/L)	3.34
DO (%S)	37.7
CONDUCTIVITY (µS/cm)	1356
pH	7.08
REDOX (mV)	7.1
TURBIDITY (NTU)	58.7

HYDROLOGICAL DATA

FLOW MEASUREMENT	Stagnant, no flow
CROSS SECTION WIDTH (m)	<3
DEPTH (m)	<0.5
OTHER	Organic scum on surface upstream

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMDS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	KEMUS
PROJECT NAME:	M12 Motorway	DATE:	14/03/2024
CLIENT:	Transport for NSW	TIME:	
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.881000984653, 150.798710837019		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Kemps Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Shrubs overhanging channel
SLOPE	Shallow bank slope
EROSION	None
OTHER	Very green tinge, mostly clear, no odour, green organic sheen

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.6
DO (mg/L)	4.00
DO (%S)	45.7
CONDUCTIVITY (µS/cm)	1459
pH	7.22
REDOX (mV)	103.9
TURBIDITY (NTU)	103.9

HYDROLOGICAL DATA

FLOW MEASUREMENT	Very slight, 0.005m/s
CROSS SECTION WIDTH (m)	<10
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
KEMUS	11	Yes	SWDUP2	
SWDUP2	1	Yes		Eurofins Metals
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPDS
PROJECT NAME:	M12 Motorway	DATE:	14/03/2024
CLIENT:	Transport for NSW	TIME:	
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8661224552491, 150.846223930042		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Reeds in water, long grass
SLOPE	Steep on roadside
EROSION	None
OTHER	Pale yellow-green tinge, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	19.1
DO (mg/L)	3.23
DO (%S)	35.0
CONDUCTIVITY (µS/cm)	2754
pH	7.29
REDOX (mV)	97.5
TURBIDITY (NTU)	4.6

HYDROLOGICAL DATA

FLOW MEASUREMENT	No flow
CROSS SECTION WIDTH (m)	6
DEPTH (m)	<1
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPDS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	ROPUS
PROJECT NAME:	M12 Motorway	DATE:	14/03/2024
CLIENT:	Transport for NSW	TIME:	9:30
SITE:	M12 - East	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8661455977709, 150.849947853536		
SAMPLING METHOD (ie grab, bucket)			
DETAILED SAMPLE LOCATION DESCRIPTION	Ropes Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	
SLOPE	
EROSION	
OTHER	No access. John Holland earthworks preventing access

FIELD MEASUREMENTS

TEMPERATURE (°C)	
DO (mg/L)	
DO (%S)	
CONDUCTIVITY (µS/cm)	
pH	
REDOX (mV)	
TURBIDITY (NTU)	

HYDROLOGICAL DATA

FLOW MEASUREMENT	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
ROPUS				
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUDS
PROJECT NAME:	M12 Motorway	DATE:	14/03/2024
CLIENT:	Transport for NSW	TIME:	14:20
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8599738161994, 150.768342269711		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Downstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear
VEGETATION	Long grass on bankm some weed growths in water at edges
SLOPE	Steep on both sides, clear drop off point
EROSION	No
OTHER	Pale yellow-green tinge, slightly cloudy, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	28.7
DO (mg/L)	10.40
DO (%S)	134.9
CONDUCTIVITY (µS/cm)	1109
pH	8.39
REDOX (mV)	110.3
TURBIDITY (NTU)	33.9
Measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	No obvious flow, wind blowing water at surface upstream
CROSS SECTION WIDTH (m)	20
DEPTH (m)	>1
OTHER	Lower water level than usual

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUDS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	



SURFACE WATER SAMPLING RECORD

PROJECT NO.	12554717	SURFACE WATER ID:	SOUUS
PROJECT NAME:	M12 Motorway	DATE:	14/03/2024
CLIENT:	Transport for NSW	TIME:	14:00
SITE:	M12 - Central	LOGGED BY:	E. Smith / A. Duval
COORDINATES/GPS (if applicable)	-33.8615835511328, 150.771191612714		
SAMPLING METHOD (ie grab, bucket)	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	South Creek - Upstream		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Clear, warm summer day
VEGETATION	Long grass and weeds on bank, spiky weeds
SLOPE	Steep on both sides
EROSION	No
OTHER	Pale yellow tinge, mostly clear, no odour or sheen.

FIELD MEASUREMENTS

TEMPERATURE (°C)	27.1
DO (mg/L)	7.78
DO (%S)	98.3
CONDUCTIVITY (µS/cm)	1067
pH	7.60
REDOX (mV)	89.5
TURBIDITY (NTU)	14.9
Measurements taken from cup	

HYDROLOGICAL DATA

FLOW MEASUREMENT	Very slight, 0.01 m/s
CROSS SECTION WIDTH (m)	12
DEPTH (m)	>1
OTHER	Much lower water level than previous rounds, consistent with low rainfall

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SOUUS	11	Yes	No	
FIELD SUPERVISOR	Andrew Duval	CHECKED (SIGN & DATE)	A. Duval 18/03/2024	

Appendix G

Laboratory reports



CHAIN OF CUSTODY

ALS Laboratory
please tick →

Subcon: Lab / Split WO:

Lab / Analysis: Perfor - 50017

Organic: 440012

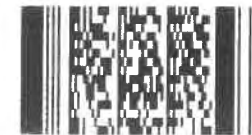
Relinquish: to / date:

Environmental Division
Sydney

Work Order Reference

ES2334428

CLIENT: GHD Pty Ltd	Connect: ☐ Standard TAT (List due date):	STANDARD TAT
OFFICE: Sydney	WO No: <u>440012</u>	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):
PROJECT: M12 Surface Water	ALS QUOTE NO: <u>SY/322/21</u>	COC SEQUENCE NUMBER (Circle)
ORDER NUMBER: 12554717		COC: 1 2 3 4 5 6 7
PROJECT MANAGER: Henry Luo	CONTACT PH: Henry Luo 0414 090 002	OF: 1 2 3 4 5 6 7
SAMPLER: Emily Smith, Terry Nham	SAMPLER MOBILE: 0431 522 928	RECEIVED BY: <u>Jack</u>
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): ESDAT	DATE/TIME: <u>06/10/23 1615</u>
Email Reports to: henry.luo@ghd.com, ghdlabreports@ghd.com; terry.nham@ghd.com, emily.smith@ghd.com; andrew.duval@ghd.com	DATE/TIME: 6-10-2023 16:15	DATE/TIME:



Telephone: +61-2-8784 8555

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please use separate workorders for the M12 Groundwater and M12 Surface Water COCs provided

ALS USE	SAMPLE DETAILS		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									
	SAMPLE ID	MATRIX: SOLID (S) WATER (W)												
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Comments	TOTAL CONTAINERS	4027 (3 sec) (mL)	4027 (3 sec) (mL)	4027 (3 sec) (mL)	4027 (3 sec) (mL)	4027 (3 sec) (mL)	4027 (3 sec) (mL)	4027 (3 sec) (mL)	4027 (3 sec) (mL)	4027 (3 sec) (mL)
1	BADDS	6/10/2023	Water		11	X	X	X	X	X	X	X	X	X
2	BADMS	6/10/2023	Water		11	X	X	X	X	X	X	X	X	X
3	BADUS	6/10/2023	Water		11	X	X	X	X	X	X	X	X	X
4	COSDS	6/10/2023	Water		11	X	X	X	X	X	X	X	X	X
5	COSUS	6/10/2023	Water		11	X	X	X	X	X	X	X	X	X
6	HINDS	4/10/2023	Water		11	X	X	X	X	X	X	X	X	X
7	HINUS	4/10/2023	Water		11	X	X	X	X	X	X	X	X	X
8	KEMDS	4/10/2023	Water		11	X	X	X	X	X	X	X	X	X
9	KEMUS	4/10/2023	Water		11	X	X	X	X	X	X	X	X	X
10	ROPDS	4/10/2023	Water		11	X	X	X	X	X	X	X	X	X
11	ROPUS	4/10/2023	Water		11	X	X	X	X	X	X	X	X	X
12	SOUDS	4/10/2023	Water		11	X	X	X	X	X	X	X	X	X
13	SOUSUS	4/10/2023	Water		11	X	X	X	X	X	X	X	X	X
14	RWDUP1	4/10/2023	Water		1	X								
15	RWDUP2	4/10/2023	Water	PLEASE FORWARD TO REMARKS WITH ATTACHMENT	1									
16	GWDUP2	6/10/2023	Water	PLEASE FORWARD TO REMARKS WITH ATTACHMENT	1									

HT

URGENT

Brandon 10/10/23 1:55 4-5

1033274

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd, Sydney	Contact Name : Emily Smith 0431 522 928	Purchase Order : 12551717	COC Number :
Office Address :	Project Manager: Henry Luo 0434 090 002	PROJECT Number : 12554717	Eurofins mgt quote ID :
Level 15, 133 Castlereagh Street, Sydney NSW 2000	Email for results : emily.smith@ghd.com; terry.nham@ghd.com; henry.luo@ghd.com; esdat+ghd_au@esdatlabsync.net	PROJECT Name : M12 Water Sampling	Data output format: ESDAT

Special Directions & Comments :				Analytes						Some common holding times (with correct preservation). For further information contact the lab								
				Dissolved metals	Total metals	Waters				Soils								
						BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days									
Sent from ALS										TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days					
										Heavy Metals	6 months	Heavy Metals	6 months					
										Mercury, CrVI	28 days	Mercury, CrVI	28 days					
										Microbiological testing	24 hours	Microbiological testing	72 hours					
										BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days					
										Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours					
										Ferrous iron	7 days	ASLP, TCLP	7 days					
Eurofins mgt DI water batch number:																		
Sample ID	Date	Matrix								Containers:								Sample comments:
										500P	250P	60P	1LA	40mL vial	200mL A	Jar	Bag	
1	SWDUP2	06/10/2023	Water		X								1					
2	GWDUP2	06/10/2023	Water	X									1					
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Relinquished By: Emily Smith	Laboratory Staff		Method Of Shipment		Temperature on arrival:
Date & Time : 06-10-2023 16:15	Received By:	☐ Courier ☐ Hand Delivered ☐ Postal Courier Consignment # :		Report number:	
Signature: esmith	Signature:				

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 Tel: +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 Tel: +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 Tel: +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 Tel: +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 Tel: +61 7 3902 4600 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 Tel: +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Christchurch	Tauranga
35 O'Rourke Road Penrose, Auckland 1061 Tel: +64 9 526 4551 IANZ# 1327	43 Detroit Drive Rolleston, Christchurch 7675 Tel: +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 Tel: +64 9 525 0568 IANZ# 1402

Sample Receipt Advice

Company name:	GHD Pty Ltd NSW
Contact name:	Henry Luo
Project name:	M12 WATER SAMPLING
Project ID:	12554717
Turnaround time:	5 Day
Date/Time received	Oct 10, 2023 1:55 PM
Eurofins reference	1033274

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : 4.5 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Bonnie Pu on phone : or by email: BonniePu@eurofins.com

Results will be delivered electronically via email to Henry Luo - henry.luo@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.



Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 Tel: +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 Tel: +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 Tel: +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 Tel: +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 Tel: +61 7 3902 4600 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 Tel: +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Christchurch	Tauranga
35 O'Rorke Road Penrose, Auckland 1061 Tel: +64 9 526 4551 IANZ# 1327	43 Detroit Drive Rolleston, Christchurch 7675 Tel: +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 Tel: +64 9 525 0568 IANZ# 1402

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: M12 WATER SAMPLING
Project ID: 12554717

Order No.:
Report #: 1033274
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Oct 10, 2023 1:55 PM
Due: Oct 16, 2023
Priority: 5 Day
Contact Name: Henry Luo

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Metals M8	Metals M8 filtered
						X	X
Sydney Laboratory - NATA # 1261 Site # 18217							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	SWDUP2	Oct 04, 2023		Water	S23-Oc0020102	X	
2	GWDUP2	Oct 06, 2023		Water	S23-Oc0020103		X
Test Counts						1	1

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Henry Luo

Report 1033274-W
Project name M12 WATER SAMPLING
Project ID 12554717
Received Date Oct 10, 2023

Client Sample ID			SWDUP2	GWDUP2
Sample Matrix			Water	Water
Eurofins Sample No.			S23- Oc0020102	S23- Oc0020103
Date Sampled			Oct 04, 2023	Oct 06, 2023
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	0.001	mg/L	0.001	-
Arsenic (filtered)	0.001	mg/L	-	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	-
Cadmium (filtered)	0.0002	mg/L	-	< 0.0002
Chromium	0.001	mg/L	< 0.001	-
Chromium (filtered)	0.001	mg/L	-	< 0.001
Copper	0.001	mg/L	0.006	-
Copper (filtered)	0.001	mg/L	-	0.003
Lead	0.001	mg/L	< 0.001	-
Lead (filtered)	0.001	mg/L	-	< 0.001
Mercury	0.0001	mg/L	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	-	< 0.0001
Nickel	0.001	mg/L	0.002	-
Nickel (filtered)	0.001	mg/L	-	0.006
Zinc	0.005	mg/L	0.020	-
Zinc (filtered)	0.005	mg/L	-	0.014

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Metals M8	Sydney	Oct 10, 2023	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M8 filtered	Sydney	Oct 10, 2023	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 Tel: +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 Tel: +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 Tel: +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 Tel: +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 Tel: +61 7 3902 4600 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 Tel: +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Perth
46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370

Auckland	Christchurch	Tauranga
35 O'Rorke Road Penrose, Auckland 1061 Tel: +64 9 526 4551 IANZ# 1327	43 Detroit Drive Rolleston, Christchurch 7675 Tel: +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 Tel: +64 9 525 0568 IANZ# 1402

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
 Sydney
 NSW 2000

Project Name: M12 WATER SAMPLING
Project ID: 12554717

Order No.:
Report #: 1033274
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Oct 10, 2023 1:55 PM
Due: Oct 16, 2023
Priority: 5 Day
Contact Name: Henry Luo

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Metals M8	Metals M8 filtered
						X	X
Sydney Laboratory - NATA # 1261 Site # 18217							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	SWDUP2	Oct 04, 2023		Water	S23-Oc0020102	X	
2	GWDUP2	Oct 06, 2023		Water	S23-Oc0020103		X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	µg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit		

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR: RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Heavy Metals									
Arsenic			mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)			mg/L	< 0.001			0.001	Pass	
Cadmium			mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)			mg/L	< 0.0002			0.0002	Pass	
Chromium			mg/L	< 0.001			0.001	Pass	
Chromium (filtered)			mg/L	< 0.001			0.001	Pass	
Copper			mg/L	< 0.001			0.001	Pass	
Copper (filtered)			mg/L	< 0.001			0.001	Pass	
Lead			mg/L	< 0.001			0.001	Pass	
Lead (filtered)			mg/L	< 0.001			0.001	Pass	
Mercury			mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)			mg/L	< 0.0001			0.0001	Pass	
Nickel			mg/L	< 0.001			0.001	Pass	
Nickel (filtered)			mg/L	< 0.001			0.001	Pass	
Zinc			mg/L	< 0.005			0.005	Pass	
Zinc (filtered)			mg/L	< 0.005			0.005	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	97			80-120	Pass	
Arsenic (filtered)			%	96			80-120	Pass	
Cadmium			%	96			80-120	Pass	
Cadmium (filtered)			%	91			80-120	Pass	
Chromium			%	98			80-120	Pass	
Chromium (filtered)			%	98			80-120	Pass	
Copper			%	98			80-120	Pass	
Copper (filtered)			%	95			80-120	Pass	
Lead			%	98			80-120	Pass	
Lead (filtered)			%	98			80-120	Pass	
Mercury			%	98			80-120	Pass	
Mercury (filtered)			%	99			80-120	Pass	
Nickel			%	96			80-120	Pass	
Nickel (filtered)			%	97			80-120	Pass	
Zinc			%	98			80-120	Pass	
Zinc (filtered)			%	95			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	N23-Oc0018535	NCP	%	96			75-125	Pass	
Cadmium	N23-Oc0018535	NCP	%	86			75-125	Pass	
Chromium	N23-Oc0018535	NCP	%	94			75-125	Pass	
Copper	N23-Oc0018535	NCP	%	91			75-125	Pass	
Lead	N23-Oc0018535	NCP	%	93			75-125	Pass	
Mercury	N23-Oc0018535	NCP	%	90			75-125	Pass	
Nickel	N23-Oc0018535	NCP	%	92			75-125	Pass	
Zinc	N23-Oc0018535	NCP	%	88			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S23-Oc0020148	NCP	%	99			75-125	Pass	
Cadmium (filtered)	S23-Oc0020148	NCP	%	88			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium (filtered)	S23-Oc0020148	NCP	%	92			75-125	Pass	
Copper (filtered)	S23-Oc0020148	NCP	%	88			75-125	Pass	
Lead (filtered)	S23-Oc0020148	NCP	%	90			75-125	Pass	
Mercury (filtered)	S23-Oc0020148	NCP	%	89			75-125	Pass	
Nickel (filtered)	S23-Oc0020148	NCP	%	88			75-125	Pass	
Zinc (filtered)	S23-Oc0020148	NCP	%	88			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	B23-Oc0013326	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	B23-Oc0013326	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	B23-Oc0013326	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	B23-Oc0013326	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	B23-Oc0013325	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	B23-Oc0013326	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	B23-Oc0013326	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	B23-Oc0013326	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S23-Oc0020050	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S23-Oc0020050	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S23-Oc0020050	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S23-Oc0020050	NCP	mg/L	0.001	0.001	4.4	30%	Pass	
Lead (filtered)	S23-Oc0020050	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S23-Oc0020050	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S23-Oc0020050	NCP	mg/L	0.001	0.002	16	30%	Pass	
Zinc (filtered)	S23-Oc0020050	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Bonnie Pu	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal
Mickael Ros	Senior Analyst-Metal



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

Environmental Division
Sydney

Work Order Reference

ES2338893



Telephone : + 61-2-9784 8555

N/A
N/A

Arany
13/11 10:50am
b.7

CLIENT: GHD Pty Ltd	TURNAROUND REQUIREMENT ☐ Standard TAT (List due date):	STANDARD TAT	FOR LAB
OFFICE: Sydney	(Standard TAT may be longer for some tests e.g., Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):		Custody S
PROJECT: M12 Surface Water	ALS QUOTE NO.: SY/322/21	COC SEQUENCE NUMBER (Circle)	Free ice / f
ORDER NUMBER: 12554717		COC: 1 2 3 4 5 6 7	Random S
PROJECT MANAGER: Henry Luo	CONTACT PH: Henry Luo 0414 090 002	OF: 1 2 3 4 5 6 7	Other com
SAMPLER: Emily Smith, Andrew Duval	SAMPLER MOBILE: 0431 522 928	RECEIVED BY: <i>Ashid</i>	RELINQUISH
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): ESDAT	DATE/TIME: 9/11/2023 - 4pm	DATE/TIME:
Email Reports to: emily.smith@ghd.com; henry.luo@ghd.com; andrew.duval@ghd.com; esdat+ghd_au@esdatlabsync.net			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please keep M12 Groundwater as a separate workorder to M12 Surface Water as per the COCs provided.

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).														
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Comments	TOTAL CONTAINERS	W-02T (8 total metals)	W-02AT (total P, Mn)	NT-00A (total H, No.2, N,3, NH3, Total P, reactive P)	EP-000 (chlorophyll a)	EP-010 (oil & grease)	UT-000W Ultra trace DO/DB	EP-010 DEFG (VOC - 16 organics, 14 aliphatics, 14 Aromatics, THM)	MW-000 (FCI Thermotolerant Coliforms)	W-10A (PAP/phenols)	EP-010A (TDS)	EP-010B (TSS)	EP-080 (BTEXH)	Ultra trace COP (EP-100A)	Super Ultra Trace (EP-100B)	EP-000 - full suite (EP-200X)
1	BADDS	8/11/2023	Water	HIT	11	X	X	X	X	X		X		X	X	X	X			
2	BADMS	8/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
3	BADUS	8/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
4	COSDS	8/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
5	COSUS	8/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
6	HINDS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
7	HINUS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
8	KEMDS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
9	KEMUS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
10	ROPDS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
11	ROPUS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
12	SODDS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
13	SODUS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X			
14	SWDUP1	8/11/2023	Water		1	X														
15	SWDUP2	9/11/2023	Water	PLEASE FORWARD TO EUROFINS WITH ATTACHED COC...	1															

1043528



ALS Laboratory:
please tick →

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:	Please keep M12 Groundwater as a separate workorder to M12 Surface Water as per the DOCs provided.

[illegible]

CLIENT DETAILS

Page 1 of 1

Company Name : GHD Pty Ltd Sydney	Contact Name : Emily Smith 0411 522 928	Purchase Order : 12554717	COC Number :
Office Address :	Project Manager: Henry Luo 0414 080 002	PROJECT Number : 12554717	Eurofins mgt quote ID :
Level 18, 133 Castlemaine Street, Sydney NSW 2000	Email for results : emily.smith@ghd.com; henry.luo@ghd.com; andrew.duval@ghd.com; esdat@ghd.au@esdatlabsync.net	PROJECT Name : M12 Water Sensing	Data output format: ESDAT

Analytes

Some common holding times (with correct preservation).
For further information contact the lab

Special Directions & Comments :								Waters		Soils	
								BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
								TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
								Heavy Metals	6 months	Heavy Metals	6 months
								Mercury, CrVI	28 days	Mercury, CrVI	28 days
								Microbiological testing	24 hours	Microbiological testing	72 hours
								BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
								Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
								Ferrous iron	7 days	ASLP, TCLP	7 days
								Eurofins I mgt DI water batch number:			

[illegible]

		Laboratory Staff		Method Of Shipment		Temperature on arrival:
Relinquished By: Andrew Duval	Received By:	☐ Courier ☐ Hand Delivered ☐ Postal				
Date & Time : 9/11/2023 - 4pm	Date & Time :					
Signature:	Signature:	Courier Consignment # :				Report number:

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 Tel: +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 Tel: +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 Tel: +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 Tel: +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 Tel: +61 7 3902 4600 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 Tel: +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Christchurch	Tauranga
35 O'Rourke Road Penrose, Auckland 1061 Tel: +64 9 526 4551 IANZ# 1327	43 Detroit Drive Rolleston, Christchurch 7675 Tel: +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 Tel: +64 9 525 0568 IANZ# 1402

Sample Receipt Advice

Company name:	GHD Pty Ltd NSW
Contact name:	Henry Luo
Project name:	M12 SURFACE WATER
Project ID:	12554717
Turnaround time:	5 Day
Date/Time received	Nov 13, 2023 10:50 AM
Eurofins reference	1043528

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : 6.7 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Bonnie Pu on phone : or by email: BonniePu@eurofins.com

Results will be delivered electronically via email to Henry Luo - henry.luo@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.



web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 Tel: +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 Tel: +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 Tel: +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 Tel: +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 Tel: +61 7 3902 4600 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 Tel: +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Christchurch	Tauranga
35 O'Rorke Road Penrose, Auckland 1061 Tel: +64 9 526 4551 IANZ# 1327	43 Detroit Drive Rolleston, Christchurch 7675 Tel: +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 Tel: +64 9 525 0568 IANZ# 1402

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: M12 SURFACE WATER
Project ID: 12554717

Order No.:
Report #: 1043528
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Nov 13, 2023 10:50 AM
Due: Nov 20, 2023
Priority: 5 Day
Contact Name: Henry Luo

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail

Metals M8

Metals M8 filtered

Sydney Laboratory - NATA # 1261 Site # 18217

External Laboratory

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	SWDUP2	Nov 09, 2023		Water	S23-No0029281	X	
2	GWDUP2	Nov 08, 2023		Water	S23-No0029282		X
Test Counts						1	1

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Henry Luo

Report 1043528-W
Project name M12 WATER SAMPLING
Project ID 12554717
Received Date Nov 13, 2023

Client Sample ID			SWDUP2	GWDUP2
Sample Matrix			Water	Water
Eurofins Sample No.			S23- No0029281	S23- No0029282
Date Sampled			Nov 09, 2023	Nov 08, 2023
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	0.001	mg/L	0.001	-
Arsenic (filtered)	0.001	mg/L	-	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	-
Cadmium (filtered)	0.0002	mg/L	-	< 0.0002
Chromium	0.001	mg/L	< 0.001	-
Chromium (filtered)	0.001	mg/L	-	< 0.001
Copper	0.001	mg/L	< 0.001	-
Copper (filtered)	0.001	mg/L	-	0.005
Lead	0.001	mg/L	< 0.001	-
Lead (filtered)	0.001	mg/L	-	< 0.001
Mercury	0.0001	mg/L	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	-	< 0.0001
Nickel	0.001	mg/L	< 0.001	-
Nickel (filtered)	0.001	mg/L	-	0.004
Zinc	0.005	mg/L	< 0.005	-
Zinc (filtered)	0.005	mg/L	-	0.012

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Nov 15, 2023	28 Days
Metals M8 filtered - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Nov 14, 2023	28 Days



Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 Tel: +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 Tel: +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 Tel: +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 Tel: +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 Tel: +61 7 3902 4600 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 Tel: +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Perth
46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370

Auckland	Christchurch	Tauranga
35 O'Rorke Road Penrose, Auckland 1061 Tel: +64 9 526 4551 IANZ# 1327	43 Detroit Drive Rolleston, Christchurch 7675 Tel: +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 Tel: +64 9 525 0568 IANZ# 1402

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: M12 WATER SAMPLING
Project ID: 12554717

Order No.: 12554717
Report #: 1043528
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Nov 13, 2023 10:50 AM
Due: Nov 20, 2023
Priority: 5 Day
Contact Name: Henry Luo

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail

Metals M8

Metals M8 filtered

Melbourne Laboratory - NATA # 1261 Site # 1254

Sydney Laboratory - NATA # 1261 Site # 18217

External Laboratory

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	SWDUP2	Nov 09, 2023		Water	S23-No0029281	X	
2	GWDUP2	Nov 08, 2023		Water	S23-No0029282		X

Test Counts

1

1

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry weight basis unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion unless otherwise stated.
- For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
- Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified in this report with blue colour indicates data provided by customers that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	µg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit		

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30%; however the following acceptance guidelines are equally

applicable: Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR: RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%

PFAS field samples that contain surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported, have been reviewed, and no data was affected.

QC Data General Comments

- Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Heavy Metals									
Arsenic			mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)			mg/L	< 0.001			0.001	Pass	
Cadmium			mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)			mg/L	< 0.0002			0.0002	Pass	
Chromium			mg/L	< 0.001			0.001	Pass	
Chromium (filtered)			mg/L	< 0.001			0.001	Pass	
Copper			mg/L	< 0.001			0.001	Pass	
Copper (filtered)			mg/L	< 0.001			0.001	Pass	
Lead			mg/L	< 0.001			0.001	Pass	
Lead (filtered)			mg/L	< 0.001			0.001	Pass	
Mercury			mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)			mg/L	< 0.0001			0.0001	Pass	
Nickel			mg/L	< 0.001			0.001	Pass	
Nickel (filtered)			mg/L	< 0.001			0.001	Pass	
Zinc			mg/L	< 0.005			0.005	Pass	
Zinc (filtered)			mg/L	< 0.005			0.005	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	101			80-120	Pass	
Arsenic (filtered)			%	96			80-120	Pass	
Cadmium			%	102			80-120	Pass	
Cadmium (filtered)			%	95			80-120	Pass	
Chromium			%	100			80-120	Pass	
Chromium (filtered)			%	95			80-120	Pass	
Copper			%	97			80-120	Pass	
Copper (filtered)			%	94			80-120	Pass	
Lead			%	100			80-120	Pass	
Lead (filtered)			%	96			80-120	Pass	
Mercury			%	108			80-120	Pass	
Mercury (filtered)			%	102			80-120	Pass	
Nickel			%	97			80-120	Pass	
Nickel (filtered)			%	96			80-120	Pass	
Zinc			%	100			80-120	Pass	
Zinc (filtered)			%	94			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S23-No0029281	CP	%	98			75-125	Pass	
Cadmium	S23-No0029281	CP	%	95			75-125	Pass	
Chromium	S23-No0029281	CP	%	102			75-125	Pass	
Copper	S23-No0029281	CP	%	100			75-125	Pass	
Lead	S23-No0029281	CP	%	102			75-125	Pass	
Mercury	S23-No0029281	CP	%	107			75-125	Pass	
Nickel	S23-No0029281	CP	%	98			75-125	Pass	
Zinc	S23-No0029281	CP	%	98			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S23-No0026691	NCP	%	99			75-125	Pass	
Cadmium (filtered)	S23-No0026691	NCP	%	91			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium (filtered)	S23-No0026691	NCP	%	92			75-125	Pass	
Copper (filtered)	S23-No0026691	NCP	%	88			75-125	Pass	
Lead (filtered)	S23-No0026691	NCP	%	90			75-125	Pass	
Mercury (filtered)	S23-No0026691	NCP	%	93			75-125	Pass	
Nickel (filtered)	S23-No0026691	NCP	%	89			75-125	Pass	
Zinc (filtered)	S23-No0026691	NCP	%	90			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S23-No0026691	NCP	mg/L	0.008	0.007	14	30%	Pass	
Cadmium	S23-No0026691	NCP	mg/L	0.0005	0.0004	24	30%	Pass	
Chromium	S23-No0026691	NCP	mg/L	0.021	0.021	<1	30%	Pass	
Copper	S23-No0026691	NCP	mg/L	0.019	0.019	1.6	30%	Pass	
Lead	S23-No0026691	NCP	mg/L	0.007	0.007	2.9	30%	Pass	
Mercury	S23-No0026691	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S23-No0026691	NCP	mg/L	0.005	0.005	3.1	30%	Pass	
Zinc	S23-No0026691	NCP	mg/L	0.021	0.020	6.6	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S23-No0026674	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S23-No0035914	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S23-No0026674	NCP	mg/L	0.001	0.001	<1	30%	Pass	
Copper (filtered)	S23-No0026674	NCP	mg/L	0.001	0.002	36	30%	Fail	Q15
Lead (filtered)	S23-No0026674	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S23-No0026674	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S23-No0026674	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S23-No0026674	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Ursula Long	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal
Mickael Ros	Senior Analyst-Metal



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

HT

Subcon / Forward Lab / Split WO

Lab / Analysis: SWDUP2 - Evotex

Organised By / Date: 6/12/2023

Relinquished By / Date: 6/12/2023

CLIENT: GHD Pty Ltd		TURNAROUND REQUIREMENT ☐ Standard TAT (List due date)		Connect / Courier: <u>STANDARD TAT</u>		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Sydney		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics) ☐ Non Standard or urgent (List due date)		COC: <u>WON</u>		Custody Seal Intact ☒ No ☐ N/A	
PROJECT: M12 Surface Water		ALS QUOTE NO.: SY322/21		Attached By PO / Internal Sheet		Free ice / freezer ☐	
ORDER NUMBER: 12554717		CONTACT PH: Henry Luo 0414 090 002		COC SEQUENCE NUMBER (Circle)		Random Sample ☐	
PROJECT MANAGER: Henry Luo		RELINQUISHED BY: Andrew Duval (GHD)		RECEIVED BY: <u>mdm</u>		Other comment	
SAMPLER: Emily Smith, Andrew Duval		SAMPLER MOBILE: 0431 522 928		DATE/TIME: 6/12/2023 - 5pm		DATE/TIME: <u>6/12/23 1715 5.10c</u>	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default): ESDAT		DATE/TIME: <u>6/12/23 1715 5.10c</u>		DATE/TIME: <u>6/12/23 1715 5.10c</u>	
Email Reports to: emily.smith@ghd.com; henry.luo@ghd.com; andrew.duval@ghd.com; esdat+ghd_au@esdatlabsync.net							

Environmental Division
Sydney
Work Order Reference
ES2342516



Telephone : + 61-2-8784 8555

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Please keep M12 Groundwater as a separate workorder to M12 Surface Water as per the C

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be specified. Where Metals are required, specify Total (unfiltered bottle required) or Diss)													
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Comments	TOTAL CONTAINERS	WAST (6 total metals)	EP08 (oil & grease)	EP09 (oil & grease)	EP10 (oil & grease)	EP11 (oil & grease)	EP12 (oil & grease)	EP13 (oil & grease)	EP14 (oil & grease)	EP15 (oil & grease)	EP16 (oil & grease)	EP17 (oil & grease)	EP18 (oil & grease)	EP19 (oil & grease)	EP20 (oil & grease)
1	BADD5	6/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	BADMS	6/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	BADUS	6/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	COSDS	6/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	COSU3	6/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	HINDS	5/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	HINUS	5/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	KEMDS	5/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	KEMUS	5/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10	ROPDS	5/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11	ROPUS	5/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	SOUDS	5/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	SOIUS	5/12/2023	Water		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	SWDUP1	5/12/2023	Water		1	X													
X	SWDUP2	5/12/2023	Water	PLEASE FORWARD TO FORWARD WITH ATTACHED COC	1														

1052 387

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Page 1 of 1

Company Name : GHD Pty Ltd, Sydney	Contact Name : Emily Smith 0431 522 926	Purchase Order : 12554717	COC Number :
Office Address :	Project Manager: Henry Luo 0414 090 002	PROJECT Number : 12554717	Eurofins mgt quote ID :
Level 15, 123 Castlereagh Street, Sydney NSW 2000	Email for results : emily.smith@ghd.com; henry.luo@ghd.com; andrew.duval@ghd.com; esdat+ghd_au@esdatlabsync.net	PROJECT Name : M12 Water Sampling	Data output format: FSDAT

				Analytes							Some common holding times (with correct preservation). For further information contact the lab									
Special Directions & Comments : Sent from ALS <																				

		Laboratory Staff		Method Of Shipment		Temperature on arrival:	
Relinquished By: Andrew Duval		Received By:		☐ Courier ☐ Hand Delivered ☐ Postal ☐ Courier Consignment # :		Report number:	
Date & Time : 6/12/2023 - 5pm		Date & Time :					
Signature:		Signature:					

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Auckland (Asb)	Christchurch	Tauranga
35 O'Rourke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Sample Receipt Advice

Company name: GHD Pty Ltd NSW
Contact name: Henry Luo
Project name: M12 SURFACE WATER
Project ID: 12554717
Turnaround time: 5 Day
Date/Time received: Dec 8, 2023 5:49 PM
Eurofins reference: 1052387

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : 5.1 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Samples received by the laboratory after 5.30pm are deemed to have been received the following working day.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Bonnie Pu on phone : or by email: BonniePu@eurofins.com

Results will be delivered electronically via email to Henry Luo - henry.luo@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.



web: www.eurofins.com.au
email: EnviroSales@eurofins.com

ABN: 50 005 085 521

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

ABN: 91 05 0159 898

Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

NZBN: 9429046024954

Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Company Name:	GHD Pty Ltd NSW	Order No.:		Received:	Dec 8, 2023 5:49 PM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	Report #:	1052387	Due:	Dec 15, 2023
		Phone:	02 9239 7100	Priority:	5 Day
		Fax:	02 9239 7199	Contact Name:	Henry Luo
Project Name:	M12 SURFACE WATER				
Project ID:	12554717				

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Metals M8	Metals M8 filtered
Melbourne Laboratory - NATA # 1261 Site # 1254							X
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	SWDUP2	Dec 05, 2023		Water	S23-De0021771	X	
2	GWDUP2	Dec 06, 2023		Water	S23-De0021772		X
Test Counts						1	1

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Henry Luo

Report 1052387-W
Project name M12 SURFACE WATER
Project ID 12554717
Received Date Dec 08, 2023

Client Sample ID			SWDUP2	GWDUP2
Sample Matrix			Water	Water
Eurofins Sample No.			S23-De0021771	S23-De0021772
Date Sampled			Dec 05, 2023	Dec 06, 2023
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	0.001	mg/L	0.003	-
Arsenic (filtered)	0.001	mg/L	-	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	-
Cadmium (filtered)	0.0002	mg/L	-	< 0.0002
Chromium	0.001	mg/L	0.002	-
Chromium (filtered)	0.001	mg/L	-	< 0.001
Copper	0.001	mg/L	0.004	-
Copper (filtered)	0.001	mg/L	-	0.002
Lead	0.001	mg/L	0.003	-
Lead (filtered)	0.001	mg/L	-	< 0.001
Mercury	0.0001	mg/L	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	-	< 0.0001
Nickel	0.001	mg/L	0.002	-
Nickel (filtered)	0.001	mg/L	-	0.002
Zinc	0.005	mg/L	0.006	-
Zinc (filtered)	0.005	mg/L	-	0.007

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Dec 14, 2023	28 Days
Metals M8 filtered - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Dec 14, 2023	28 Days



web: www.eurofins.com.au
email: EnviroSales@eurofins.com

ABN: 50 005 085 521

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

ABN: 91 05 0159 898

Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

NZBN: 9429046024954

Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: M12 SURFACE WATER
Project ID: 12554717

Order No.:
Report #: 1052387
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Dec 8, 2023 5:49 PM
Due: Dec 15, 2023
Priority: 5 Day
Contact Name: Henry Luo

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Metals M8	Metals M8 filtered
Melbourne Laboratory - NATA # 1261 Site # 1254							X
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	SWDUP2	Dec 05, 2023		Water	S23-De0021771	X	
2	GWDUP2	Dec 06, 2023		Water	S23-De0021772		X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry weight basis unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion unless otherwise stated.
- For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
- Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ppm: parts per million
µg/L: micrograms per litre	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit	Colour: Pt-Co Units	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 70 – 130%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

- Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Heavy Metals									
Arsenic			mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)			mg/L	< 0.001			0.001	Pass	
Cadmium			mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)			mg/L	< 0.0002			0.0002	Pass	
Chromium			mg/L	< 0.001			0.001	Pass	
Chromium (filtered)			mg/L	< 0.001			0.001	Pass	
Copper			mg/L	< 0.001			0.001	Pass	
Copper (filtered)			mg/L	< 0.001			0.001	Pass	
Lead			mg/L	< 0.001			0.001	Pass	
Lead (filtered)			mg/L	< 0.001			0.001	Pass	
Mercury			mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)			mg/L	< 0.0001			0.0001	Pass	
Nickel			mg/L	< 0.001			0.001	Pass	
Nickel (filtered)			mg/L	< 0.001			0.001	Pass	
Zinc			mg/L	< 0.005			0.005	Pass	
Zinc (filtered)			mg/L	< 0.005			0.005	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	89			80-120	Pass	
Arsenic (filtered)			%	92			80-120	Pass	
Cadmium			%	87			80-120	Pass	
Cadmium (filtered)			%	92			80-120	Pass	
Chromium			%	88			80-120	Pass	
Chromium (filtered)			%	90			80-120	Pass	
Copper			%	88			80-120	Pass	
Copper (filtered)			%	89			80-120	Pass	
Lead			%	87			80-120	Pass	
Lead (filtered)			%	91			80-120	Pass	
Mercury			%	94			80-120	Pass	
Mercury (filtered)			%	99			80-120	Pass	
Nickel			%	88			80-120	Pass	
Nickel (filtered)			%	88			80-120	Pass	
Zinc			%	87			80-120	Pass	
Zinc (filtered)			%	89			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S23-De0021771	CP	%	94			75-125	Pass	
Cadmium	S23-De0021771	CP	%	89			75-125	Pass	
Chromium	S23-De0021771	CP	%	88			75-125	Pass	
Copper	S23-De0021771	CP	%	85			75-125	Pass	
Lead	S23-De0021771	CP	%	86			75-125	Pass	
Mercury	S23-De0021771	CP	%	96			75-125	Pass	
Nickel	S23-De0021771	CP	%	86			75-125	Pass	
Zinc	S23-De0021771	CP	%	85			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S23-De0024809	NCP	%	86			75-125	Pass	
Cadmium (filtered)	S23-De0024809	NCP	%	88			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium (filtered)	S23-De0024809	NCP	%	84			75-125	Pass	
Copper (filtered)	S23-De0024809	NCP	%	83			75-125	Pass	
Lead (filtered)	S23-De0024809	NCP	%	84			75-125	Pass	
Mercury (filtered)	S23-De0013499	NCP	%	92			75-125	Pass	
Nickel (filtered)	S23-De0024809	NCP	%	83			75-125	Pass	
Zinc (filtered)	S23-De0024809	NCP	%	82			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S23-De0019009	NCP	mg/L	0.004	0.004	3.7	30%	Pass	
Cadmium	S23-De0019009	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S23-De0019009	NCP	mg/L	0.002	0.002	3.7	30%	Pass	
Copper	S23-De0019009	NCP	mg/L	0.003	0.003	<1	30%	Pass	
Lead	S23-De0019009	NCP	mg/L	0.004	0.004	3.4	30%	Pass	
Mercury	S23-De0016640	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S23-De0019009	NCP	mg/L	0.007	0.007	3.9	30%	Pass	
Zinc	S23-De0019009	NCP	mg/L	0.012	0.013	1.9	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S23-De0021772	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S23-De0021772	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S23-De0021772	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S23-De0021772	CP	mg/L	0.002	0.002	6.3	30%	Pass	
Lead (filtered)	S23-De0021772	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S23-De0021772	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S23-De0021772	CP	mg/L	0.002	0.002	8.3	30%	Pass	
Zinc (filtered)	S23-De0021772	CP	mg/L	0.007	0.007	2.6	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Ursula Long	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal
Mickael Ros	Senior Analyst-Metal



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

☒ **Sydney**
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgdlabmark.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murrarie
Phone: +617 3902 4600
Email: enviro.bris@mgdlabmark.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgdlabmark.com.au

CHAIN OF CUSTODY RECORD

Page 1 of 1

CLIENT DETAILS

Company Name : GHD Pty Ltd Sydney	Contact Name : Emily Smith 0431 522 928	Purchase Order : 12554717	COC Number :
Office Address :	Project Manager: Henry Luo 02 14 896 002	PROJECT Number : 12554717	Eurofins mgt quote ID :
Email for results : emily.smith@ghd.com; andrew.duval@ghd.com; henry.luo@ghd.com; ghdlabreports@ghd.com	PROJECT Name : M12 Water Sampling	Data output format: ESDAT	

				Analytes							Some common holding times (with correct preservation). For further information contact the lab									
Special Directions & Comments : Eurofins mg/L water batch number:				12 vol red metals	24 Total metals					Waters					Soils					
										BTEX, MAH, VOC		14 days	BTEX, MAH, VOC		14 days					
										TRH, PAH, Phenols, Pesticides		7 days	TRH, PAH, Phenols, Pesticides		14 days					
										Heavy Metals		6 months	Heavy Metals		6 months					
										Mercury, CrVI		28 days	Mercury, CrVI		28 days					
										Microbiological testing		24 hours	Microbiological testing		72 hours					
										BOD, Nitrate, Nitrite, Total N		2 days	Anions		28 days					
										Solids - TSS, TDS etc		7 days	SPOCAS, pH Field and FOX, CrS		24 hours					
										Ferrous iron		7 days	ASLP, TCLP		7 days					
																				Containers:
										500P	250P	60P	1LA	40mL vial	200mLA	Jar	Beg			
1	SWR51P1	19/01/2014	Water																	
2	SWR51P2	19/01/2014	Water	X																
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished By: Andrew Duval - GHD	Received By:	Method Of Shipment	Temperature on arrival:
Date & Time : 19-01-2024	Date & Time :	☐ Courier ☐ Hand Delivered ☐ Postal	Report number:
Signature: <i>Andrew Duval</i>	Signature:	Courier Consignment # :	

1061811

Lab / Analysis: Environ - SWDUP.2
Organised By / Date: _____
Relinquished By / Date: _____

HT



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

CLIENT: GHD Pty Ltd

OFFICE: Sydney

PROJECT: M12 Groundwater

ORDER NUMBER: 1254717

PROJECT MANAGER: Henry Luo

SAMPLER: Emily Smith, Andrew Duval

COC emailed to ALS? (YES / NO)

Email Reports to: emily.smith@ghd.com; andrew.duval@ghd.com; henry.luo@ghd.com;
andrewreports@ghd.com

WO No: _____

Attached By: Internal Sheet

TURNAROUND REQUIREMENT ☐ Standard TAT (List due date):
(Standard TAT may be longer for some tests e.g., Ultra Trace)

ALS QUOTE NO.: SYJ322121

CONTACT PH: Henry Luo 0414 090 002

SAMPLER MOBILE: 0431 522 928

EDD FORMAT (or default): ESDAT

RELIQUISHED BY:

Andrew Duval - GHD

DATE/TIME:
19-01-2024

STANDARD TAT

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

RECEIVED BY:

HW

DATE/TIME:
19/1/24 1718

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?

Yes

No

N/A

Free ice / frozen ice bricks present upon receipt?

Yes

No

N/A

Random Sample Temperature on Receipt

6.8 °C

Other comment

RECEIVED BY:

Andrew Duval

DATE/TIME:

22/1/24 1718

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

PLEASE DO NOT LOG ALL SAMPLES RECEIVED IN ONE WORKORDER. LOG AS TWO SEPARATE WORKORDERS AS PER THE TWO CO.

ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:						CONTAINER INFORMATION		ANALYSIS REQUIRED INCLUDING SUBSTRATE									
ALS USE	SAMPLE DETAILS			MATRIX: SOLID (S) WATER (W)				Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field metals only)									
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Comments	TOTAL CONTAINERS	W-002 (disinfectant 5 min)	EA-002F (disinfectant 5 min)	W-241 (TR) / ST-241 (TR) / Phenols / 18 min (disinfectant)	W-004 (TR) / NO2, IPR, TP, Soluble Residue	W-010 3.02 (major cations & anions, Residual)	EA-014H (TDS)	EA-004H (Turb)	EP-004A (SIM) (Phenols - Standard level (1.5 mg/L))	W-027 (BOD 5 @ 20°C)	ST-200		
					6		X	X	X	X	X	X	X				
1	BH104R	19/01/2024	Water		6		X	X	X	X	X	X	X				
2	BH107R	19/01/2024	Water		6		X	X	X	X	X	X	X				
3	BH112R	19/01/2024	Water		6		X	X	X	X	X	X	X				
4	BH145P	19/01/2024	Water		1	X											
5	GW00P1	19/01/2024	Water	PLEASE FORWARD TO EUROPE WITH ATTACHED COC	1										X		
X	GW00P2	19/01/2024	Water		1											X	
6	GW00P1	19/01/2024	Water		1											X	
7	Top spike	15/01/2024	Water		1												
8	Top blank	15/01/2024	Water														

Environmental Division
Sydney
Work Order Reference
ES2401985



Environmental Division
Sydney
Work Order Reference
ES2401985



Telephone : + 61-2-8784 8555

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Auckland (Asb)	Christchurch	Tauranga
35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Sample Receipt Advice

Company name:	GHD Pty Ltd NSW
Contact name:	Henry Luo
Project name:	M12 WATER SAMPLING
Project ID:	12554717
Turnaround time:	5 Day
Date/Time received	Jan 22, 2024 2:35 PM
Eurofins reference	1061811

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : 6.8 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Bonnie Pu on phone : or by email: BonniePu@eurofins.com

Results will be delivered electronically via email to Henry Luo - henry.luo@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.



web: www.eurofins.com.au
email: EnviroSales@eurofins.com

ABN: 50 005 085 521					
Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

ABN: 91 05 0159 898		NZBN: 9429046024954	
Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290
		Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402	

Company Name:	GHD Pty Ltd NSW	Order No.:		Received:	Jan 22, 2024 2:35 PM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	Report #:	1061811	Due:	Jan 30, 2024
		Phone:	02 9239 7100	Priority:	5 Day
		Fax:	02 9239 7199	Contact Name:	Henry Luo
Project Name:	M12 WATER SAMPLING				
Project ID:	12554717				
Eurofins Analytical Services Manager : Bonnie Pu					

Sample Detail						Metals M8	Metals M8 filtered
						X	X
Sydney Laboratory - NATA # 1261 Site # 18217							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	GWDUP2	Jan 19, 2024		Water	S24-Ja0033834		X
2	SWDUP2	Jan 19, 2024		Water	S24-Ja0033835	X	
Test Counts						1	1

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Henry Luo

Report 1061811-W
Project name M12 WATER SAMPLING
Project ID 12554717
Received Date Jan 22, 2024

Client Sample ID			GWDUP2	SWDUP2
Sample Matrix			Water	Water
Eurofins Sample No.			S24-Ja0033834	S24-Ja0033835
Date Sampled			Jan 19, 2024	Jan 19, 2024
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	0.001	mg/L	-	0.002
Arsenic (filtered)	0.001	mg/L	0.003	-
Cadmium	0.0002	mg/L	-	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	-
Chromium	0.001	mg/L	-	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	-
Copper	0.001	mg/L	-	0.006
Copper (filtered)	0.001	mg/L	< 0.001	-
Lead	0.001	mg/L	-	0.002
Lead (filtered)	0.001	mg/L	< 0.001	-
Mercury	0.0001	mg/L	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	-
Nickel	0.001	mg/L	-	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	-
Zinc	0.005	mg/L	-	0.013
Zinc (filtered)	0.005	mg/L	< 0.005	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Jan 24, 2024	28 Days
Metals M8 filtered - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Jan 24, 2024	28 Days



web: www.eurofins.com.au
email: EnviroSales@eurofins.com

ABN: 50 005 085 521

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

ABN: 91 05 0159 898

Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

NZBN: 9429046024954

Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: M12 WATER SAMPLING
Project ID: 12554717

Order No.:
Report #: 1061811
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Jan 22, 2024 2:35 PM
Due: Jan 30, 2024
Priority: 5 Day
Contact Name: Henry Luo

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Metals M8	Metals M8 filtered
						X	X
Sydney Laboratory - NATA # 1261 Site # 18217							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	GWDUP2	Jan 19, 2024		Water	S24-Ja0033834		X
2	SWDUP2	Jan 19, 2024		Water	S24-Ja0033835	X	
Test Counts						1	1

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry weight basis unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion unless otherwise stated.
- For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
- Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified in this report with blue colour indicates data provided by customers that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ppm: parts per million
µg/L: micrograms per litre	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit	Colour: Pt-Co Units	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 70 – 130%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

- Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Heavy Metals									
Arsenic			mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)			mg/L	< 0.001			0.001	Pass	
Cadmium			mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)			mg/L	< 0.0002			0.0002	Pass	
Chromium			mg/L	< 0.001			0.001	Pass	
Chromium (filtered)			mg/L	< 0.001			0.001	Pass	
Copper			mg/L	< 0.001			0.001	Pass	
Copper (filtered)			mg/L	< 0.001			0.001	Pass	
Lead			mg/L	< 0.001			0.001	Pass	
Lead (filtered)			mg/L	< 0.001			0.001	Pass	
Mercury			mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)			mg/L	< 0.0001			0.0001	Pass	
Nickel			mg/L	< 0.001			0.001	Pass	
Nickel (filtered)			mg/L	< 0.001			0.001	Pass	
Zinc			mg/L	< 0.005			0.005	Pass	
Zinc (filtered)			mg/L	< 0.005			0.005	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	82			80-120	Pass	
Arsenic (filtered)			%	97			80-120	Pass	
Cadmium			%	82			80-120	Pass	
Cadmium (filtered)			%	97			80-120	Pass	
Chromium			%	88			80-120	Pass	
Chromium (filtered)			%	99			80-120	Pass	
Copper			%	88			80-120	Pass	
Copper (filtered)			%	101			80-120	Pass	
Lead			%	86			80-120	Pass	
Lead (filtered)			%	97			80-120	Pass	
Mercury			%	92			80-120	Pass	
Mercury (filtered)			%	97			80-120	Pass	
Nickel			%	87			80-120	Pass	
Nickel (filtered)			%	101			80-120	Pass	
Zinc			%	85			80-120	Pass	
Zinc (filtered)			%	101			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S24-Ja0033821	NCP	%	95			75-125	Pass	
Cadmium (filtered)	S24-Ja0033821	NCP	%	100			75-125	Pass	
Chromium (filtered)	S24-Ja0033821	NCP	%	95			75-125	Pass	
Copper (filtered)	S24-Ja0033821	NCP	%	97			75-125	Pass	
Lead (filtered)	S24-Ja0033821	NCP	%	94			75-125	Pass	
Nickel (filtered)	S24-Ja0033821	NCP	%	97			75-125	Pass	
Zinc (filtered)	S24-Ja0033821	NCP	%	96			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S24-Ja0026117	NCP	%	82			75-125	Pass	
Cadmium	S24-Ja0026117	NCP	%	81			75-125	Pass	
Chromium	S24-Ja0026117	NCP	%	91			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	S24-Ja0026117	NCP	%	93			75-125	Pass	
Lead	S24-Ja0026117	NCP	%	87			75-125	Pass	
Mercury	S24-Ja0026117	NCP	%	96			75-125	Pass	
Nickel	S24-Ja0026117	NCP	%	88			75-125	Pass	
Zinc	S24-Ja0026117	NCP	%	83			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	W24-Ja0022835	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	W24-Ja0022835	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	W24-Ja0022835	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	W24-Ja0022835	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	W24-Ja0022835	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	W24-Ja0022835	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	W24-Ja0022835	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	W24-Ja0022835	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S24-Ja0031868	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	W24-Ja0028902	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S24-Ja0031868	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	W24-Ja0022835	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	S24-Ja0031868	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	S24-Ja0031868	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	W24-Ja0022835	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	S24-Ja0031868	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Ursula Long	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal
Mickael Ros	Senior Analyst-Metal



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Subcon / (Forward Lab / Split WO)
Lab / Analysis: Environ. SWP02
Organised By / Date:
Relinquished By / Date:

Updated

Environmental Division
Sydney

Work Order Reference

ES2404914



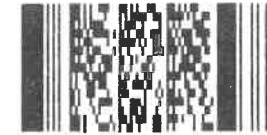
CHAIN OF CUSTODY

ALS Laboratory:
please tick →

Connote / Courier:

WO No:

Attached By PO / Internal Supply



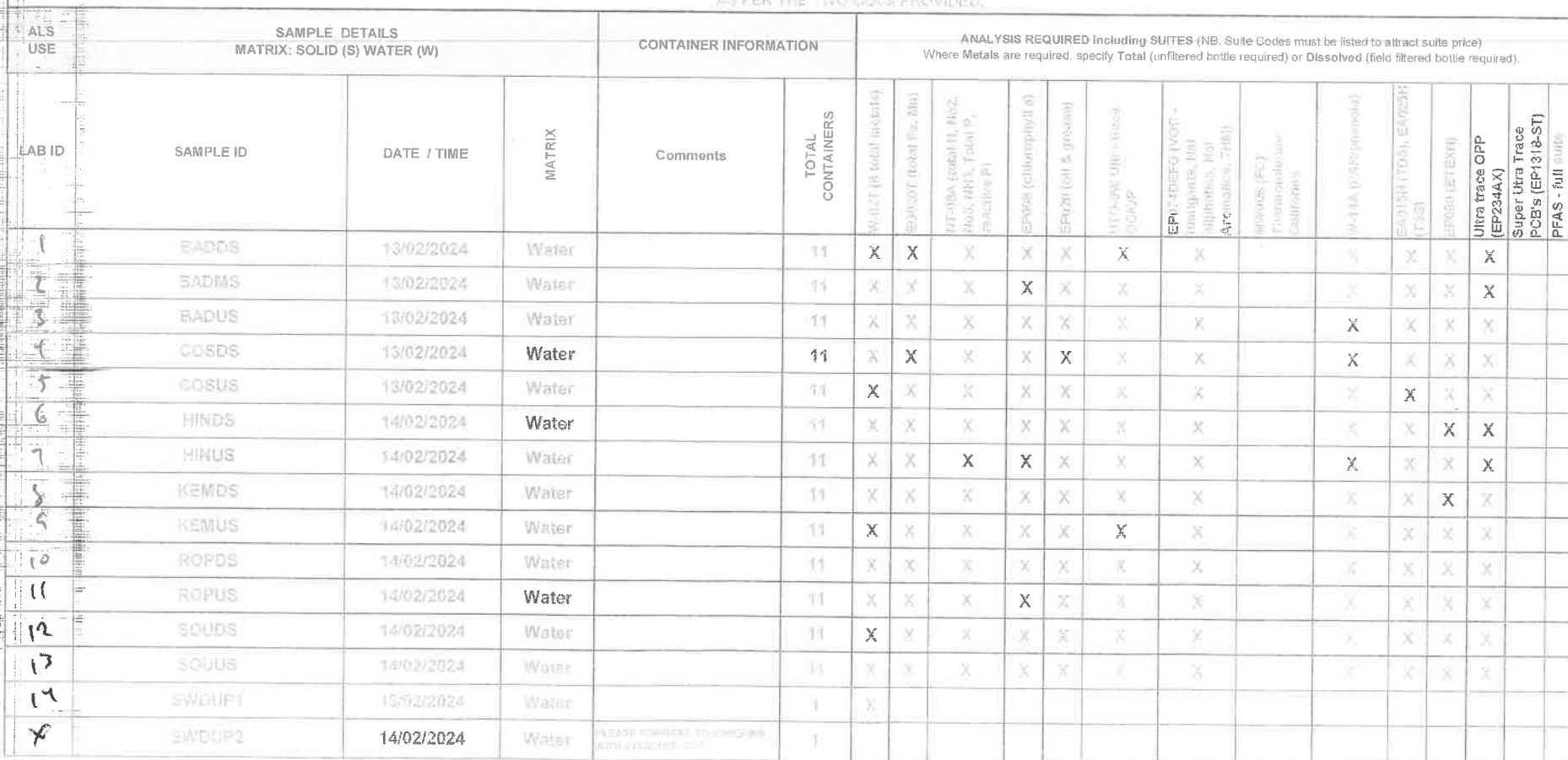
Telephone : + 61-2-8784 8555

CLIENT: GHD Pty Ltd	TURNAROUND REQUIREMENT ☐ Standard TAT (List due date): (Standard TAT may be longer for some tests e.g., Ultra Trace)	STANDARD TAT	FOR LABORATORY USE
OFFICE: Sydney	☐ Non Standard or urgent TAT (List due date):		Custody Seal Intact?
PROJECT: M12 Groundwater	ALS QUOTE NO.: 5V73221	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt: ☐
ORDER NUMBER: 12554717		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: 13.1 °C
PROJECT MANAGER: Henry Luo	CONTACT PH: Henry Luo 0414 080 562	OR: 1 2 3 4 5 6 7	Other comment
SAMPLER: Andrew Duval, Jackson Miller	SAMPLER MOBILE: 0468301344	RECEIVED BY: <i>FA</i>	RECEIVED BY: <i>Branden</i>
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): ESDAT	DATE/TIME: 15/02/24 10:00	DATE/TIME: 16/02/24 2:12
Email Reports to: emily.smith@ghd.com; andrew.duval@ghd.com; henry.luo@ghd.com; ghd@reports@ghd.com			
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: PLEASE DO NOT LOG ALL SAMPLES RECEIVED IN ONE WORK-ORDER. LOG AS TWO SEPARATE WORK-ORDERS AS PER THE TWO COCs PROVIDED.			

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB, Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Comments	TOTAL CONTAINERS	W-01 (Unfiltered)	ED-01P (Dissolved Pb)	W-04 (FENATE Cu)	HT-08A (TN, NO ₃ , NH ₄ , TP, Soluble Phosphate P)	HT-010 & 02 (major cations & anions, Hardness)	ES-01SH (TOB)	ES-01B (TOB)	ES-01B (TOB) (if multiple)	W-02T (3 used bottles)	ES-01B (TOB)
1		BH104R	13/02/2024	Water		6	X	X	X	X	X	X	X	X		
2		BH107R	13/02/2024	Water		6	X	X	X	X	X	X	X	X		
3		BH112R	13/02/2024	Water		6	X	X	X	X	X	X	X	X		
4		BH145R	14/02/2024	Water		6	X	X	X	X	X	X	X	X		
5		GWDUP1	13/02/2024	Water		1	X									
6		GWDUP2	13/02/2024	Water	PLEASE FORWARD TO EDD FOR RE-TEST WITH ATTACHED COC	1										
7		GWPE1	13/02/2024	Water		1									X	
8		Trip spike	5/02/2024	Water		1										X
9		Trip blank	5/02/2024	Water		1										X

1069861

Telephone : + 61-2-8784 8555





☒ **Sydney**
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgflabmark.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murrarie
Phone: +617 3902 4800
Email: enviro.bris@mgflabmark.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgflabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Page 1 of 1

Company Name : GHD	Contact Name : Andrew Duval 0463 301 544	Purchase Order : 12554717	COC Number :
Office Address :	Project Manager: Henry Luo 0414 090 002	PROJECT Number : 12554717	Eurofins mgt quote ID :
Level 15, 125 Queen Street, Sydney NSW 2000	Email for results : emily.smith@ghd.com; andrew.duval@ghd.com; henry.luo@ghd.com; ghdsupport@ghd.com	PROJECT Name : 1012 Water Sampling	Data output format: ESDAT

Special Directions & Comments :	Analytes					Some common holding times (with correct preservation). For further information contact the lab			
						Waters		Soils	
Sample ID						BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
						TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
						Heavy Metals	6 months	Heavy Metals	6 months
						Mercury, CrVI	28 days	Mercury, CrVI	28 days
						Microbiological testing	24 hours	Microbiological testing	72 hours
						BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
						Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
						Ferrous iron	7 days	ASLP, TCLP	7 days

Eurofins mgt DI water batch number:				Dissolved metals	Total metals	Containers:										Sample comments:
Sample ID	Date	Matrix				500P	250P	60P	1LA	40mL vial	200mL A	Jar	Bag			
1	SWDUP1	19/02/2014	Water	X												
2	GWDUP1	19/02/2014	Water	X												
3																
4																
5																
6																
7																
8																
9																
10																

Relinquished By:		Received By:		Laboratory Staff				Method Of Shipment				Temperature on arrival:	
Date & Time:		Date & Time:						☐ Courier ☐ Hand Delivered ☐ Postal Courier Consignment # :				Report number:	
Signature:		Signature:											

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 T: +61 7 3902 4600 +61 2 4968 8448 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Auckland (Asb)	Christchurch	Tauranga
35 O'Rourke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Sample Receipt Advice

Company name:	GHD Pty Ltd NSW
Contact name:	Henry Luo
Project name:	M12 WATER SAMPLING
Project ID:	12554717
Turnaround time:	5 Day
Date/Time received	Feb 16, 2024 2:52 PM
Eurofins reference	1069861

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : 13.8 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Bonnie Pu on phone : or by email: BonniePu@eurofins.com

Results will be delivered electronically via email to Henry Luo - henry.luo@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.



web: www.eurofins.com.au
email: EnviroSales@eurofins.com

ABN: 50 005 085 521					
Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

ABN: 91 05 0159 898		NZBN: 9429046024954	
Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290
		Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402	

Company Name:	GHD Pty Ltd NSW	Order No.:		Received:	Feb 16, 2024 2:52 PM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	Report #:	1069861	Due:	Feb 23, 2024
		Phone:	02 9239 7100	Priority:	5 Day
		Fax:	02 9239 7199	Contact Name:	Henry Luo
Project Name:	M12 WATER SAMPLING				
Project ID:	12554717				
Eurofins Analytical Services Manager : Bonnie Pu					

Sample Detail						Metals M8	Metals M8 filtered
						X	X
Sydney Laboratory - NATA # 1261 Site # 18217							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	SWDUP2	Feb 14, 2024		Water	S24-Fe0044850	X	
2	GWDUP2	Feb 13, 2024		Water	S24-Fe0044851		X
Test Counts						1	1

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Henry Luo

Report 1069861-W
Project name M12 WATER SAMPLING
Project ID 12554717
Received Date Feb 16, 2024

Client Sample ID			SWDUP2	GWDUP2
Sample Matrix			Water	Water
Eurofins Sample No.			S24-Fe0044850	S24-Fe0044851
Date Sampled			Feb 14, 2024	Feb 13, 2024
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	0.001	mg/L	0.002	-
Arsenic (filtered)	0.001	mg/L	-	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	-
Cadmium (filtered)	0.0002	mg/L	-	< 0.0002
Chromium	0.001	mg/L	< 0.001	-
Chromium (filtered)	0.001	mg/L	-	< 0.001
Copper	0.001	mg/L	< 0.001	-
Copper (filtered)	0.001	mg/L	-	0.002
Lead	0.001	mg/L	< 0.001	-
Lead (filtered)	0.001	mg/L	-	< 0.001
Mercury	0.0001	mg/L	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	-	< 0.0001
Nickel	0.001	mg/L	< 0.001	-
Nickel (filtered)	0.001	mg/L	-	< 0.001
Zinc	0.005	mg/L	0.007	-
Zinc (filtered)	0.005	mg/L	-	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Feb 20, 2024	28 Days
Metals M8 filtered - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Feb 20, 2024	28 Days



web: www.eurofins.com.au
email: EnviroSales@eurofins.com

ABN: 50 005 085 521

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

ABN: 91 05 0159 898

Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

NZBN: 9429046024954

Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: M12 WATER SAMPLING
Project ID: 12554717

Order No.:
Report #: 1069861
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Feb 16, 2024 2:52 PM
Due: Feb 23, 2024
Priority: 5 Day
Contact Name: Henry Luo

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Metals M8	Metals M8 filtered
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	SWDUP2	Feb 14, 2024		Water	S24-Fe0044850	X	
2	GWDUP2	Feb 13, 2024		Water	S24-Fe0044851		X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry weight basis unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion unless otherwise stated.
- For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
- Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified in this report with blue colour indicates data provided by customers that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ppm: parts per million
µg/L: micrograms per litre	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit	Colour: Pt-Co Units	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 70 – 130%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

- Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Heavy Metals									
Arsenic			mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)			mg/L	< 0.001			0.001	Pass	
Cadmium			mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)			mg/L	< 0.0002			0.0002	Pass	
Chromium			mg/L	< 0.001			0.001	Pass	
Chromium (filtered)			mg/L	< 0.001			0.001	Pass	
Copper			mg/L	< 0.001			0.001	Pass	
Copper (filtered)			mg/L	< 0.001			0.001	Pass	
Lead			mg/L	< 0.001			0.001	Pass	
Lead (filtered)			mg/L	< 0.001			0.001	Pass	
Mercury			mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)			mg/L	< 0.0001			0.0001	Pass	
Nickel			mg/L	< 0.001			0.001	Pass	
Nickel (filtered)			mg/L	< 0.001			0.001	Pass	
Zinc			mg/L	< 0.005			0.005	Pass	
Zinc (filtered)			mg/L	< 0.005			0.005	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	93			80-120	Pass	
Arsenic (filtered)			%	83			80-120	Pass	
Cadmium			%	90			80-120	Pass	
Cadmium (filtered)			%	82			80-120	Pass	
Chromium			%	88			80-120	Pass	
Chromium (filtered)			%	83			80-120	Pass	
Copper			%	87			80-120	Pass	
Copper (filtered)			%	82			80-120	Pass	
Lead			%	90			80-120	Pass	
Lead (filtered)			%	84			80-120	Pass	
Mercury			%	98			80-120	Pass	
Mercury (filtered)			%	86			80-120	Pass	
Nickel			%	88			80-120	Pass	
Nickel (filtered)			%	83			80-120	Pass	
Zinc			%	88			80-120	Pass	
Zinc (filtered)			%	82			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S24-Fe0044850	CP	%	104			75-125	Pass	
Cadmium	S24-Fe0044850	CP	%	98			75-125	Pass	
Chromium	S24-Fe0044850	CP	%	97			75-125	Pass	
Copper	S24-Fe0044850	CP	%	94			75-125	Pass	
Lead	S24-Fe0044850	CP	%	97			75-125	Pass	
Mercury	S24-Fe0044850	CP	%	94			75-125	Pass	
Nickel	S24-Fe0044850	CP	%	94			75-125	Pass	
Zinc	S24-Fe0044850	CP	%	93			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	N24-Fe0039874	NCP	%	92			75-125	Pass	
Cadmium (filtered)	N24-Fe0039874	NCP	%	84			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium (filtered)	N24-Fe0039874	NCP	%	81			75-125	Pass	
Lead (filtered)	N24-Fe0039874	NCP	%	80			75-125	Pass	
Mercury (filtered)	N24-Fe0039874	NCP	%	83			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S24-Fe0044548	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S24-Fe0044548	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S24-Fe0044548	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	S24-Fe0044548	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	S24-Fe0044548	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	S24-Fe0044548	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S24-Fe0044548	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	S24-Fe0044548	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	N24-Fe0039857	NCP	mg/L	0.001	0.001	<1	30%	Pass	
Cadmium (filtered)	N24-Fe0039857	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	N24-Fe0039857	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	N24-Fe0039857	NCP	mg/L	0.003	0.003	1.7	30%	Pass	
Lead (filtered)	N24-Fe0039857	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	N24-Fe0039857	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	N24-Fe0039857	NCP	mg/L	0.002	0.002	2.0	30%	Pass	
Zinc (filtered)	N24-Fe0039857	NCP	mg/L	0.023	0.022	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Bonnie Pu	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal
Mickael Ros	Senior Analyst-Metal



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Page 1 of 1

Company Name : GHD Pty Ltd Sydney

Contact Name : Andrew Dival 0468 301 344

Purchase Order : 12554717

COC Number :

Office Address :

Project Manager: Henry Luo 0414 090 002

PROJECT Number : 12554717

Eurofins | mgt quote id :

Level 15, 127 Castlereagh Street, Sydney, NSW 2000

Email for results : emily.smith@ghd.com: andrew.duval@ghd.com:
luo@ghd.com: ghdlabreports@ghd.com

PROJECT Name : M12 Water Sampling

Data output format: ESDAT

Special Directions & Comments :

Sent from ALS

Eurofins | mgt DI water batch number:

Analytes

Some common holding times (with correct preservation).
For further information contact the lab

Waters

Soils

BTEX. MAH. VOC	14 days	BTEX, MAH, VOC	14 days
TRH. PAH. Phenols. Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

500P	250P	60P	1LA	40mL vial	200mL A	Jar	Bag

Sample comments:

Relinquished By: Emily Smith

Received By:

Elizabeth Brotherton

Date & Time : 15/03/2024 17:45

Date & Time

18/3 1:40 pm

Signature: _____

Signature: _____

GR

Method Of Shipment

Temperature on arrival:

3.

Courier

Hand Delivered

Postal

Courier Consignment # :

Report number:

1079293

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 T: +61 7 3902 4600 +61 2 4968 8448 NATA# 1261 Site# 20794	1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Auckland (Asb)	Christchurch	Tauranga
35 O'Rourke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Sample Receipt Advice

Company name:	GHD Pty Ltd NSW
Contact name:	Henry Luo
Project name:	M12 WATER SAMPLING
Project ID:	12554717
Turnaround time:	5 Day
Date/Time received	Mar 18, 2024 1:40 PM
Eurofins reference	1079293

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : 3.3 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Bonnie Pu on phone : or by email: BonniePu@eurofins.com

Results will be delivered electronically via email to Henry Luo - henry.luo@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.



Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Company Name:	GHD Pty Ltd NSW	Order No.:		Received:	Mar 18, 2024 1:40 PM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	Report #:	1079293	Due:	Mar 25, 2024
		Phone:	02 9239 7100	Priority:	5 Day
		Fax:	02 9239 7199	Contact Name:	Henry Luo
Project Name:	M12 WATER SAMPLING				
Project ID:	12554717				
Eurofins Analytical Services Manager : Bonnie Pu					

Sample Detail						Metals M8	Metals M8 filtered
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	SWDUP2	Mar 14, 2024		Water	S24-Ma0043136	X	
2	GWDUP2	Mar 15, 2024		Water	S24-Ma0043137		X
Test Counts						1	1

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Henry Luo

Report 1079293-W
Project name M12 WATER SAMPLING
Project ID 12554717
Received Date Mar 18, 2024

Client Sample ID			SWDUP2	GWDUP2
Sample Matrix			Water	Water
Eurofins Sample No.			S24- Ma0043136	S24- Ma0043137
Date Sampled			Mar 14, 2024	Mar 15, 2024
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	0.001	mg/L	0.002	-
Arsenic (filtered)	0.001	mg/L	-	0.004
Cadmium	0.0002	mg/L	< 0.0002	-
Cadmium (filtered)	0.0002	mg/L	-	< 0.0002
Chromium	0.001	mg/L	< 0.001	-
Chromium (filtered)	0.001	mg/L	-	< 0.001
Copper	0.001	mg/L	0.004	-
Copper (filtered)	0.001	mg/L	-	< 0.001
Lead	0.001	mg/L	0.001	-
Lead (filtered)	0.001	mg/L	-	< 0.001
Mercury	0.0001	mg/L	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	-	< 0.0001
Nickel	0.001	mg/L	0.002	-
Nickel (filtered)	0.001	mg/L	-	< 0.001
Zinc	0.005	mg/L	0.021	-
Zinc (filtered)	0.005	mg/L	-	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Metals M8	Sydney	Mar 20, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M8 filtered	Sydney	Mar 20, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			



web: www.eurofins.com.au
email: EnviroSales@eurofins.com

ABN: 50 005 085 521

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289

ABN: 91 05 0159 898

Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

NZBN: 9429046024954

Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: M12 WATER SAMPLING
Project ID: 12554717

Order No.:
Report #: 1079293
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Mar 18, 2024 1:40 PM
Due: Mar 25, 2024
Priority: 5 Day
Contact Name: Henry Luo

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Metals M8	Metals M8 filtered
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	SWDUP2	Mar 14, 2024		Water	S24-Ma0043136	X	
2	GWDUP2	Mar 15, 2024		Water	S24-Ma0043137		X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ppm: parts per million
µg/L: micrograms per litre	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit	Colour: Pt-Co Units	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 70 – 130%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Heavy Metals									
Arsenic			mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)			mg/L	< 0.001			0.001	Pass	
Cadmium			mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)			mg/L	< 0.0002			0.0002	Pass	
Chromium			mg/L	< 0.001			0.001	Pass	
Chromium (filtered)			mg/L	< 0.001			0.001	Pass	
Copper			mg/L	< 0.001			0.001	Pass	
Copper (filtered)			mg/L	< 0.001			0.001	Pass	
Lead			mg/L	< 0.001			0.001	Pass	
Lead (filtered)			mg/L	< 0.001			0.001	Pass	
Mercury			mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)			mg/L	< 0.0001			0.0001	Pass	
Nickel			mg/L	< 0.001			0.001	Pass	
Nickel (filtered)			mg/L	< 0.001			0.001	Pass	
Zinc			mg/L	< 0.005			0.005	Pass	
Zinc (filtered)			mg/L	< 0.005			0.005	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	98			80-120	Pass	
Arsenic (filtered)			%	99			80-120	Pass	
Cadmium			%	96			80-120	Pass	
Cadmium (filtered)			%	97			80-120	Pass	
Chromium			%	97			80-120	Pass	
Chromium (filtered)			%	97			80-120	Pass	
Copper			%	96			80-120	Pass	
Copper (filtered)			%	96			80-120	Pass	
Lead			%	98			80-120	Pass	
Lead (filtered)			%	97			80-120	Pass	
Mercury			%	102			80-120	Pass	
Mercury (filtered)			%	103			80-120	Pass	
Nickel			%	96			80-120	Pass	
Nickel (filtered)			%	96			80-120	Pass	
Zinc			%	103			80-120	Pass	
Zinc (filtered)			%	95			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	N24-Ma0040450	NCP	%	100			75-125	Pass	
Cadmium	N24-Ma0040450	NCP	%	97			75-125	Pass	
Chromium	N24-Ma0040450	NCP	%	98			75-125	Pass	
Copper	N24-Ma0040450	NCP	%	96			75-125	Pass	
Lead	N24-Ma0040450	NCP	%	99			75-125	Pass	
Mercury	N24-Ma0040450	NCP	%	100			75-125	Pass	
Nickel	N24-Ma0040450	NCP	%	96			75-125	Pass	
Zinc	N24-Ma0040450	NCP	%	96			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S24-Ma0035096	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S24-Ma0035096	NCP	mg/L	0.0003	0.0003	3.4	30%	Pass	
Chromium	S24-Ma0035096	NCP	mg/L	0.002	0.002	14	30%	Pass	
Copper	S24-Ma0035096	NCP	mg/L	0.005	0.005	3.0	30%	Pass	
Lead	S24-Ma0035096	NCP	mg/L	0.004	0.004	6.1	30%	Pass	
Mercury	S24-Ma0035096	NCP	mg/L	0.0002	0.0002	5.4	30%	Pass	
Nickel	S24-Ma0035096	NCP	mg/L	0.008	0.008	1.4	30%	Pass	
Zinc	S24-Ma0035096	NCP	mg/L	0.78	0.78	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S24-Ma0043137	CP	mg/L	0.004	0.004	2.4	30%	Pass	
Cadmium (filtered)	S24-Ma0043137	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S24-Ma0043137	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S24-Ma0043137	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	S24-Ma0043137	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S24-Ma0043137	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S24-Ma0043137	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S24-Ma0043137	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Nileshni Goundar
Fang Yee Tan

Analytical Services Manager
Senior Analyst-Metal



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.



CHAIN OF CUSTODY

ALS Laboratory,
please tick →

ALS Laboratory, 25 Harbour Road, Middle Harbour Bridge, 1500m Road, Warrack, NSW, 2204
Ph: 02 6877 8888 E: ghd@als.com.au
ALS Laboratory, 25 Harbour Road, Middle Harbour Bridge, 1500m Road, Warrack, NSW, 2204
Ph: 02 6877 8888 E: ghd@als.com.au
ALS Laboratory, 25 Harbour Road, Middle Harbour Bridge, 1500m Road, Warrack, NSW, 2204
Ph: 02 6877 8888 E: ghd@als.com.au

Environmental Division
Sydney

Work Order Reference

ES2334428



Telephone: + 61-2-8784 8555

CLIENT: GHD Pty Ltd	TURNAROUND REQUIREMENT ☐ Standard TAT (List due date):	STANDARD TAT
OFFICE: Sydney	(Standard TAT may be longer for some tests e.g., Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	
PROJECT: M12 Surface Water	ALS QUOTE NO.: SY1322/21	COC SEQUENCE NUMBER (Circle)
ORDER NUMBER: 12554717		COC: 1 2 3 4 5 6 7
PROJECT MANAGER: Henry Luo	CONTACT PH: Henry Luo 0414 090 002	OF: 1 2 3 4 5 6 7
SAMPLER: Emily Smith, Terry Nham	SAMPLER MOBILE: 0431 522 928	RELINQUISHED BY:
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): ESDAT	Emily Smith
Email Reports to: henry.luo@ghd.com, ghdlabreports@ghd.com; terry.nham@ghd.com, emily.smith@ghd.com; andrew.duval@ghd.com		DATE/TIME: 6-10-2023 16:15
		RECEIVED BY: Jack
		DATE/TIME: 06/10/23 16:15
		RELINQUISHED BY:
		DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Please use separate workorders for the M12 Groundwater and M12 Surface Water COCs provided

ALS USE	SAMPLE DETAILS	MATRIX: SOLID (S) WATER (W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).													
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Comments	TOTAL CONTAINERS	W-02T (3 total metals)	EG020T (total Fe, Mn)	NT-08A (total N, No2, No3, NH3, Total P, reactive P)	EP008 (chlorophyll a)	EP020 (oil & grease)	UTO-9W Ultra trace OC/OP	EP074DEFG (VOC - fumigants, Hal aliphatics, Hal Aromatics, THM)	MW006 (FC) Thermotolerant Coliforms	W-14A (PAH/phenols)	EA015H (TDS), EA025H (TSS)	EP030 (BTEXN)	Ultra trace OPP (EP234AX)	Super Ultra Trace PCB's (EP1318-ST)	PFAS - full suite (EP231X)
1	BADDS	6/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
2	BADMS	6/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
3	BADUS	6/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
4	COSDS	6/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
5	COSUS	6/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
6	HINDS	4/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
7	HINUS	4/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
8	KEMDS	4/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
9	KEMUS	4/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
10	ROPDS	4/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
11	ROPUS	4/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
12	SOUDS	4/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
13	SOUUS	4/10/2023	Water		11	X	X	X	X	X		X	X	X	X	X	X		
14	SWDUP1	4/10/2023	Water		1	X													
-	SWDUP2	4/10/2023	Water	PLEASE FORWARD TO EUROFIN WITH ATTACHED COC	1														
-	GWDUP2	6/10/2023	Water	PLEASE FORWARD TO EUROFIN WITH ATTACHED COC	1														

HT

URGENT



mgt

☒ **Sydney**

Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtlabmark.com.au

☐ **Brisbane**

Unit 1-21 Smallwood Place, Murrarie
Phone: +617 3902 4600
Email: enviro.bris@mgtlabmark.com.au

☐ **Melbourne**

2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD**CLIENT DETAILS**Page 1 of 1

Company Name : GHD Pty Ltd, Sydney	Contact Name : Emily Smith 0431 522 928	Purchase Order : 12554717	COC Number :
Office Address :	Project Manager: Henry Luo 0414 090 002	PROJECT Number : 12554717	Eurofins mgt quote ID :
Level 15, 133 Castlereagh Street, Sydney NSW 2000	Email for results : emily.smith@ghd.com; terry.nham@ghd.com; henry.luo@ghd.com; esdat+ghd_au@esdatlabsync.net	PROJECT Name : M12 Water Sampling	Data output format: ESDAT

Analytes						Some common holding times (with correct preservation). For further information contact the lab			
						Waters		Soils	
Special Directions & Comments : Eurofins mgt DI water batch number:	Dissolved metals	Total metals				BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
						TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
						Heavy Metals	6 months	Heavy Metals	6 months
						Mercury, CrVI	28 days	Mercury, CrVI	28 days
						Microbiological testing	24 hours	Microbiological testing	72 hours
						BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
						Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
						Ferrous iron	7 days	ASLP, TCLP	7 days

	Sample ID	Date	Matrix	Dissolved metals	Total metals	Containers:								Sample comments:
						500P	250P	60P	1LA	40mL vial	200mL A	Jar	Bag	
1	SWDUP2	4/10/2023	Water		X			1						
2	GWDUP2	6/10/2023	Water	X				1						
3														
4														
5														
6														
7														
8														
9														
10														

Laboratory Staff		Method Of Shipment		Temperature on arrival:
Relinquished By: Emily Smith	Received By:	☐ Courier ☐ Hand Delivered ☐ Postal Courier Consignment # :		
Date & Time : 06-10-2023 16:15	Date & Time :			Report number:
Signature: esmith	Signature:			



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2334428**

Client : **GHD PTY LTD**
Contact : **MR HENRY LUO**
Address : **LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW, AUSTRALIA 2000**

Laboratory : **Environmental Division Sydney**
Contact : **Sarah Mathew**
Address : **277-289 Woodpark Road Smithfield
NSW Australia 2164**

E-mail : **henry.luo@ghd.com**
Telephone : **+61 02 9239 7100**
Facsimile : **+61 02 9239 7199**

E-mail : **sarah.mathew@alsglobal.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Project : **12554717**
Order number : **12554717**
C-O-C number : **----**
Site : **----**
Sampler : **EMILY SMITH, TERRY NHAM**

Page : **1 of 4**
Quote number : **ES2021GHDSE0026 (SY/322/21)**
QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **06-Oct-2023 16:15**
Client Requested Due : **12-Oct-2023**
Date

Issue Date : **06-Oct-2023**
Scheduled Reporting Date : **12-Oct-2023**

Delivery Details

Mode of Delivery : **Undefined**
No. of coolers/boxes : **8**
Receipt Detail :

Security Seal : **Not Available**
Temperature : **2.3, 2.1, 1.7°C**
No. of samples received / analysed : **14 / 14**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples SWDUP2 and GWDUP2 have been forwarded to Eurofins.**
- **MW006 (FC) could not be conducted as no micro bottles were provided.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EG020T Total Metals by ICP/MS (including digestion)	WATER - EP008 Chlorophyll a	WATER - EP020 Oil & Grease (O&G)	WATER - EP074DEFG VOC - Fumigants, Hal Aliphatics, Hal Aromatics,	WATER - NT-08A Total Nitrogen + NO2 + NO3 + NH3 + Total P +	WATER - W-02T 8 metals (Total)	WATER - W-14A PAH/Phenols (SIM)
ES2334428-001	06-Oct-2023 00:00	BADDS	✓	✓	✓	✓	✓	✓	✓
ES2334428-002	06-Oct-2023 00:00	BADMS	✓	✓	✓	✓	✓	✓	✓
ES2334428-003	06-Oct-2023 00:00	BADUS	✓	✓	✓	✓	✓	✓	✓
ES2334428-004	06-Oct-2023 00:00	COSDS	✓	✓	✓	✓	✓	✓	✓
ES2334428-005	06-Oct-2023 00:00	COSUS	✓	✓	✓	✓	✓	✓	✓
ES2334428-006	04-Oct-2023 00:00	HINDS	✓	✓	✓	✓	✓	✓	✓
ES2334428-007	04-Oct-2023 00:00	HINUS	✓	✓	✓	✓	✓	✓	✓
ES2334428-008	04-Oct-2023 00:00	KEMDS	✓	✓	✓	✓	✓	✓	✓
ES2334428-009	04-Oct-2023 00:00	KEMUS	✓	✓	✓	✓	✓	✓	✓
ES2334428-010	04-Oct-2023 00:00	ROPDS	✓	✓	✓	✓	✓	✓	✓
ES2334428-011	04-Oct-2023 00:00	ROPUS	✓	✓	✓	✓	✓	✓	✓
ES2334428-012	04-Oct-2023 00:00	SOUUS	✓	✓	✓	✓	✓	✓	✓
ES2334428-013	04-Oct-2023 00:00	SOUUS	✓	✓	✓	✓	✓	✓	✓
ES2334428-014	04-Oct-2023 00:00	SWDUP1						✓	

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EA025H Suspended Solids - Standard Level	WATER - EP080 BTEXN	WATER - EP234AX Organophosphorus Pesticides - Extended List (50
ES2334428-001	06-Oct-2023 00:00	BADDS	✓	✓	✓	✓
ES2334428-002	06-Oct-2023 00:00	BADMS	✓	✓	✓	✓
ES2334428-003	06-Oct-2023 00:00	BADUS	✓	✓	✓	✓
ES2334428-004	06-Oct-2023 00:00	COSDS	✓	✓	✓	✓
ES2334428-005	06-Oct-2023 00:00	COSUS	✓	✓	✓	✓
ES2334428-006	04-Oct-2023 00:00	HINDS	✓	✓	✓	✓
ES2334428-007	04-Oct-2023 00:00	HINUS	✓	✓	✓	✓
ES2334428-008	04-Oct-2023 00:00	KEMDS	✓	✓	✓	✓
ES2334428-009	04-Oct-2023 00:00	KEMUS	✓	✓	✓	✓
ES2334428-010	04-Oct-2023 00:00	ROPDS	✓	✓	✓	✓



			WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EA025H Suspended Solids - Standard Level	WATER - EP080 BTEXN	WATER - EP234AX Organophosphorus Pesticides - Extended List (50
ES2334428-011	04-Oct-2023 00:00	ROPUS	✓	✓	✓	✓
ES2334428-012	04-Oct-2023 00:00	SOUUS	✓	✓	✓	✓
ES2334428-013	04-Oct-2023 00:00	SOUUS	✓	✓	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Accounts Payable Australia

Email accountspayableAU@ghd.com

Email andrew.duval@ghd.com

- [illegible]

Email emily.smith@ghd.com

- [illegible]

Email ghdlabreports@ghd.com

- [illegible]

Email henry.luo@ghd.com

- [illegible]

Email terry.nham@ghd.com

- [illegible]



CERTIFICATE OF ANALYSIS

Work Order	: ES2334428	Page	: 1 of 21
Client	: GHD PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR HENRY LUO	Contact	: Sarah Mathew
Address	: LEVEL 15, 133 CASTLEREAGH STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9239 7100	Telephone	: +61-2-8784 8555
Project	: 12554717	Date Samples Received	: 06-Oct-2023 16:15
Order number	: 12554717	Date Analysis Commenced	: 06-Oct-2023
C-O-C number	: ----	Issue Date	: 12-Oct-2023 15:31
Sampler	: EMILY SMITH, TERRY NHAM		
Site	: ----		
Quote number	: SY/322/21		
No. of samples received	: 14		
No. of samples analysed	: 14		



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences and high matrix spike recovery has been noted for particular compounds due to ion enhancement.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-001	ES2334428-002	ES2334428-003	ES2334428-004	ES2334428-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	989	874	686	799	2070
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	29	26	28	43	7
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.003	0.004	0.001
Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.002	0.003	0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	0.010	0.010
Manganese	7439-96-5	0.001	mg/L	0.602	0.619	0.370	0.456	1.86
Iron	7439-89-6	0.05	mg/L	0.73	0.73	0.98	1.23	1.33
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.03	0.03	0.07	0.10
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	0.04	0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.06	0.02	0.04	0.75	0.09
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.06	0.02	0.04	0.79	0.10
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.7	0.8	0.8	0.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.8	0.7	0.8	1.6	0.5
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.08	0.06	0.09	0.06	0.04
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	0.01	0.01	<0.01	<0.01
EP008: Chlorophyll a & Pheophytin a								
Chlorophyll a	----	1	mg/m³	4	6	5	10	<1



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-001	ES2334428-002	ES2334428-003	ES2334428-004	ES2334428-005
				Result	Result	Result	Result	Result
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-001	ES2334428-002	ES2334428-003	ES2334428-004	ES2334428-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-001	ES2334428-002	ES2334428-003	ES2334428-004	ES2334428-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-001	ES2334428-002	ES2334428-003	ES2334428-004	ES2334428-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Formothion	2540-82-1	20	µg/L	<20	<20	<20	<20	<20
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	<10	<10
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00	06-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-001	ES2334428-002	ES2334428-003	ES2334428-004	ES2334428-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	103	104	80.3	97.6	101
Toluene-D8	2037-26-5	5	%	93.0	85.7	81.5	84.2	88.0
4-Bromofluorobenzene	460-00-4	5	%	98.0	90.3	81.4	86.7	90.7
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	19.9	17.8	27.4	24.1	18.5
2-Chlorophenol-D4	93951-73-6	1.0	%	45.2	40.3	55.6	51.7	41.3
2,4,6-Tribromophenol	118-79-6	1.0	%	40.4	39.8	51.9	47.1	36.6
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	52.1	57.1	59.4	58.1	57.8
Anthracene-d10	1719-06-8	1.0	%	70.8	77.9	87.0	62.2	72.4
4-Terphenyl-d14	1718-51-0	1.0	%	60.4	63.8	73.5	67.1	59.3
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	95.2	96.5	78.0	90.2	94.0
Toluene-D8	2037-26-5	2	%	105	96.9	79.6	95.2	99.5
4-Bromofluorobenzene	460-00-4	2	%	109	98.5	82.3	99.5	104



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-006	ES2334428-007	ES2334428-008	ES2334428-009	ES2334428-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	279	356	1010	884	1510
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	11	<5	10	8
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	0.001	0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	<0.001	<0.001	0.004
Copper	7440-50-8	0.001	mg/L	0.001	<0.001	0.006	0.007	0.003
Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.002	0.002	0.003
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.018	0.021	<0.005
Manganese	7439-96-5	0.001	mg/L	0.584	0.354	0.044	0.085	0.982
Iron	7439-89-6	0.05	mg/L	1.52	2.98	0.13	0.30	0.13
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.03	0.05	0.08	0.14
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.08	0.12	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.01	<0.01	7.65	7.72	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	<0.01	7.73	7.84	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	1.1	1.4	2.1	1.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.9	1.1	9.1	9.9	1.5
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.03	0.05	0.78	0.90	0.13
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.67	0.76	0.02
EP008: Chlorophyll a & Pheophytin a								
Chlorophyll a	----	1	mg/m³	1	8	3	2	25



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-006	ES2334428-007	ES2334428-008	ES2334428-009	ES2334428-010
				Result	Result	Result	Result	Result
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-006	ES2334428-007	ES2334428-008	ES2334428-009	ES2334428-010
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-006	ES2334428-007	ES2334428-008	ES2334428-009	ES2334428-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	1.2	1.9	<0.5
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-006	ES2334428-007	ES2334428-008	ES2334428-009	ES2334428-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.09	0.56	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Formothion	2540-82-1	20	µg/L	<20	<20	<20	<20	<20
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	<10	<10
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	ES2334428-006	ES2334428-007	ES2334428-008	ES2334428-009	ES2334428-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	111	109	116	112	113
Toluene-D8	2037-26-5	5	%	94.2	92.6	93.5	92.8	102
4-Bromofluorobenzene	460-00-4	5	%	90.8	93.4	96.5	97.6	105
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	20.0	21.5	21.5	23.4	32.3
2-Chlorophenol-D4	93951-73-6	1.0	%	43.3	46.0	46.4	50.8	69.1
2,4,6-Tribromophenol	118-79-6	1.0	%	41.4	45.2	44.9	50.8	78.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	50.8	52.9	52.6	57.2	80.2
Anthracene-d10	1719-06-8	1.0	%	60.3	61.9	60.0	63.3	94.2
4-Terphenyl-d14	1718-51-0	1.0	%	62.0	68.3	65.7	71.3	95.2
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	102	100	107	104	104
Toluene-D8	2037-26-5	2	%	106	105	106	105	115
4-Bromofluorobenzene	460-00-4	2	%	109	111	107	111	116



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time					04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	----
Compound	CAS Number	LOR	Unit		ES2334428-011	ES2334428-012	ES2334428-013	ES2334428-014	-----
					Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		216	938	976	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		23	24	12	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		0.003	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		0.002	0.003	0.003	0.003	----
Nickel	7440-02-0	0.001	mg/L		0.002	0.004	0.004	<0.001	----
Lead	7439-92-1	0.001	mg/L		0.003	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	<0.005	0.009	----
Manganese	7439-96-5	0.001	mg/L		1.07	0.326	0.375	----	----
Iron	7439-89-6	0.05	mg/L		4.47	0.50	0.36	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.06	0.06	0.19	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	0.01	0.02	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	0.18	0.19	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	0.19	0.21	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		2.0	1.4	1.6	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		2.0	1.6	1.8	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.13	0.06	0.08	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.01	<0.01	<0.01	----	----
EP008: Chlorophyll a & Pheophytin a									
Chlorophyll a	----	1	mg/m³		4	5	8	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time				04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2334428-011	ES2334428-012	ES2334428-013	ES2334428-014	-----
				Result	Result	Result	Result	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	----	----
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	----	----
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	----	----
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	----	----
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	----	----
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	----	----
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	----	----
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	----	----
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	----	----
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	----	----
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	----	----
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	----	----
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	----	----
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	----	----
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	----	----
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	----	----
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	----	----
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	----	----
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	----	----
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	----	----
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2334428-011	ES2334428-012	ES2334428-013	ES2334428-014	-----
				Result	Result	Result	Result	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	----	----
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	----	----
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	----	----
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	----	----
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	----	----
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	----	----
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	----	----
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	----	----
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	----	----
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	----	----
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	----	----
Bromoform	75-25-2	5	µg/L	<5	<5	<5	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time				04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2334428-011	ES2334428-012	ES2334428-013	ES2334428-014	-----
				Result	Result	Result	Result	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	----	----
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2334428-011	ES2334428-012	ES2334428-013	ES2334428-014	-----
				Result	Result	Result	Result	----
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	0.08	0.08	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	<10	----	----
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Formothion	2540-82-1	20	µg/L	<20	<20	<20	----	----
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	04-Oct-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2334428-011	ES2334428-012	ES2334428-013	ES2334428-014	-----
				Result	Result	Result	Result	----
EP234A: OP Pesticides - Continued								
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	112	105	118	----	----
Toluene-D8	2037-26-5	5	%	93.1	83.6	91.9	----	----
4-Bromofluorobenzene	460-00-4	5	%	95.1	90.1	96.9	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	25.8	22.3	25.2	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	56.2	47.3	52.8	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	61.6	45.8	52.0	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	66.9	55.5	62.2	----	----
Anthracene-d10	1719-06-8	1.0	%	72.0	63.8	90.2	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	79.2	71.6	78.7	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	104	96.6	109	----	----
Toluene-D8	2037-26-5	2	%	105	94.6	104	----	----
4-Bromofluorobenzene	460-00-4	2	%	111	104	111	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



QUALITY CONTROL REPORT

Work Order : **ES2334428**

Page : 1 of 19

Client : **GHD PTY LTD**

Laboratory : Environmental Division Sydney

Contact : **MR HENRY LUO**

Contact : Sarah Mathew

Address : LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 9239 7100

Telephone : +61-2-8784 8555

Project : 12554717

Date Samples Received : 06-Oct-2023

Order number : 12554717

Date Analysis Commenced : 06-Oct-2023

C-O-C number : ----

Issue Date : 12-Oct-2023

Sampler : EMILY SMITH, TERRY NHAM

Site : ----

Quote number : SY/322/21

No. of samples received : 14

No. of samples analysed : 14



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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5351638)									
ES2334085-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1360	1350	0.7	0% - 20%
ES2334325-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	546	520	5.1	0% - 20%
ES2334359-010	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2270	2290	0.9	0% - 20%
ES2334428-009	KEMUS	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	884	956	7.8	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5351639)									
ES2334085-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	54	44	18.8	0% - 50%
ES2334325-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2334359-010	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	6	6	0.0	No Limit
ES2334428-009	KEMUS	EA025H: Suspended Solids (SS)	----	5	mg/L	10	12	22.7	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 5348560)									
ES2334314-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0050	<0.0050	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.050	<0.050	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.050	<0.050	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.138	0.140	1.2	0% - 50%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.050	<0.050	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	3.23	3.29	1.6	0% - 20%
		EG020A-T: Iron	7439-89-6	0.05	mg/L	1.37	1.37	0.0	No Limit
ES2334428-008	KEMDS	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.006	0.006	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Page : 3 of 19
 Work Order : ES2334428
 Client : GHD PTY LTD
 Project : 12554717



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 5348560) - continued									
ES2334428-008	KEMDS	EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.044	0.043	2.7	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.018	0.017	7.2	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.13	0.14	8.1	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5350324)									
ES2333696-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2334428-009	KEMUS	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5346279)									
ES2334158-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.05	28.6	No Limit
ES2334428-006	HINDS	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.06	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5346282)									
ES2334429-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	1.97	1.98	0.6	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5344677)									
ES2334362-005	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.07	0.07	0.0	No Limit
ES2334246-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5344683)									
ES2334428-013	SOUUS	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5345467)									
ES2334410-019	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2334436-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.06	0.06	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5346281)									
ES2334359-008	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.07	0.07	0.0	No Limit
ES2334428-006	HINDS	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5346277)									
ES2334359-009	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.4	0.0	No Limit
ES2334429-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	1.2	0.0	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5346275)									
ES2334158-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.03	0.0	No Limit
ES2334352-005	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.02	0.03	35.8	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5346278)									
ES2334428-004	COSDS	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.06	0.07	0.0	No Limit
ES2334429-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.13	0.12	0.0	0% - 50%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 5344678)									
ES2334428-013	SOUUS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2334246-002	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.22	0.22	0.0	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 5345468)									
ES2334428-001	BADDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	<0.01	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074D: Fumigants (QC Lot: 5346631)									
ES2334428-001	BADDS	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES2334428-009	KEMUS	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5346631)									
ES2334428-001	BADDS	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES2334428-009	KEMUS	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5346631) - continued									
ES2334428-009	KEMUS	EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 5346631)									
ES2334428-001	BADDS	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES2334428-009	KEMUS	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 5346631) - continued									
ES2334428-009	KEMUS	EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 5346631)									
ES2334428-001	BADDS	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES2334428-009	KEMUS	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 5346484)									
ES2334428-001	BADDS	EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	0.0	No Limit
ES2334428-010	ROPDS	EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5346484)									
ES2334428-001	BADDS	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	0.0	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.0	No Limit
ES2334428-010	ROPDS	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	0.0	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.0	No Limit
EP080: BTEXN (QC Lot: 5346633)									
ES2334428-001	BADDS	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 5346633) - continued									
ES2334428-001	BADDS	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2334428-009	KEMUS	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP234A: OP Pesticides (QC Lot: 5346135)									
ES2334263-001	Anonymous	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Naftalofos	1491-41-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	0.0	No Limit
		EP234-1x: Formothion	2540-82-1	20	µg/L	<20	<20	0.0	No Limit
ES2334428-010	ROPDS	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Naftalofos	1491-41-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	0.0	No Limit
		EP234-1x: Formothion	2540-82-1	20	µg/L	<20	<20	0.0	No Limit
EP234A: OP Pesticides (QC Lot: 5346136)									
ES2334263-001	Anonymous	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5346136) - continued									
ES2334263-001	Anonymous	EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofenthion	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	0.0	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit
ES2334428-010	ROPDS	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfthion	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5346136) - continued									
ES2334428-010	ROPDS	EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	<10	0.0	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit

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

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
	Spike	Spike Recovery (%)	Acceptable Limits (%)	
Result	Concentration	LCS	Low	High
<10	2000 mg/L	99.2	87.0	109
<10	293 mg/L	102	75.2	126
<10	2470 mg/L	99.4	83.0	124
<5	150 mg/L	96.0	83.0	129
<5	1000 mg/L	98.6	82.0	110
<5	841 mg/L	94.5	83.0	118
<0.001	0.1 mg/L	111	82.0	114
<0.0001	0.1 mg/L	104	84.0	112
<0.001	0.1 mg/L	113	86.0	116
<0.001	0.1 mg/L	114	83.0	118
<0.001	0.1 mg/L	112	85.0	115
<0.001	0.1 mg/L	108	85.0	113
<0.001	0.1 mg/L	110	84.0	116
<0.005	0.1 mg/L	111	79.0	117
<0.05	0.5 mg/L	117	85.0	117
<0.0001	0.01 mg/L	99.3	77.0	111
<0.01	1 mg/L	103	90.0	114
<0.01	1 mg/L	102	90.0	114
<0.01	0.5 mg/L	102	82.0	114
<0.01	0.5 mg/L	98.6	82.0	114
<0.01	0.5 mg/L	100	82.0	114



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5346281) - continued								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5346277)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	96.9	69.0	101
				<0.1	1 mg/L	94.1	70.0	118
				<0.1	5 mg/L	81.8	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5346275)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	98.6	71.3	126
				<0.01	0.442 mg/L	102	71.3	126
				<0.01	1 mg/L	103	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5346278)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	99.1	71.3	126
				<0.01	0.442 mg/L	101	71.3	126
				<0.01	1 mg/L	85.5	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5344678)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	106	85.0	117
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5345468)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	85.0	117
EP008: Chlorophyll (QCLot: 5344613)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	93.3	70.0	130
EP020: Oil and Grease (O&G) (QCLot: 5353168)								
EP020: Oil & Grease	----	5	mg/L	<5	5000 mg/L	93.1	81.0	121
EP074D: Fumigants (QCLot: 5346631)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	93.4	68.0	122
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	102	76.0	118
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	96.0	62.0	120
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	94.7	60.0	114
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	92.9	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 5346631)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	126	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	111	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	96.1	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	93.5	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	102	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	93.7	69.0	131



Sub-Matrix: **WATER**

Method Blank (MB) Report				Laboratory Control Spike (LCS) Report				
				Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
					LCS		Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EP074E: Halogenated Aliphatic Compounds (QCLot: 5346631) - continued								
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	92.1	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	80.4	70.2	128
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	91.2	74.0	118
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	92.6	74.0	120
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	94.9	77.0	119
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	88.5	67.0	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	85.5	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	89.2	62.0	120
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	101	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	96.5	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	95.0	73.0	119
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	97.4	72.0	126
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	97.4	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	85.8	72.0	124
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	87.9	66.0	114
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	68.8	60.0	120
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	87.8	70.6	128
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	98.4	70.0	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	102	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	90.7	71.8	126
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	73.2	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	103	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5346631)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	94.0	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	90.3	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	92.4	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	92.2	73.0	119
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	94.7	75.0	117
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	96.0	74.0	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	97.4	75.0	117
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	103	61.0	125
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	98.0	67.0	123
EP074G: Trihalomethanes (QCLot: 5346631)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	99.1	72.0	120



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074G: Trihalomethanes (QCLot: 5346631) - continued								
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	90.8	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	89.7	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	88.4	73.5	126
EP075(SIM)A: Phenolic Compounds (QCLot: 5346484)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	40.3	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	67.2	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	66.4	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	64.0	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	72.7	48.0	100
EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	74.2	49.0	99.0
EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	76.6	53.0	105
EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	79.2	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	85.4	53.0	99.0
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	69.5	50.0	106
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	67.0	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	43.6	10.0	95.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5346484)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	70.9	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	82.6	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	74.7	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	85.7	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	70.0	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	70.6	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	73.6	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	77.2	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	73.5	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	72.2	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	78.9	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	80.3	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	73.6	63.3	117
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	68.7	59.9	118
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	68.7	61.2	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	68.4	59.1	118



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP080: BTEXN (QCLot: 5346633)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	101	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	92.8	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	104	73.8	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	99.6	73.0	122
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	100	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	92.5	75.5	124
EP234A: OP Pesticides (QCLot: 5346135)								
EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	5 µg/L	86.5	70.0	130
EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	5 µg/L	106	70.0	130
EP234-1x: Formothion	2540-82-1	20	µg/L	<20	----	----	----	----
EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	5 µg/L	107	70.0	130
EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	5 µg/L	114	70.0	130
EP234-1x: Naftalofos	1491-41-4	1	µg/L	<1.0	5 µg/L	81.5	70.0	130
EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	5 µg/L	117	70.0	130
EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	5 µg/L	95.8	70.0	130
EP234A: OP Pesticides (QCLot: 5346136)								
EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	0.2 µg/L	127	77.0	129
EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	0.2 µg/L	115	75.0	135
EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	1 µg/L	128	70.0	130
EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	0.2 µg/L	114	70.0	130
EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	0.2 µg/L	124	74.0	134
EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	0.2 µg/L	126	70.0	130
EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	2 µg/L	120	70.0	130
EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	0.1 µg/L	126	70.0	130
EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	0.05 µg/L	126	64.0	134
EP234-1: Demeton-O & Demeton-S	298-03-3/12 6-75-0	0.02	µg/L	<0.02	0.1 µg/L	126	79.0	127
EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	0.05 µg/L	126	63.0	135
EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	0.2 µg/L	120	70.0	128
EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	0.1 µg/L	121	68.0	138
EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	2 µg/L	124	76.0	128
EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	0.2 µg/L	120	75.0	127
EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	0.5 µg/L	127	72.0	134
EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	0.5 µg/L	129	70.0	130

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EP234A: OP Pesticides (QCLot: 5346136) - continued								
EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	0.2 µg/L	124	70.0	130
EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	0.1 µg/L	91.0	78.0	128
EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	0.1 µg/L	122	71.0	135
EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	100 µg/L	120	70.0	130
EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	20 µg/L	106	64.0	136
EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	0.1 µg/L	122	79.0	125
EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	0.5 µg/L	120	70.0	130
EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	0.2 µg/L	119	70.0	130
EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	0.2 µg/L	116	77.0	123
EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	0.2 µg/L	122	75.0	129
EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	0.1 µg/L	119	74.0	130
EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	2 µg/L	111	69.0	139
EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	20 µg/L	123	66.0	140
EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	1 µg/L	117	68.0	136
EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	0.1 µg/L	124	70.0	130
EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	0.1 µg/L	117	71.0	137
EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	0.1 µg/L	125	70.0	130
EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	1 µg/L	120	70.0	130
EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	0.05 µg/L	114	71.0	137
EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	0.5 µg/L	123	70.0	130
EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	0.2 µg/L	125	70.0	130
EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	0.1 µg/L	124	70.0	130
EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	0.1 µg/L	122	74.0	128
EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	0.05 µg/L	127	77.0	131
EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	0.2 µg/L	94.8	70.0	130
EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	5 µg/L	124	63.0	139

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 5348560)							



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 5348560) - continued							
ES2334416-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	114	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	113	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	112	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	114	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	112	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	114	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	111	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	114	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5350324)							
ES2333696-002	Anonymous	EG035T: Mercury	7439-97-6	0.02 mg/L	74.0	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5346279)							
ES2334158-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	121	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5346282)							
ES2334429-004	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	126	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5344677)							
ES2334246-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	127	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5344683)							
ES2334428-013	SOUUS	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	120	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5345467)							
ES2334428-001	BADDS	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	101	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5346281)							
ES2334359-008	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	110	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5346277)							
ES2334359-010	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	99.2	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5346275)							
ES2334158-002	Anonymous	EK067G: Total Phosphorus as P	----	10 mg/L	95.6	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5346278)							
ES2334428-005	COSUS	EK067G: Total Phosphorus as P	----	1 mg/L	94.7	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5344678)							
ES2334246-002	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	123	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5345468)							
ES2334428-001	BADDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	102	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 5346631)							
ES2334428-001	BADDS	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	78.8	70.0	130



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 5346631) - continued							
ES2334428-001	BADDS	EP074: Trichloroethene	79-01-6	25 µg/L	93.3	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5346631)							
ES2334428-001	BADDS	EP074: Chlorobenzene	108-90-7	25 µg/L	98.9	70.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 5346484)							
ES2334428-002	BADMS	EP075(SIM): Phenol	108-95-2	20 µg/L	33.3	20.0	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	75.6	60.0	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	73.2	60.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	84.5	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	54.9	20.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5346484)							
ES2334428-002	BADMS	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	79.6	70.0	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	79.0	70.0	130
EP080: BTEXN (QCLot: 5346633)							
ES2334428-001	BADDS	EP080: Benzene	71-43-2	25 µg/L	95.5	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	91.7	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	102	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	100	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	97.3	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	105	70.0	130
EP234A: OP Pesticides (QCLot: 5346135)							
ES2334263-001	Anonymous	EP234-1x: Acephate	30560-19-1	5 µg/L	83.0	70.0	130
		EP234-1x: Bensulide	741-58-2	5 µg/L	115	70.0	130
		EP234-1x: Fosetyl Aluminium	39148-24-8	5 µg/L	# 8.1	70.0	130
		EP234-1x: Methidathion	950-37-8	5 µg/L	109	70.0	130
		EP234-1x: Naftalofos	1491-41-4	5 µg/L	101	70.0	130
		EP234-1x: Pyrazophos	13457-18-6	5 µg/L	111	70.0	130
		EP234-1x: Thiometon	640-15-3	5 µg/L	# 29.0	70.0	130
EP234A: OP Pesticides (QCLot: 5346136)							
ES2334263-001	Anonymous	EP234-1: Azinphos-methyl	86-50-0	0.2 µg/L	97.6	70.0	130
		EP234-1: Azinphos-ethyl	2642-71-9	0.2 µg/L	114	70.0	130
		EP234-1: Bromophos-ethyl	4824-78-6	1 µg/L	104	70.0	130
		EP234-1: Carbofenothion	786-19-6	0.2 µg/L	100	70.0	130
		EP234-1: Chlorfenvinphos	470-90-6	0.2 µg/L	106	70.0	130
		EP234-1: Chlorpyrifos	2921-88-2	0.2 µg/L	114	70.0	130
		EP234-1: Chlorpyrifos-methyl	5598-13-0	2 µg/L	104	58.0	136
		EP234-1: Coumaphos	56-72-4	0.1 µg/L	113	70.0	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP234A: OP Pesticides (QCLot: 5346136) - continued							
ES2334263-001	Anonymous	EP234-1: Demeton-O	298-03-3	0.05 µg/L	# 14.6	70.0	130
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.1 µg/L	# 0.0	69.0	129
		EP234-1: Demeton-S	126-75-0	0.05 µg/L	# 21.4	70.0	130
		EP234-1: Demeton-S-methyl	919-86-8	0.2 µg/L	# 43.0	70.0	130
		EP234-1: Diazinon	333-41-5	0.1 µg/L	101	70.0	130
		EP234-1: Dichlorvos	62-73-7	2 µg/L	101	70.0	130
		EP234-1: Dimethoate	60-51-5	0.2 µg/L	102	69.0	131
		EP234-1: Disulfoton	298-04-4	0.5 µg/L	# 13.7	70.0	130
		EP234-1: EPN	2104-64-5	0.5 µg/L	117	70.0	130
		EP234-1: Ethion	563-12-2	0.2 µg/L	106	70.0	130
		EP234-1: Ethoprophos	13194-48-4	0.1 µg/L	101	70.0	132
		EP234-1: Fenamiphos	22224-92-6	0.1 µg/L	84.6	70.0	130
		EP234-1: Fenchlorphos (Ronnel)	299-84-3	100 µg/L	97.8	71.0	133
		EP234-1: Fenitrothion	122-14-5	20 µg/L	82.2	64.0	136
		EP234-1: Fensulfotthion	115-90-2	0.1 µg/L	# 124	83.0	123
		EP234-1: Fenthion	55-38-9	0.5 µg/L	94.1	70.0	130
		EP234-1: Malathion	121-75-5	0.2 µg/L	113	70.0	130
		EP234-1: Mevinphos	7786-34-7	0.2 µg/L	112	69.0	125
		EP234-1: Monocrotophos	6923-22-4	0.2 µg/L	99.4	70.0	128
		EP234-1: Omethoate	1113-02-6	0.1 µg/L	90.4	70.0	130
		EP234-1: Parathion	56-38-2	2 µg/L	83.6	70.0	130
		EP234-1: Parathion-methyl	298-00-0	20 µg/L	# 53.2	70.0	140
		EP234-1: Phorate	298-02-2	1 µg/L	# 58.5	70.0	130
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.1 µg/L	101	70.0	130
		EP234-1: Pirimiphos-methyl	29232-93-7	0.1 µg/L	101	70.0	130
		EP234-1: Profenofos	41198-08-7	0.1 µg/L	103	70.0	130
		EP234-1: Prothiofos	34643-46-4	1 µg/L	113	70.0	130
		EP234-1: Sulfotep	3689-24-5	0.05 µg/L	112	63.0	135
		EP234-1: Sulprofos	35400-43-2	0.5 µg/L	93.9	70.0	130
		EP234-1: Temephos	3383-96-8	0.2 µg/L	109	70.0	130
		EP234-1: Terbufos	13071-79-9	0.1 µg/L	75.8	70.0	130
		EP234-1: Tetrachlorvinphos	22248-79-9	0.1 µg/L	103	77.0	125
		EP234-1: Triazophos	24017-47-8	0.05 µg/L	112	74.0	132
		EP234-1: Trichlorfon	52-68-6	0.2 µg/L	# 47.4	70.0	130
		EP234-1: Trichloronate	327-98-0	5 µg/L	120	63.0	139



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2334428	Page	: 1 of 12
Client	: GHD PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR HENRY LUO	Telephone	: +61-2-8784 8555
Project	: 12554717	Date Samples Received	: 06-Oct-2023
Site	: ----	Issue Date	: 12-Oct-2023
Sampler	: EMILY SMITH, TERRY NHAM	No. of samples received	: 14
Order number	: 12554717	No. of samples analysed	: 14

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

Page : 2 of 12
 Work Order : ES2334428
 Client : GHD PTY LTD
 Project : 12554717



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP234A: OP Pesticides	ES2334263--001	Anonymous	Demeton-O	298-03-3	14.6 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2334263--001	Anonymous	Demeton-O & Demeton-S	298-03-3/126-75-0	0.0 %	69.0-129%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2334263--001	Anonymous	Demeton-S	126-75-0	21.4 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2334263--001	Anonymous	Demeton-S-methyl	919-86-8	43.0 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2334263--001	Anonymous	Disulfoton	298-04-4	13.7 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2334263--001	Anonymous	Fensulfothion	115-90-2	124 %	83.0-123%	Recovery greater than upper data quality objective
EP234A: OP Pesticides	ES2334263--001	Anonymous	Parathion-methyl	298-00-0	53.2 %	70.0-140%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2334263--001	Anonymous	Phorate	298-02-2	58.5 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2334263--001	Anonymous	Trichlorfon	52-68-6	47.4 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2334263--001	Anonymous	Fosetyl Aluminium	39148-24-8	8.1 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2334263--001	Anonymous	Thiometon	640-15-3	29.0 %	70.0-130%	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
HINDS,	HINUS,	----	----	----	07-Oct-2023	06-Oct-2023	1
KEMDS,	KEMUS,						
ROPDS,	ROPUS,						
SOUUS,	SOUUS						
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural							
HINDS,	HINUS,	----	----	----	07-Oct-2023	06-Oct-2023	1
KEMDS,	KEMUS,						
ROPDS,	ROPUS,						
SOUUS,	SOUUS						



Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
	3				
Laboratory Control Samples (LCS)					
Oil and Grease	3	40	7.50	8.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)								
HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	----	----	----	11-Oct-2023	11-Oct-2023	✔
Clear Plastic Bottle - Natural (EA015H)								
BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	----	----	----	11-Oct-2023	13-Oct-2023	✔
EA025: Total Suspended Solids dried at 104 ± 2 °C								
Clear Plastic Bottle - Natural (EA025H)								
HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	----	----	----	11-Oct-2023	11-Oct-2023	✔
Clear Plastic Bottle - Natural (EA025H)								
BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	----	----	----	11-Oct-2023	13-Oct-2023	✔

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) HINDS, HINUS, KEMDS, KEMUS, ROPDS, ROPUS, SOUDS, SOUUS, SWDUP1	04-Oct-2023	10-Oct-2023	01-Apr-2024	✓	10-Oct-2023	01-Apr-2024	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) BADDS, BADMS, BADUS, COSDS, COSUS	06-Oct-2023	10-Oct-2023	03-Apr-2024	✓	10-Oct-2023	03-Apr-2024	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) HINDS, HINUS, KEMDS, KEMUS, ROPDS, ROPUS, SOUDS, SOUUS, SWDUP1	04-Oct-2023	----	----	----	12-Oct-2023	01-Nov-2023	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) BADDS, BADMS, BADUS, COSDS, COSUS	06-Oct-2023	----	----	----	12-Oct-2023	03-Nov-2023	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) HINDS, HINUS, KEMDS, KEMUS, ROPDS, ROPUS, SOUDS, SOUUS	04-Oct-2023	----	----	----	11-Oct-2023	01-Nov-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) BADDS, BADMS, BADUS, COSDS, COSUS	06-Oct-2023	----	----	----	11-Oct-2023	03-Nov-2023	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) HINDS, HINUS, KEMDS, KEMUS, ROPDS, ROPUS, SOUDS, SOUUS	04-Oct-2023	----	----	----	07-Oct-2023	06-Oct-2023	✗
Clear Plastic Bottle - Natural (EK057G) BADDS, BADMS, BADUS, COSDS, COSUS	06-Oct-2023	----	----	----	07-Oct-2023	08-Oct-2023	✓

Page : 5 of 12
 Work Order : ES2334428
 Client : GHD PTY LTD
 Project : 12554717



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	----	----	----	11-Oct-2023	01-Nov-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	----	----	----	11-Oct-2023	03-Nov-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	09-Oct-2023	01-Nov-2023	✓	11-Oct-2023	01-Nov-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	09-Oct-2023	03-Nov-2023	✓	11-Oct-2023	03-Nov-2023	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	09-Oct-2023	01-Nov-2023	✓	11-Oct-2023	01-Nov-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	09-Oct-2023	03-Nov-2023	✓	11-Oct-2023	03-Nov-2023	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	----	----	----	07-Oct-2023	06-Oct-2023	✗
Clear Plastic Bottle - Natural (EK071G) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	----	----	----	07-Oct-2023	08-Oct-2023	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP008: Chlorophyll a & Pheophytin a									
White Plastic Bottle - Unpreserved (EP008)	HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	----	----	----	06-Oct-2023	06-Oct-2023	✓
White Plastic Bottle - Unpreserved (EP008)	BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	----	----	----	06-Oct-2023	08-Oct-2023	✓
EP020: Oil and Grease (O&G)									
Amber Jar - Sulfuric Acid or Sodium Bisulfate (EP020)	HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	----	----	----	11-Oct-2023	01-Nov-2023	✓
Amber Jar - Sulfuric Acid or Sodium Bisulfate (EP020)	BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	----	----	----	11-Oct-2023	03-Nov-2023	✓
EP074D: Fumigants									
Amber VOC Vial - Sulfuric Acid (EP074)	HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	10-Oct-2023	18-Oct-2023	✓	10-Oct-2023	18-Oct-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074)	BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	10-Oct-2023	20-Oct-2023	✓	10-Oct-2023	20-Oct-2023	✓
EP074E: Halogenated Aliphatic Compounds									
Amber VOC Vial - Sulfuric Acid (EP074)	HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	10-Oct-2023	18-Oct-2023	✓	10-Oct-2023	18-Oct-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074)	BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	10-Oct-2023	20-Oct-2023	✓	10-Oct-2023	20-Oct-2023	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	10-Oct-2023	18-Oct-2023	✓	10-Oct-2023	18-Oct-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074)								
BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	10-Oct-2023	20-Oct-2023	✓	10-Oct-2023	20-Oct-2023	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)								
HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	10-Oct-2023	18-Oct-2023	✓	10-Oct-2023	18-Oct-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074)								
BADDS, BADUS, COSUS	BADMS, COSDS,	06-Oct-2023	10-Oct-2023	20-Oct-2023	✓	10-Oct-2023	20-Oct-2023	✓
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	09-Oct-2023	11-Oct-2023	✓	11-Oct-2023	18-Nov-2023	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
BADDS		06-Oct-2023	09-Oct-2023	13-Oct-2023	✓	10-Oct-2023	18-Nov-2023	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
BADMS, COSDS,	BADUS, COSUS	06-Oct-2023	09-Oct-2023	13-Oct-2023	✓	11-Oct-2023	18-Nov-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	04-Oct-2023	09-Oct-2023	11-Oct-2023	✓	11-Oct-2023	18-Nov-2023	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
BADDS		06-Oct-2023	09-Oct-2023	13-Oct-2023	✓	10-Oct-2023	18-Nov-2023	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
BADMS, COSDS,	BADUS, COSUS	06-Oct-2023	09-Oct-2023	13-Oct-2023	✓	11-Oct-2023	18-Nov-2023	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)	HINUS, KEMDS, ROPDS, SOUUS	04-Oct-2023	10-Oct-2023	18-Oct-2023	✓	10-Oct-2023	18-Oct-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)	BADDS, BADUS, COSUS	06-Oct-2023	10-Oct-2023	20-Oct-2023	✓	10-Oct-2023	20-Oct-2023	✓
EP234A: OP Pesticides								
Amber Glass Bottle - Unpreserved (EP234-1)	HINUS, KEMDS, ROPDS, SOUUS	04-Oct-2023	----	----	----	09-Oct-2023	11-Oct-2023	✓
Amber Glass Bottle - Unpreserved (EP234-1)	BADDS, BADUS, COSUS	06-Oct-2023	----	----	----	09-Oct-2023	13-Oct-2023	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	3	27	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	5	44	11.36	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	EP008	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	44	6.82	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	3	40	7.50	8.00	✗	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	6	33	18.18	15.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	EP008	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	44	6.82	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	3	40	7.50	6.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	2	27	7.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	44	6.82	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C. This method is compliant with NEPM Schedule B(3)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G. Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Chlorophyll a and Pheophytin a	EP008	WATER	In house: Referenced to APHA 10200 H. The pigments are extracted into aqueous acetone. The optical density of the extract before and after acidification at both 664 nm and 665 nm is determined spectrometrically.
Oil and Grease	EP020	WATER	In house: Referenced to APHA 5520 B. Oil & grease is a gravimetric procedure to determine the amount of dissolved or emulsified oil & grease residue in an aqueous sample. The sample is serially extracted three times n-hexane. The resultant extracts are combined, dehydrated and concentrated prior to gravimetric determination. This method is compliant with NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.



CHAIN OF CUSTODY

ALS Laboratory
please tick →



Environmental Division
Sydney
Work Order Reference
ES2338893

CLIENT: GHD Pty Ltd	TURNAROUND REQUIREMENT	☐ Standard TAT (List due date):	STANDARD TAT	FOR LAB
OFFICE: Sydney	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Non Standard or urgent TAT (List due date):		Custody St
PROJECT: M12 Surface Water	ALS QUOTE NO.:	SY/322/21		Free Ice / 1

ORDER NUMBER: 12554717	CONTACT PH: Henry Luo 0414 090 002	COC SEQUENCE NUMBER (Circle)	1	2	3	4	5	6	7	Random S
PROJECT MANAGER: Henry Luo		OF:	1	2	3	4	5	6	7	Other com

SAMPLER: Emily Smith, Andrew Duval	SAMPLER MOBILE: 0431 522 928	RELINQUISHED BY:	Andrew Duval (GHD)	RECEIVED BY:	Asmid	RELINQUISHED:
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): ESDAT	DATE/TIME: 9/11/2023 - 4pm	DATE/TIME: 9/11/2023	DATE/TIME:	9/11/16/5	DATE/TIME:

Email Reports to: emily.smith@ghd.com; henry.luo@ghd.com; andrew.duval@ghd.com; esdat@ghd.au@esdatlabsync.net	DATE/TIME: 9/11/2023 - 4pm	DATE/TIME:	Telephone : + 61-2-9794 8655

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please keep M12 Groundwater as a separate workorder to M12 Surface Water as per the COCs provided.

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)	CONTAINER INFORMATION	ANALYSIS REQUIRED including SUTES (NB: Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).																
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Comments	TOTAL CONTAINERS	W-02T (8 total metals)	EG020T (total Fe, Mn)	NT-08A (total N, No2, No3, NH3, Total P, reactive P)	EP008 (chlorophyll a)	EP020 (oil & grease)	UTO-9W Ultra trace OC/OP	EP074DEFG (VOC - fumigants, Hal aliphatics, Hal Aromatics, THM)	MW006 (FC) Thermotolerant Coliforms	W-14A (PAH/phenols)	EA015H (TDS), EA025H (TSS)	EP080 (BTEXN)	Ultra trace OPP (EP234AX)	Super Ultra Trace PCB's (EP1318-ST)	PFAS - full suite (EP231X)

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Comments	TOTAL CONTAINERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			</

PLEASE FORWARD TO EUROFINS WITH ATTACHED COC.



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

JOURNAL OF LINGUISTICS, 47 (2011), 1. doi:10.1017/S0022268811000051
 Printed in the United Kingdom
 © Cambridge University Press 2011
 This journal is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. Organizations in the USA who are also registered with the C.C.C. may therefore copy material (beyond the limits permitted by sections 107 and 108 of US copyright law) subject to payment to C.C.C. of the per copy fee of \$12.00, code 0022-2688/2011 \$12.00. This consent does not extend to multiple copying for promotional or commercial purposes. www.copyright.com
 ISI Tear Sheet Service, 3501 Market Street, Philadelphia, PA 19104, USA, is authorized to supply single copies of separate articles for private use only. Organizations authorized by the Copyright Licensing Agency may also copy material subject to the usual conditions. For all other use, permission should be sought from Cambridge or the American Branch of Cambridge University Press.
 This journal is included in the Cambridge Journals Online service which can be found at <http://www.journals.cambridge.org>. For further information on other Press titles access <http://www.cambridge.org>

© 2004 Blackwell Publishing Ltd, *Journal of Internal Medicine* 255: 105–112

CLIENT: GHD Pty Ltd

OFFICE: Sydney

PROJECT: M12 Groundwater

ORDER NUMBER: 12554717

PROJECT MANAGER: Henry Luo

SAMPLER: Emily Smith, Andrew Duval

COC emailed to ALS? (YES / NO)

Email Reports to: emily.smith@ghd.com; henry.luo@ghd.com; andrew.duval@ghd.com;

eschool.org/anderson/andersonyiv.html

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Please keep M12 Groundwater as a separate workorder to M12 Surface Water as per the COCs provided

TURNAROUND REQUIREMENT ☐ Standard TAT (list due date):

☐ Non Standard or urgent TAT (List due date)

ALS QUOTE NO.: SY1322/21

CONTACT PH: Henry Luo 0414 090 002

MOBILE: 0434 522 928

Andrew Duval (GHD)

DATE/TIME: 9/11/2023 - 4pm

STANDARD TAT

Customary Soil Interact

Free ice / frozen ice bricks present upon receipt? ☒ Yes ☐ No

Random Sample Temperature on Receipt

Other comment

INQUISISHED BY:

ESTIMES:

RECEIVED BY:

100

ANALYSIS REQUIRED including **SUITES** (NB. Suite Codes must be listed to attract suite price)
Where Metals are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).

[illegible]



☒ Sydney
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9500 8400
Email: enviro.syd@mglabmark.com.au

☐ Brisbane
Unit 1-21 Smallwood Place, Murrumbidgee
Phone: +612 3902 4800
Email: enviro.bris@mglabmark.com.au

☐ Melbourne
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.mel@mglabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd, Sydney

Contact Name : Emily Smith 0431 522 928

Purchase Order : 12554717

COC Number :

Page 1 of 1

Office Address :

Project Manager: Henry Luo 0414 050 002

PROJECT Number : 12554717

Eurofins | mgt quote ID :

Level 15, 133 Castlereagh Street, Sydney NSW 2000

Email for results : emily.smith@ghd.com; henry.luo@ghd.com;
andrew.duval@ghd.com; esdat@ghd.au@esdatlabsync.net

PROJECT Name : M12 Water Sampling

Date output format: ES DAT

Special Directions & Comments :

Some common holding times (with correct preservation).
For further information contact the lab

Sent from ALS

Eurofins | mgt DI water batch number:

Sample ID	Date	Matrix	Dissolved metals		Total metals											
1	SWDUP2	9/11/2023	Water		X											
2	GWDUP2	8/11/2023	Water	X												
3																
4																
5																
6																
7																
8																
9																
10																

Relinquished By: Andrew Duval

Received By:

Laboratory Staff

Date & Time : 9/11/2023 - 4pm

Date & Time :

Signature:

Signature:

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Method Of Shipment

Containers:

500P	250P	60P	1LA	40mL vial	200mL A	Jar	Bag
		1					
		1					

Sample comments:

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAs, pH Field and FOX, CFS	24 hours
Ferrous Iron	7 days	ASLP, TCLP	7 days

Report number:

Temperature on arrival:



CHAIN OF
CUSTODY

ALS Laboratory
please tick →



Environmental Division
Sydney
Work Order Reference
ES2338893

CLIENT: GHD Pty Ltd

OFFICE: Sydney

PROJECT: M12 Surface Water

ORDER NUMBER: 12554717

PROJECT MANAGER: Henry Luo

SAMPLER: Emily Smith, Andrew Duval

COC emailed to ALS? (YES / NO)

Email Reports to: emily.smith@ghd.com, henry.luo@ghd.com, andrew.duval@ghd.com, esdat+ghd_aus@esdatbcsync.net

TURNAROUND REQUIREMENT ☐ Standard TAT (List due date):

(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)

ALS QUOTE NO.:

SY/22/21

CONTACT PH: Henry Luo 0414 090 002

SAMPLER MOBILE: 0431 522 928

RELINQUISHED BY:

Andrew Duval (GHD)

DATE/TIME: 9/11/2023 - 4pm

RECEIVED BY:

Asmad

DATE/TIME: 9/11/16/5

RELINQUISHED

DATE/TIME:

Telephone : + 61-2-8794 8655



COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Please keep M12 Groundwater as a separate workorder to M12 Surface Water as per the COCs provided.

SAMPLE DETAILS
MATRIX: SOLID (S) WATER (W)

CONTAINER INFORMATION

ANALYSIS REQUIRED INCLUDING SUITES (NB: Suite Codes must be listed to attract suite price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	Comments	TOTAL CONTAINERS	W-02T (8 total metals)	EG020T (total Fe, Mn)	NT-08A (total N, No2, No3, NH3, Total P, reactive P)	EP008 (chlorophyll a)	EP020 (oil & grease)	UTO-9W Ultra trace OC/OP	EP074DEFG (VOC - fumigants, Hal aliphatics, Hal Aromatics, THM)	MW006 (FC) Thermotolerant Coliforms	W-14A (PAH/phenols)	EA015H (TDS), EA025H (TSS)	EP080 (BTEXN)	Ultra trace OPP (EP234AX)	Super Ultra Trace PCB's (EP1318-ST)	PFAS - full suite (EP231X)
1	BADDS	8/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
2	BADMS	8/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
3	BADUS	8/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
4	COSDS	8/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
5	COSUS	8/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
6	HINDS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
7	HINUS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
8	KEMDS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
9	KEMUS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
10	ROPDS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
11	ROPUS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
12	SODS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
13	SOUUS	9/11/2023	Water		11	X	X	X	X	X		X		X	X	X	X		
14	SWDUP1	8/11/2023	Water		1	X													
15	SWDUP2	9/11/2023	Water		1														

PLEASE FORWARD TO EUROFINS
WITH ATTACHED COC

CHAIN OF CUSTODY
ALS Laboratory:
please link →



ALSO provides a secure chain of custody for all samples received from clients. The chain of custody is a record that tracks the sample from the point of collection to the point of analysis. It ensures that the sample is not tampered with and that the analysis is performed on the correct sample. The chain of custody is a critical part of the ALS process and is used to ensure the integrity of the data.

CLIENT: GHD Pty Ltd

OFFICE: Sydney

PROJECT: M12 Groundwater

ORDER NUMBER: 12564717

PROJECT MANAGER: Henry Luo

SAMPLER: Emily Smith, Andrew Duval

COC emailed to ALS? (YES / NO)

Email Reports to: emily.smith@ghd.com, henry.luo@ghd.com, andrew.duval@ghd.com, esdat@ghd.au, esdat@alabsync.net

Comments/Special Handling/Storage or Disposal:

Please keep M12 Groundwater as a separate workorder to M12 Surface Water as per the COCs provided.

TURNAROUND REQUIREMENT ☐ Standard TAT (List due date): **STANDARD TAT** ☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY/322121

RELINQUISHED BY: Andrew Duval (GHD)

RECEIVED BY: Ashild

DATE/TIME: 9/11/2023 - 4pm

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023

DATE/TIME: 9/11/2023



Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400

Unit 1-21 Smallwood Place, Murrarie
Phone: +617 3902 4600

2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090

CLIENT DETAILS

Page 1 of 1

Contact Name : Emily Smith 0431 522 928

COC Number :

Project Manager: Henry Luo 0414 090 002

Eurofins | mgt quote ID :

Email for results : emily.smith@gghd.com; henry.luo@gghd.com
andrew.duval@gghd.com; esdat+gghd_aud@esdatlabsync.net

Data output format: ESDA

Analytes

Some common holding times (with correct preservation)

For further information contact the lab

Waters

Soils

Sent from ALS

Eurofins | mgt DI water batch number

Sample ID	Date	Matrix

Dissolved metals

Total metals

Containers

500P	250P	60P	1LA	40ml vial	200ml A	Jar	Bag

Sample comments:

	Laboratory Staff

Relinquished By: Andrew Duval

Received By:

Method Of Shipment

Temperature on arrival:

Date & Time : 9/11/2023 - 4pm

Date & Time

Signature: _____

Signature: _____

Couris

☐ Hand DeliveredPostal ☐ ☐

Courier Consignment #

Report number:



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2338893**

Amendment : **2**

Client : **GHD PTY LTD**
Contact : **MR HENRY LUO**
Address : **LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW, AUSTRALIA 2000**

Laboratory : **Environmental Division Sydney**
Contact : **Sarah Mathew**
Address : **277-289 Woodpark Road Smithfield
NSW Australia 2164**

E-mail : **henry.luo@ghd.com**
Telephone : **+61 02 9239 7100**
Facsimile : **+61 02 9239 7199**

E-mail : **sarah.mathew@alsglobal.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Project : **12554717**
Order number : **12554717**
C-O-C number : **----**
Site : **----**
Sampler : **ANDREW DUVAL, EMILY SMITH**

Page : **1 of 4**
Quote number : **ES2021GHDSE0026 (SY/322/21)**
QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **09-Nov-2023 16:15**
Client Requested Due Date : **16-Nov-2023**

Issue Date : **04-Dec-2023**
Scheduled Reporting Date : **16-Nov-2023**

Delivery Details

Mode of Delivery : **Client Drop Off**
No. of coolers/boxes : **7**

Security Seal : **Not Available**
Temperature : **12°C, 16°C, 3.6°C - Ice present**

Receipt Detail :
No. of samples received / analysed : **22 / 22**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Sample GWDUP2 and SWDUP2 have been forwarded to EUROFINs**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA025H Suspended Solids - Standard Level	WATER - EG020T Total Metals by ICP/MS (including digestion)	WATER - EP008 Chlorophyll a	WATER - EP020 Oil & Grease (O&G)	WATER - EP074DEFG VOC - Fumigants, Hal Aliphatics, Hal Aromatics,	WATER - NT-08A Total Nitrogen + NO2 + NO3 + NH3 + Total P +	WATER - W-02T 8 metals (Total)
ES2338893-001	08-Nov-2023 00:00	BADDS	✓	✓	✓	✓	✓	✓	✓
ES2338893-002	08-Nov-2023 00:00	BADMS	✓	✓	✓	✓	✓	✓	✓
ES2338893-003	08-Nov-2023 00:00	BADUS	✓	✓	✓	✓	✓	✓	✓
ES2338893-004	08-Nov-2023 00:00	COSDS	✓	✓	✓	✓	✓	✓	✓
ES2338893-005	08-Nov-2023 00:00	COSUS	✓	✓	✓	✓	✓	✓	✓
ES2338893-006	08-Nov-2023 00:00	HINDS	✓	✓	✓	✓	✓	✓	✓
ES2338893-007	08-Nov-2023 00:00	HINUS	✓	✓	✓	✓	✓	✓	✓
ES2338893-008	08-Nov-2023 00:00	KEMDS	✓	✓	✓	✓	✓	✓	✓
ES2338893-009	08-Nov-2023 00:00	KEMUS	✓	✓	✓	✓	✓	✓	✓
ES2338893-010	08-Nov-2023 00:00	ROPDS	✓	✓	✓	✓	✓	✓	✓
ES2338893-011	08-Nov-2023 00:00	ROPUS	✓	✓	✓	✓	✓	✓	✓
ES2338893-012	08-Nov-2023 00:00	SOUUS	✓	✓	✓	✓	✓	✓	✓
ES2338893-013	08-Nov-2023 00:00	SOUUS	✓	✓	✓	✓	✓	✓	✓
ES2338893-014	08-Nov-2023 00:00	SWDUP1							✓
ES2338893-015	08-Nov-2023 00:00	BH104R	✓					✓	
ES2338893-016	08-Nov-2023 00:00	BH107R	✓					✓	
ES2338893-017	08-Nov-2023 00:00	BH112R	✓					✓	
ES2338893-018	09-Nov-2023 00:00	BH145R	✓					✓	
ES2338893-020	08-Nov-2023 00:00	GWRB1							✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EP080 BTEXN	WATER - EP234AX Organophosphorus Pesticides - Extended List (50	WATER - NT-01D & 02 Major Cations & Anions (Ca, Mg, Na, K, Cl, SO4,	WATER - W-02 8 Metals	WATER - W-14A PAH/Phenols (SIM)
ES2338893-001	08-Nov-2023 00:00	BADDS	✓		✓	✓			✓
ES2338893-002	08-Nov-2023 00:00	BADMS	✓		✓	✓			✓
ES2338893-003	08-Nov-2023 00:00	BADUS	✓		✓	✓			✓
ES2338893-004	08-Nov-2023 00:00	COSDS	✓		✓	✓			✓
ES2338893-005	08-Nov-2023 00:00	COSUS	✓		✓	✓			✓



			WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EP080 BTEXN	WATER - EP234AX Organophosphorus Pesticides - Extended List (50	WATER - NT-01D & 02 Major Cations & Anions (Ca, Mg, Na, K, Cl, SO4,	WATER - W-02 8 Metals	WATER - W-14A PAH/Phenols (SIM)
ES2338893-006	08-Nov-2023 00:00	HINDS	✓		✓	✓			✓
ES2338893-007	08-Nov-2023 00:00	HINUS	✓		✓	✓			✓
ES2338893-008	08-Nov-2023 00:00	KEMDS	✓		✓	✓			✓
ES2338893-009	08-Nov-2023 00:00	KEMUS	✓		✓	✓			✓
ES2338893-010	08-Nov-2023 00:00	ROPDS	✓		✓	✓			✓
ES2338893-011	08-Nov-2023 00:00	ROPUS	✓		✓	✓			✓
ES2338893-012	08-Nov-2023 00:00	SOUDS	✓		✓	✓			✓
ES2338893-013	08-Nov-2023 00:00	SOUUS	✓		✓	✓			✓
ES2338893-015	08-Nov-2023 00:00	BH104R	✓	✓			✓	✓	
ES2338893-016	08-Nov-2023 00:00	BH107R	✓	✓			✓	✓	
ES2338893-017	08-Nov-2023 00:00	BH112R	✓	✓			✓	✓	
ES2338893-018	09-Nov-2023 00:00	BH145R	✓	✓			✓	✓	
ES2338893-019	08-Nov-2023 00:00	GWDUP1						✓	
ES2338893-021	08-Nov-2023 00:00	TRIP SPIKE			✓				
ES2338893-022	08-Nov-2023 00:00	TRIP BLANK			✓				
Matrix: WATER									
Laboratory sample ID	Sampling date / time	Sample ID	WATER - W-04 TRH/BTEXN						
ES2338893-015	08-Nov-2023 00:00	BH104R	✓						
ES2338893-016	08-Nov-2023 00:00	BH107R	✓						
ES2338893-017	08-Nov-2023 00:00	BH112R	✓						
ES2338893-018	09-Nov-2023 00:00	BH145R	✓						

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Accounts Payable Australia

Email accountspayableAU@ghd.com

Email andrew.duval@ghd.com

- [illegible]

Email emily.smith@ghd.com

- [illegible]

Email esdat+ghd_au@esdatlabsync.net

Email esdat+ghd_au@esdatlabsync.net

Email henry.luo@ghd.com

- [illegible]



CERTIFICATE OF ANALYSIS

Work Order : **ES2338893-AE**

Page : 1 of 27

Amendment : **6**

Client : **GHD PTY LTD**

Laboratory : Environmental Division Sydney

Contact : **MR HENRY LUO**

Contact : Samiksha Sathish

Address : LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 9239 7100

Telephone : +61-2-8784 8555

Project : 12554717

Date Samples Received : 09-Nov-2023 16:15

Order number : 12554717

Date Analysis Commenced : 10-Nov-2023

C-O-C number : ----

Issue Date : 04-Apr-2024 13:31

Sampler : ANDREW DUVAL, EMILY SMITH

Site : ----

Quote number : SY/322/21_V5

No. of samples received : 14

No. of samples analysed : 14



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP234: Particular samples required dilution due to unsuitable sample matrix. LOR values have been adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- It has been noted that Reactive P is greater than Total P, however this difference is within the limits of experimental variation.
- TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Amendment (04/04/2024): This report has been amended as a result of misinterpretation of sampling dates. All analysis results are as per the previous report.
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEXN compounds spiked at 20 ug/L.
- Amendment (30/11/2023): This report has been amended following the request to report all samples on a separate COA. All analysis results are as per the previous report
- Amendment (04/12/2023): This report has been amended following the request to report project ID specific samples on separate COAs. All analysis results are as per the previous report

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	
Compound	CAS Number	LOR	Unit	ES2338893-001	ES2338893-002	ES2338893-003	ES2338893-004	ES2338893-005	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	466	546	440	1870	1880	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	164	218	37	32	<5	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.005	0.007	0.002	0.002	<0.001	
Copper	7440-50-8	0.001	mg/L	0.010	0.014	0.004	0.002	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.006	0.008	0.002	0.002	<0.001	
Lead	7439-92-1	0.001	mg/L	0.007	0.009	0.002	0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.022	0.025	0.006	0.036	<0.005	
Manganese	7439-96-5	0.001	mg/L	0.155	0.246	0.250	0.425	0.390	
Iron	7439-89-6	0.05	mg/L	5.33	6.87	1.71	1.68	0.39	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.04	0.03	0.07	0.11	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.02	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.29	0.27	0.02	0.09	0.06	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.31	0.29	0.02	0.09	0.06	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	0.9	3.1	0.6	0.6	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.3	1.2	3.1	0.7	0.7	
EK067G: Total Phosphorus as P by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time					08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00
Compound	CAS Number	LOR	Unit		ES2338893-001	ES2338893-002	ES2338893-003	ES2338893-004	ES2338893-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		0.26	0.36	0.10	0.05	0.03
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
EP008: Chlorophyll a & Pheophytin a									
Chlorophyll a	----	1	mg/m ³		5	<1	4	<1	<1
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	ES2338893-001	ES2338893-002	ES2338893-003	ES2338893-004	ES2338893-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	ES2338893-001	ES2338893-002	ES2338893-003	ES2338893-004	ES2338893-005
				Result	Result	Result	Result	Result
EP074G: Trihalomethanes - Continued								
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	ES2338893-001	ES2338893-002	ES2338893-003	ES2338893-004	ES2338893-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	ES2338893-001	ES2338893-002	ES2338893-003	ES2338893-004	ES2338893-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenclorophos (Ronnell)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfthion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Formothion	2540-82-1	20	µg/L	<20	<20	<20	<20	<20
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	<10	<10
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	ES2338893-001	ES2338893-002	ES2338893-003	ES2338893-004	ES2338893-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	119	100	118	118	121
Toluene-D8	2037-26-5	5	%	125	106	124	122	126
4-Bromofluorobenzene	460-00-4	5	%	124	105	123	123	122
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	27.9	24.2	28.0	24.5	28.8
2-Chlorophenol-D4	93951-73-6	1.0	%	58.6	52.0	56.9	50.5	57.0
2,4,6-Tribromophenol	118-79-6	1.0	%	70.5	58.9	67.9	56.0	62.1
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	74.1	64.3	76.2	67.7	77.3
Anthracene-d10	1719-06-8	1.0	%	80.9	70.5	80.2	70.8	78.1
4-Terphenyl-d14	1718-51-0	1.0	%	75.1	64.7	74.6	64.4	71.9



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time					08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00	08-Nov-2023 00:00
Compound	CAS Number	LOR	Unit		ES2338893-001	ES2338893-002	ES2338893-003	ES2338893-004	ES2338893-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		105	89.5	105	105	108
Toluene-D8	2037-26-5	2	%		105	89.7	104	103	106
4-Bromofluorobenzene	460-00-4	2	%		117	99.4	116	116	119

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	
Compound	CAS Number	LOR	Unit	ES2338893-006	ES2338893-007	ES2338893-008	ES2338893-009	ES2338893-010	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	326	428	755	727	1850	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	34	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.001	0.003	0.001	0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	<0.001	<0.001	0.002	
Copper	7440-50-8	0.001	mg/L	<0.001	0.002	0.006	0.005	0.007	
Nickel	7440-02-0	0.001	mg/L	0.001	0.002	0.002	0.002	0.003	
Lead	7439-92-1	0.001	mg/L	<0.001	0.003	<0.001	<0.001	0.002	
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.013	0.012	0.043	
Manganese	7439-96-5	0.001	mg/L	0.319	0.456	0.052	0.059	0.196	
Iron	7439-89-6	0.05	mg/L	0.92	5.87	0.40	0.34	2.29	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.13	0.08	0.09	0.03	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.12	0.15	0.02	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.05	0.01	6.03	5.41	0.44	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.05	0.01	6.15	5.56	0.46	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	1.3	1.9	1.9	0.9	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.0	1.3	8.0	7.5	1.4	
EK067G: Total Phosphorus as P by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time					09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00
Compound	CAS Number	LOR	Unit		ES2338893-006	ES2338893-007	ES2338893-008	ES2338893-009	ES2338893-010
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		0.04	0.20	0.76	0.78	0.11
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	0.83	0.83	0.02
EP008: Chlorophyll a & Pheophytin a									
Chlorophyll a	----	1	mg/m ³		2	78	2	2	<1
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	ES2338893-006	ES2338893-007	ES2338893-008	ES2338893-009	ES2338893-010
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	ES2338893-006	ES2338893-007	ES2338893-008	ES2338893-009	ES2338893-010
				Result	Result	Result	Result	Result
EP074G: Trihalomethanes - Continued								
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	ES2338893-006	ES2338893-007	ES2338893-008	ES2338893-009	ES2338893-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	ES2338893-006	ES2338893-007	ES2338893-008	ES2338893-009	ES2338893-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.19	0.18	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenclorophos (Ronnell)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Formothion	2540-82-1	20	µg/L	<20	<20	<20	<20	<20
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	<10	<10
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	0.02	<0.02
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	ES2338893-006	ES2338893-007	ES2338893-008	ES2338893-009	ES2338893-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	122	128	130	109	128
Toluene-D8	2037-26-5	5	%	122	127	127	118	125
4-Bromofluorobenzene	460-00-4	5	%	123	123	124	112	124
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	26.3	27.6	26.5	26.4	28.4
2-Chlorophenol-D4	93951-73-6	1.0	%	53.4	45.1	55.0	52.3	56.6
2,4,6-Tribromophenol	118-79-6	1.0	%	59.0	43.7	63.4	61.7	67.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	74.1	78.7	71.2	70.0	78.5
Anthracene-d10	1719-06-8	1.0	%	75.3	78.6	72.8	71.2	77.5
4-Terphenyl-d14	1718-51-0	1.0	%	68.9	72.6	67.9	67.0	72.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time					09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00
Compound	CAS Number	LOR	Unit		ES2338893-006	ES2338893-007	ES2338893-008	ES2338893-009	ES2338893-010
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		109	115	116	97.6	114
Toluene-D8	2037-26-5	2	%		109	115	114	99.7	119
4-Bromofluorobenzene	460-00-4	2	%		119	125	126	107	128

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SOU DS	SOU S	SWDUP1	----
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	08-Nov-2023 00:00	-----	
Compound	CAS Number	LOR	Unit	ES2338893-011	ES2338893-012	ES2338893-013	ES2338893-014	-----	
				Result	Result	Result	Result	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	271	1100	1300	----	----	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	8	17	35	----	----	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.003	<0.001	0.001	0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	<0.001	0.002	----	
Copper	7440-50-8	0.001	mg/L	0.001	0.004	0.002	0.004	----	
Nickel	7440-02-0	0.001	mg/L	0.002	0.006	0.005	0.003	----	
Lead	7439-92-1	0.001	mg/L	0.002	<0.001	<0.001	0.002	----	
Zinc	7440-66-6	0.005	mg/L	0.006	<0.005	<0.005	0.023	----	
Manganese	7439-96-5	0.001	mg/L	0.816	0.364	0.484	----	----	
Iron	7439-89-6	0.05	mg/L	5.16	1.04	1.22	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.17	0.05	0.02	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.02	0.02	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.28	0.24	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.30	0.26	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.5	2.2	2.3	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.5	2.5	2.6	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time					09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	08-Nov-2023 00:00	----
Compound	CAS Number	LOR	Unit		ES2338893-011	ES2338893-012	ES2338893-013	ES2338893-014	-----
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		0.10	0.09	0.12	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	----	----
EP008: Chlorophyll a & Pheophytin a									
Chlorophyll a	----	1	mg/m ³		5	23	47	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	----	----
1,2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	----	----
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	----	----
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	----	----
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	----	----
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	----	----
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	----	----
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	----	----
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	----	----
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	----	----
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	----	----
1,1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	----	----
1,1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	08-Nov-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2338893-011	ES2338893-012	ES2338893-013	ES2338893-014	-----
				Result	Result	Result	Result	----
EP074E: Halogenated Aliphatic Compounds - Continued								
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	----	----
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	----	----
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	----	----
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	----	----
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	----	----
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	----	----
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	----	----
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	----	----
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	----	----
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	----	----
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	----	----
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	----	----
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	----	----
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	----	----
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	----	----
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	----	----
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	08-Nov-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2338893-011	ES2338893-012	ES2338893-013	ES2338893-014	-----
				Result	Result	Result	Result	----
EP074G: Trihalomethanes - Continued								
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	----	----
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	----	----
Bromoform	75-25-2	5	µg/L	<5	<5	<5	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	08-Nov-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2338893-011	ES2338893-012	ES2338893-013	ES2338893-014	-----
				Result	Result	Result	Result	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	----	----
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	08-Nov-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2338893-011	ES2338893-012	ES2338893-013	ES2338893-014	-----
				Result	Result	Result	Result	----
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenclorophos (Ronnell)	299-84-3	10	µg/L	<10	<10	<10	----	----
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	----	----
Fensulfthion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Formothion	2540-82-1	20	µg/L	<20	<20	<20	----	----
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	08-Nov-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2338893-011	ES2338893-012	ES2338893-013	ES2338893-014	-----
				Result	Result	Result	Result	----
EP234A: OP Pesticides - Continued								
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	126	130	124	----	----
Toluene-D8	2037-26-5	5	%	127	128	126	----	----
4-Bromofluorobenzene	460-00-4	5	%	123	122	121	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	26.5	22.9	21.9	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	53.2	45.3	43.0	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	65.7	50.7	48.0	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	74.0	65.4	62.4	----	----
Anthracene-d10	1719-06-8	1.0	%	76.8	65.7	60.4	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	73.0	61.2	57.1	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time					09-Nov-2023 00:00	09-Nov-2023 00:00	09-Nov-2023 00:00	08-Nov-2023 00:00	----
Compound	CAS Number	LOR	Unit		ES2338893-011	ES2338893-012	ES2338893-013	ES2338893-014	-----
					Result	Result	Result	Result	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		112	116	111	----	----
Toluene-D8	2037-26-5	2	%		115	115	112	----	----
4-Bromofluorobenzene	460-00-4	2	%		125	125	123	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



QUALITY CONTROL REPORT

Work Order : ES2338893-AE

Page : 1 of 21

Amendment : 6

Client : GHD PTY LTD

Contact : MR HENRY LUO

Address : LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW, AUSTRALIA 2000

Telephone : +61 02 9239 7100

Project : 12554717

Order number : 12554717

C-O-C number : ----

Sampler : ANDREW DUVAL, EMILY SMITH

Site : ----

Quote number : SY/322/21_V5

No. of samples received : 14

No. of samples analysed : 14

Laboratory : Environmental Division Sydney

Contact : Samiksha Sathish

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61-2-8784 8555

Date Samples Received : 09-Nov-2023

Date Analysis Commenced : 10-Nov-2023

Issue Date : 04-Apr-2024



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5423626)									
ES2338210-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1680	1620	3.6	0% - 20%
ES2338732-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	146	162	10.1	0% - 50%
ES2338808-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	820	826	0.7	0% - 20%
ES2338893-006	HINDS	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	326	328	0.5	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5423627)									
ES2338210-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2338732-005	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	7	9	25.0	No Limit
ES2338808-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	26	25	0.0	No Limit
ES2338893-006	HINDS	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 5419195)									
ES2338152-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.116	0.111	4.5	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.67	0.62	7.4	0% - 50%
		EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 5419195) - continued									
ES2338152-011	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.034	0.036	3.7	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.32	0.32	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 5419196)									
ES2338893-003	BADUS	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.002	0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.003	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.250	0.252	0.6	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.006	0.006	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	1.71	1.67	2.4	0% - 20%
ES2338893-013	SOUUS	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.484	0.495	2.2	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.005	0.005	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	1.22	1.17	4.0	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5419200)									
ES2338279-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2338771-012	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5419201)									
ES2338893-009	KEMUS	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2339034-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5421261)									
ES2338789-012	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.02	0.0	No Limit
ES2338893-007	HINUS	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.13	0.13	0.0	0% - 50%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5418046)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5418046) - continued									
ES2338789-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2338789-010	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.14	0.14	0.0	0% - 50%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5418048)									
ES2338893-006	HINDS	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2339032-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.04	0.04	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5421262)									
ES2338789-012	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	7.26	7.27	0.2	0% - 20%
ES2338893-007	HINUS	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.02	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5421257)									
ES2338893-008	KEMDS	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.2)*	mg/L	1.9	1.9	0.0	No Limit
ES2338893-012	SOU DS	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.2	2.1	0.0	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5421255)									
ES2338771-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2338893-008	KEMDS	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.76	0.76	0.0	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5421258)									
ES2338893-012	SOU DS	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.09	0.08	0.0	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 5418047)									
ES2338893-010	ROPDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	0.02	0.0	No Limit
ES2338893-006	HINDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP074D: Fumigants (QC Lot: 5422345)									
ES2338893-001	BADDS	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES2338893-011	ROPUS	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5422345)									
ES2338893-001	BADDS	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5422345) - continued									
ES2338893-001	BADD5	EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES2338893-011	ROPUS	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5422345) - continued									
ES2338893-011	ROPUS	EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 5422345)									
ES2338893-001	BADDS	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES2338893-011	ROPUS	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 5422345)									
ES2338893-001	BADDS	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074G: Trihalomethanes (QC Lot: 5422345) - continued									
ES2338893-011	ROPUS	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 5417740)									
ES2338893-001	BADDS	EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	0.0	No Limit
ES2338893-011	ROPUS	EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5417740)									
ES2338893-001	BADDS	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5417740) - continued											
ES2338893-001	BADDS	EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.0	No Limit		
ES2338893-011	ROPUS	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP080: BTEXN (QC Lot: 5422344)									
		ES2338893-001	BADDS	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
				EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
EP080: Ethylbenzene	100-41-4			2	µg/L	<2	<2	0.0	No Limit		
EP080: meta- & para-Xylene	108-38-3 106-42-3			2	µg/L	<2	<2	0.0	No Limit		
EP080: ortho-Xylene	95-47-6			2	µg/L	<2	<2	0.0	No Limit		
EP080: Naphthalene	91-20-3			5	µg/L	<5	<5	0.0	No Limit		
ES2338893-011	ROPUS	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit		
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit		
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit		



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 5422344) - continued									
ES2338893-011	ROPUS	EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP234A: OP Pesticides (QC Lot: 5419645)									
ES2338893-004	COSDS	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Naftalofofos	1491-41-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	0.0	No Limit
		EP234-1x: Formothion	2540-82-1	20	µg/L	<20	<20	0.0	No Limit
EP2315727-001	Anonymous	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Naftalofofos	1491-41-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	0.0	No Limit
		EP234-1x: Formothion	2540-82-1	20	µg/L	<20	<20	0.0	No Limit
EP234A: OP Pesticides (QC Lot: 5419646)									
ES2338893-004	COSDS	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5419646) - continued									
ES2338893-004	COSDS	EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-7 5-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	<10	0.0	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit
EP2315727-001	Anonymous	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5419646) - continued									
EP2315727-001	Anonymous	EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofenthion	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5 (2.0)*	µg/L	<2.0	<2.0	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	<10	0.0	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit

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

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
	Spike	Spike Recovery (%)	Acceptable Limits (%)	
Result	Concentration	LCS	Low	High
<10	2000 mg/L	96.3	87.0	109
<10	293 mg/L	105	75.2	126
<10	2470 mg/L	98.6	83.0	124
<5	150 mg/L	99.0	83.0	129
<5	1000 mg/L	94.6	82.0	110
<5	841 mg/L	95.5	83.0	118
<0.001	0.1 mg/L	102	82.0	114
<0.0001	0.1 mg/L	99.8	84.0	112
<0.001	0.1 mg/L	98.8	86.0	116
<0.001	0.1 mg/L	95.6	83.0	118
<0.001	0.1 mg/L	96.7	85.0	115
<0.001	0.1 mg/L	97.0	85.0	113
<0.001	0.1 mg/L	98.5	84.0	116
<0.005	0.1 mg/L	97.8	79.0	117
<0.05	0.5 mg/L	99.5	85.0	117
<0.001	0.1 mg/L	105	82.0	114
<0.0001	0.1 mg/L	104	84.0	112
<0.001	0.1 mg/L	99.7	86.0	116
<0.001	0.1 mg/L	97.5	83.0	118
<0.001	0.1 mg/L	99.3	85.0	115
<0.001	0.1 mg/L	98.5	85.0	113
<0.001	0.1 mg/L	102	84.0	116
<0.005	0.1 mg/L	100	79.0	117
<0.05	0.5 mg/L	102	85.0	117
<0.0001	0.01 mg/L	84.5	77.0	111



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5419201) - continued								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.6	77.0	111
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5421261)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	98.3	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5418046)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	100	82.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5418048)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	101	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5421262)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5421257)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	73.5	69.0	101
				<0.1	1 mg/L	112	70.0	118
				<0.1	5 mg/L	94.3	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5421255)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	87.0	71.3	126
				<0.01	0.442 mg/L	82.4	71.3	126
				<0.01	1 mg/L	95.8	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5421258)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	85.2	71.3	126
				<0.01	0.442 mg/L	95.5	71.3	126
				<0.01	1 mg/L	95.8	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5418047)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	104	85.0	117
EP008: Chlorophyll (QCLot: 5418362)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	97.6	70.0	130
EP020: Oil and Grease (O&G) (QCLot: 5424395)								
EP020: Oil & Grease	----	5	mg/L	<5	5000 mg/L	98.2	81.0	121
				<5	4000 mg/L	98.6	70.0	110
EP074D: Fumigants (QCLot: 5422345)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	99.8	68.0	122
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	96.7	76.0	118
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	94.0	62.0	120
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	96.7	60.0	114
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	99.5	69.0	117



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 5422345)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	60.6	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	78.5	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	71.8	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	83.5	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	83.9	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	89.6	69.0	131
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	92.0	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	76.6	70.2	128
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	95.0	74.0	118
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	94.8	74.0	120
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	98.3	77.0	119
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	94.9	67.0	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	95.3	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	93.4	62.0	120
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	100	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	96.2	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	98.3	73.0	119
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	103	72.0	126
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	101	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	99.2	72.0	124
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	97.8	66.0	114
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	102	60.0	120
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	99.7	70.6	128
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	105	70.0	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	108	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	98.0	71.8	126
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	95.7	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	101	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5422345)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	102	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	101	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	103	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	103	73.0	119
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	107	75.0	117



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074F: Halogenated Aromatic Compounds (QCLot: 5422345) - continued								
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	106	74.0	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	103	75.0	117
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	104	61.0	125
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	106	67.0	123
EP074G: Trihalomethanes (QCLot: 5422345)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	101	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	94.3	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	94.8	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	94.8	73.5	126
EP075(SIM)A: Phenolic Compounds (QCLot: 5417740)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	32.8	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	70.3	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	67.9	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	64.4	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	77.0	48.0	100
EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	72.0	49.0	99.0
EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	72.7	53.0	105
EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	75.3	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	73.5	53.0	99.0
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	76.3	50.0	106
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	69.4	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	48.0	10.0	95.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5417740)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	70.6	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	74.1	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	75.2	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	72.3	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	76.5	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	77.8	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	78.0	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	79.4	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	71.1	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	75.1	62.5	116



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5417740) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	74.9	61.7	119
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	72.2	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	73.1	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	72.3	59.9	118
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	72.4	61.2	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	73.4	59.1	118
EP080: BTEXN (QCLot: 5422344)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	79.9	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	73.6	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	77.7	73.8	122
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	81.9	73.0	122
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	83.3	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	87.8	75.5	124
EP234A: OP Pesticides (QCLot: 5419645)								
EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	5 µg/L	96.4	70.0	130
EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	5 µg/L	93.1	70.0	130
EP234-1x: Formothion	2540-82-1	20	µg/L	<20	-----	-----	-----	-----
EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	5 µg/L	111	70.0	130
EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	5 µg/L	90.7	70.0	130
EP234-1x: Naftalofos	1491-41-4	1	µg/L	<1.0	5 µg/L	93.4	70.0	130
EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	5 µg/L	99.4	70.0	130
EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	5 µg/L	108	70.0	130
EP234A: OP Pesticides (QCLot: 5419646)								
EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	0.2 µg/L	113	77.0	129
EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	0.2 µg/L	93.0	75.0	135
EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	1 µg/L	130	70.0	130
EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	0.2 µg/L	121	70.0	130
EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	0.2 µg/L	92.6	74.0	134
EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	0.2 µg/L	96.0	70.0	130
EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	2 µg/L	108	70.0	130
EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	0.1 µg/L	94.6	70.0	130
EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	0.05 µg/L	90.2	64.0	134



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EP234A: OP Pesticides (QCLot: 5419646) - continued								
EP234-1: Demeton-O & Demeton-S	298-03-3/12 6-75-0	0.02	µg/L	<0.02	0.1 µg/L	96.9	79.0	127
EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	0.05 µg/L	104	63.0	135
EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	0.2 µg/L	92.2	70.0	128
EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	0.1 µg/L	95.3	68.0	138
EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	2 µg/L	80.6	76.0	128
EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	0.2 µg/L	97.6	75.0	127
EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	0.5 µg/L	90.0	72.0	134
EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	0.5 µg/L	117	70.0	130
EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	0.2 µg/L	100	70.0	130
EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	0.1 µg/L	99.8	78.0	128
EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	0.1 µg/L	96.4	71.0	135
EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	100 µg/L	104	70.0	130
EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	20 µg/L	103	64.0	136
EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	0.1 µg/L	89.8	79.0	125
EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	0.5 µg/L	92.5	70.0	130
EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	0.2 µg/L	95.6	70.0	130
EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	0.2 µg/L	95.6	77.0	123
EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	0.2 µg/L	99.8	75.0	129
EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	0.1 µg/L	94.6	74.0	130
EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	2 µg/L	93.4	69.0	139
EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	20 µg/L	93.0	66.0	140
EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	1 µg/L	94.8	68.0	136
EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	0.1 µg/L	96.3	70.0	130
EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	0.1 µg/L	91.4	71.0	137
EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	0.1 µg/L	103	70.0	130
EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	1 µg/L	82.0	70.0	130
EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	0.05 µg/L	103	71.0	137
EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	0.5 µg/L	124	70.0	130
EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	0.2 µg/L	104	70.0	130
EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	0.1 µg/L	85.6	70.0	130
EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	0.1 µg/L	104	74.0	128
EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	0.05 µg/L	98.6	77.0	131
EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	0.2 µg/L	99.4	70.0	130
EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	5 µg/L	132	63.0	139



Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 5419195)							
ES2338152-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	96.6	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	95.6	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	93.5	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	93.0	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	99.0	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	90.8	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	95.7	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	94.9	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 5419196)							
ES2338893-004	COSDS	EG020A-T: Arsenic	7440-38-2	1 mg/L	123	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	118	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	115	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	114	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	119	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	108	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	118	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	117	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5419200)							
ES2338279-002	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	82.2	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5419201)							
ES2338893-010	ROPDS	EG035T: Mercury	7439-97-6	0.01 mg/L	70.7	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5421261)							
ES2338789-012	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	99.5	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5418046)							
ES2338789-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	106	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5418048)							
ES2338893-006	HINDS	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	108	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5421262)							
ES2338789-012	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5421257)							
ES2338893-013	SOUUS	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	86.2	70.0	130

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5421255)							
ES2338771-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	89.0	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5421258)							
ES2338893-013	SOUUS	EK067G: Total Phosphorus as P	----	1 mg/L	90.0	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5418047)							
ES2338893-006	HINDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	104	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 5422345)							
ES2338893-001	BADDS	EP074: 1,1-Dichloroethene	75-35-4	50 µg/L	107	70.0	130
		EP074: Trichloroethene	79-01-6	50 µg/L	81.3	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5422345)							
ES2338893-001	BADDS	EP074: Chlorobenzene	108-90-7	50 µg/L	78.8	70.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 5417740)							
ES2338893-002	BADMS	EP075(SIM): Phenol	108-95-2	20 µg/L	32.8	20.0	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	76.0	60.0	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	89.3	60.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	75.3	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	43.0	20.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5417740)							
ES2338893-002	BADMS	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	75.9	70.0	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	77.6	70.0	130
EP080: BTEXN (QCLot: 5422344)							
ES2338893-001	BADDS	EP080: Benzene	71-43-2	25 µg/L	105	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	102	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	108	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	115	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	118	70.0	130
	EP080: Naphthalene	91-20-3	25 µg/L	117	70.0	130	
EP234A: OP Pesticides (QCLot: 5419645)							
EP2315727-001	Anonymous	EP234-1x: Acephate	30560-19-1	5 µg/L	93.1	70.0	130
		EP234-1x: Bensulide	741-58-2	5 µg/L	87.3	70.0	130
		EP234-1x: Fosetyl Aluminium	39148-24-8	5 µg/L	115	70.0	130
		EP234-1x: Methidathion	950-37-8	5 µg/L	106	70.0	130
		EP234-1x: Naftalofos	1491-41-4	5 µg/L	102	70.0	130
		EP234-1x: Pyrazophos	13457-18-6	5 µg/L	113	70.0	130
	EP234-1x: Thiometon	640-15-3	5 µg/L	# 68.0	70.0	130	
EP234A: OP Pesticides (QCLot: 5419646)							



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP234A: OP Pesticides (QCLot: 5419646) - continued							
EP2315727-001	Anonymous	EP234-1: Azinphos-methyl	86-50-0	0.2 µg/L	96.8	70.0	130
		EP234-1: Azinphos-ethyl	2642-71-9	0.2 µg/L	93.4	70.0	130
		EP234-1: Bromophos-ethyl	4824-78-6	1 µg/L	122	70.0	130
		EP234-1: Carbofenothion	786-19-6	0.2 µg/L	127	70.0	130
		EP234-1: Chlorfenvinphos	470-90-6	0.2 µg/L	97.7	70.0	130
		EP234-1: Chlorpyrifos	2921-88-2	0.2 µg/L	98.0	70.0	130
		EP234-1: Chlorpyrifos-methyl	5598-13-0	2 µg/L	100	58.0	136
		EP234-1: Coumaphos	56-72-4	0.1 µg/L	92.3	70.0	130
		EP234-1: Demeton-O	298-03-3	0.05 µg/L	94.8	70.0	130
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.1 µg/L	99.5	69.0	129
		EP234-1: Demeton-S	126-75-0	0.05 µg/L	104	70.0	130
		EP234-1: Demeton-S-methyl	919-86-8	0.2 µg/L	95.8	70.0	130
		EP234-1: Diazinon	333-41-5	0.1 µg/L	93.4	70.0	130
		EP234-1: Dichlorvos	62-73-7	2 µg/L	89.8	70.0	130
		EP234-1: Dimethoate	60-51-5	0.2 µg/L	82.0	69.0	131
		EP234-1: Disulfoton	298-04-4	0.5 µg/L	90.2	70.0	130
		EP234-1: EPN	2104-64-5	0.5 µg/L	119	70.0	130
		EP234-1: Ethion	563-12-2	0.2 µg/L	95.8	70.0	130
		EP234-1: Ethoprophos	13194-48-4	0.1 µg/L	89.9	70.0	132
		EP234-1: Fenamiphos	22224-92-6	0.1 µg/L	98.1	70.0	130
		EP234-1: Fenchlorphos (Ronnell)	299-84-3	100 µg/L	98.7	71.0	133
		EP234-1: Fenitrothion	122-14-5	20 µg/L	108	64.0	136
		EP234-1: Fensulfotthion	115-90-2	0.1 µg/L	96.3	83.0	123
		EP234-1: Fenthion	55-38-9	0.5 µg/L	93.5	70.0	130
		EP234-1: Malathion	121-75-5	0.2 µg/L	96.3	70.0	130
		EP234-1: Mevinphos	7786-34-7	0.2 µg/L	100	69.0	125
		EP234-1: Monocrotophos	6923-22-4	0.2 µg/L	111	70.0	128
		EP234-1: Omethoate	1113-02-6	0.1 µg/L	89.1	70.0	130
		EP234-1: Parathion	56-38-2	2 µg/L	109	70.0	130
		EP234-1: Parathion-methyl	298-00-0	20 µg/L	104	70.0	140
		EP234-1: Phorate	298-02-2	1 µg/L	100	70.0	130
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.1 µg/L	98.7	70.0	130
		EP234-1: Pirimiphos-methyl	29232-93-7	0.1 µg/L	97.8	70.0	130
		EP234-1: Profenofos	41198-08-7	0.1 µg/L	104	70.0	130
		EP234-1: Prothiofos	34643-46-4	1 µg/L	# 133	70.0	130
		EP234-1: Sulfotep	3689-24-5	0.05 µg/L	92.0	63.0	135
		EP234-1: Sulprofos	35400-43-2	0.5 µg/L	111	70.0	130
		EP234-1: Temephos	3383-96-8	0.2 µg/L	108	70.0	130
		EP234-1: Terbufos	13071-79-9	0.1 µg/L	92.5	70.0	130



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP234A: OP Pesticides (QCLot: 5419646) - continued							
EP2315727-001	Anonymous	EP234-1: Tetrachlorvinphos	22248-79-9	0.1 µg/L	97.8	77.0	125
		EP234-1: Triazophos	24017-47-8	0.05 µg/L	99.8	74.0	132
		EP234-1: Trichlorfon	52-68-6	0.2 µg/L	96.6	70.0	130
		EP234-1: Trichloronate	327-98-0	5 µg/L	123	63.0	139



QA/QC Compliance Assessment to assist with Quality Review

Work Order : ES2338893

Page : 1 of 16

Amendment : 6

Client : GHD PTY LTD

Contact : MR HENRY LUO

Project : 12554717

Site : ----

Sampler : ANDREW DUVAL, EMILY SMITH

Order number : 12554717

Laboratory : Environmental Division Sydney

Telephone : +61-2-8784 8555

Date Samples Received : 09-Nov-2023

Issue Date : 04-Apr-2024

No. of samples received : 22

No. of samples analysed : 22

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	ES2338736--001	Anonymous	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	ES2338789--012	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP234A: OP Pesticides	EP2315727--001	Anonymous	Prothiofos	34643-46-4	133 %	70.0-130%	Recovery greater than upper data quality objective
EP234A: OP Pesticides	EP2315727--001	Anonymous	Thiometon	640-15-3	68.0 %	70.0-130%	Recovery less than lower data quality objective

Matrix: **WATER** Evaluation: **x** = Holding time breach ; **✓** = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) BADDs, BADUS, COSUS, BH107R, BH112R		08-Nov-2023	----	----	----	14-Nov-2023	15-Nov-2023	✓
Clear Plastic Bottle - Natural (EA015H) HINDs, KEMDS, ROPDS, SOUUS, BH145R		09-Nov-2023	----	----	----	14-Nov-2023	16-Nov-2023	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H) BADDs, BADUS, COSUS, BH107R,	BADMS, COSDS, BH104R, BH112R	08-Nov-2023	----	----	----	14-Nov-2023	15-Nov-2023	✓
Clear Plastic Bottle - Natural (EA025H) HINDS, KEMDS, ROPDS, SOUDS, BH145R	HINUS, KEMUS, ROPUS, SOUUS,	09-Nov-2023	----	----	----	14-Nov-2023	16-Nov-2023	✓
EA065: Total Hardness as CaCO3								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) BH104R, BH112R	BH107R,	08-Nov-2023	----	----	----	14-Nov-2023	06-Dec-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) BH145R		09-Nov-2023	----	----	----	14-Nov-2023	07-Dec-2023	✓
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P) BH104R, BH112R	BH107R,	08-Nov-2023	----	----	----	13-Nov-2023	22-Nov-2023	✓
Clear Plastic Bottle - Natural (ED037-P) BH145R		09-Nov-2023	----	----	----	13-Nov-2023	23-Nov-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) BH104R, BH112R	BH107R,	08-Nov-2023	----	----	----	10-Nov-2023	06-Dec-2023	✓
Clear Plastic Bottle - Natural (ED041G) BH145R		09-Nov-2023	----	----	----	11-Nov-2023	07-Dec-2023	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) BH104R, BH112R	BH107R,	08-Nov-2023	----	----	----	10-Nov-2023	06-Dec-2023	✓
Clear Plastic Bottle - Natural (ED045G) BH145R		09-Nov-2023	----	----	----	11-Nov-2023	07-Dec-2023	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) BH104R, BH112R	BH107R,	08-Nov-2023	----	----	----	14-Nov-2023	06-Dec-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) BH145R		09-Nov-2023	----	----	----	14-Nov-2023	07-Dec-2023	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) BH104R, BH112R,	BH107R, GWDUP1	08-Nov-2023	----	----	----	14-Nov-2023	06-May-2024	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) BH145R		09-Nov-2023	----	----	----	14-Nov-2023	07-May-2024	✓
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) BADDs, BADUS, COSUS,	BADMS, COSDS, SWDUP1	08-Nov-2023	13-Nov-2023	06-May-2024	✓	13-Nov-2023	06-May-2024	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) HINDs, KEMDS, ROPDS, SOUDS, GWRB1	HINUS, KEMUS, ROPUS, SOUUS,	09-Nov-2023	13-Nov-2023	07-May-2024	✓	13-Nov-2023	07-May-2024	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) BH104R, BH112R,	BH107R, GWDUP1	08-Nov-2023	----	----	----	15-Nov-2023	06-Dec-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) BH145R		09-Nov-2023	----	----	----	15-Nov-2023	07-Dec-2023	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) BADDs, BADUS, COSUS,	BADMS, COSDS, SWDUP1	08-Nov-2023	----	----	----	14-Nov-2023	06-Dec-2023	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) HINDs, KEMDS, ROPDS, SOUDS, GWRB1	HINUS, KEMUS, ROPUS, SOUUS,	09-Nov-2023	----	----	----	14-Nov-2023	07-Dec-2023	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G)		08-Nov-2023	----	----	----	13-Nov-2023	06-Dec-2023	✔
BADDS,	BADMS,							
BADUS,	COSDS,							
COSUS,	BH104R,							
BH107R,	BH112R							
Clear Plastic Bottle - Sulfuric Acid (EK055G)		09-Nov-2023	----	----	----	13-Nov-2023	07-Dec-2023	✔
HINDS,	HINUS,							
KEMDS,	KEMUS,							
ROPDS,	ROPUS,							
SOUUS,	SOUUS,							
BH145R								
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G)		08-Nov-2023	----	----	----	10-Nov-2023	10-Nov-2023	✔
BADDS,	BADMS,							
BADUS,	COSDS,							
COSUS,	BH104R,							
BH107R,	BH112R							
Clear Plastic Bottle - Natural (EK057G)		09-Nov-2023	----	----	----	10-Nov-2023	11-Nov-2023	✔
HINDS,	HINUS,							
KEMDS,	KEMUS,							
ROPDS,	ROPUS,							
SOUUS,	SOUUS							
Clear Plastic Bottle - Natural (EK057G)		09-Nov-2023	----	----	----	11-Nov-2023	11-Nov-2023	✔
BH145R								
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G)		08-Nov-2023	----	----	----	13-Nov-2023	06-Dec-2023	✔
BADDS,	BADMS,							
BADUS,	COSDS,							
COSUS,	BH104R,							
BH107R,	BH112R							
Clear Plastic Bottle - Sulfuric Acid (EK059G)		09-Nov-2023	----	----	----	13-Nov-2023	07-Dec-2023	✔
HINDS,	HINUS,							
KEMDS,	KEMUS,							
ROPDS,	ROPUS,							
SOUUS,	SOUUS,							
BH145R								



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) BADDS, BADMS, BADUS, COSDS, COSUS, BH104R, BH107R, BH112R	08-Nov-2023	13-Nov-2023	06-Dec-2023	✓	13-Nov-2023	06-Dec-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) HINDS, HINUS, KEMDS, KEMUS, ROPDS, ROPUS, SOUUS, SOUUS, BH145R	09-Nov-2023	13-Nov-2023	07-Dec-2023	✓	13-Nov-2023	07-Dec-2023	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) BADDS, BADMS, BADUS, COSDS, COSUS, BH104R, BH107R, BH112R	08-Nov-2023	13-Nov-2023	06-Dec-2023	✓	13-Nov-2023	06-Dec-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G) HINDS, HINUS, KEMDS, KEMUS, ROPDS, ROPUS, SOUUS, SOUUS, BH145R	09-Nov-2023	13-Nov-2023	07-Dec-2023	✓	13-Nov-2023	07-Dec-2023	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G) BADDS, BADMS, BADUS, COSDS, COSUS, BH104R, BH107R, BH112R	08-Nov-2023	----	----	----	10-Nov-2023	10-Nov-2023	✓
Clear Plastic Bottle - Natural (EK071G) HINDS, HINUS, KEMDS, KEMUS, ROPDS, ROPUS, SOUUS, SOUUS	09-Nov-2023	----	----	----	10-Nov-2023	11-Nov-2023	✓
Clear Plastic Bottle - Natural (EK071G) BH145R	09-Nov-2023	----	----	----	11-Nov-2023	11-Nov-2023	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP008: Chlorophyll a & Pheophytin a									
Opaque Plastic Bottle - Unpreserved (EP008) BADDS, BADUS, COSUS		BADMS, COSDS,	08-Nov-2023	----	----	----	10-Nov-2023	10-Nov-2023	✓
Opaque Plastic Bottle - Unpreserved (EP008) HINDS, KEMDS, ROPDS, SOUUS,		HINUS, KEMUS, ROPUS, SOUUS	09-Nov-2023	----	----	----	10-Nov-2023	11-Nov-2023	✓
EP020: Oil and Grease (O&G)									
Amber Jar - Sulfuric Acid or Sodium Bisulfate (EP020) BADDS, BADUS, COSUS		BADMS, COSDS,	08-Nov-2023	----	----	----	15-Nov-2023	06-Dec-2023	✓
Amber Jar - Sulfuric Acid or Sodium Bisulfate (EP020) HINDS, KEMDS, ROPDS, SOUUS,		HINUS, KEMUS, ROPUS, SOUUS	09-Nov-2023	----	----	----	15-Nov-2023	07-Dec-2023	✓
EP074D: Fumigants									
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS		BADMS, COSDS,	08-Nov-2023	14-Nov-2023	22-Nov-2023	✓	14-Nov-2023	22-Nov-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS		HINUS,	09-Nov-2023	14-Nov-2023	23-Nov-2023	✓	14-Nov-2023	23-Nov-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) KEMUS, ROPUS, SOUUS		ROPDS, SOUUS,	09-Nov-2023	14-Nov-2023	23-Nov-2023	✓	15-Nov-2023	23-Nov-2023	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	08-Nov-2023	14-Nov-2023	22-Nov-2023	✔	14-Nov-2023	22-Nov-2023	✔
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS	HINUS,	09-Nov-2023	14-Nov-2023	23-Nov-2023	✔	14-Nov-2023	23-Nov-2023	✔
Amber VOC Vial - Sulfuric Acid (EP074) KEMUS, ROPUS, SOUUS	ROPDS, SOUUS,	09-Nov-2023	14-Nov-2023	23-Nov-2023	✔	15-Nov-2023	23-Nov-2023	✔
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	08-Nov-2023	14-Nov-2023	22-Nov-2023	✔	14-Nov-2023	22-Nov-2023	✔
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS	HINUS,	09-Nov-2023	14-Nov-2023	23-Nov-2023	✔	14-Nov-2023	23-Nov-2023	✔
Amber VOC Vial - Sulfuric Acid (EP074) KEMUS, ROPUS, SOUUS	ROPDS, SOUUS,	09-Nov-2023	14-Nov-2023	23-Nov-2023	✔	15-Nov-2023	23-Nov-2023	✔
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	08-Nov-2023	14-Nov-2023	22-Nov-2023	✔	14-Nov-2023	22-Nov-2023	✔
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS	HINUS,	09-Nov-2023	14-Nov-2023	23-Nov-2023	✔	14-Nov-2023	23-Nov-2023	✔
Amber VOC Vial - Sulfuric Acid (EP074) KEMUS, ROPUS, SOUUS	ROPDS, SOUUS,	09-Nov-2023	14-Nov-2023	23-Nov-2023	✔	15-Nov-2023	23-Nov-2023	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BADDS, BADUS, COSUS	BADMS, COSDS,	08-Nov-2023	13-Nov-2023	15-Nov-2023	✓	14-Nov-2023	23-Dec-2023	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	09-Nov-2023	13-Nov-2023	16-Nov-2023	✓	14-Nov-2023	23-Dec-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BADDS, BADUS, COSUS	BADMS, COSDS,	08-Nov-2023	13-Nov-2023	15-Nov-2023	✓	14-Nov-2023	23-Dec-2023	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	09-Nov-2023	13-Nov-2023	16-Nov-2023	✓	14-Nov-2023	23-Dec-2023	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) BH104R, BH112R	BH107R,	08-Nov-2023	13-Nov-2023	15-Nov-2023	✓	16-Nov-2023	23-Dec-2023	✓
Amber Glass Bottle - Unpreserved (EP071) BH145R		09-Nov-2023	13-Nov-2023	16-Nov-2023	✓	16-Nov-2023	23-Dec-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) BH104R, BH112R	BH107R,	08-Nov-2023	14-Nov-2023	22-Nov-2023	✓	15-Nov-2023	22-Nov-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) BH145R		09-Nov-2023	14-Nov-2023	23-Nov-2023	✓	15-Nov-2023	23-Nov-2023	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) BH104R, BH112R	BH107R,	08-Nov-2023	13-Nov-2023	15-Nov-2023	✓	16-Nov-2023	23-Dec-2023	✓
Amber Glass Bottle - Unpreserved (EP071) BH145R		09-Nov-2023	13-Nov-2023	16-Nov-2023	✓	16-Nov-2023	23-Dec-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) BH104R, BH112R	BH107R,	08-Nov-2023	14-Nov-2023	22-Nov-2023	✓	15-Nov-2023	22-Nov-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) BH145R		09-Nov-2023	14-Nov-2023	23-Nov-2023	✓	15-Nov-2023	23-Nov-2023	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) TRIP SPIKE,	TRIP BLANK	06-Nov-2023	14-Nov-2023	20-Nov-2023	✓	15-Nov-2023	20-Nov-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) BADDS, BADUS, COSUS	BADMS, COSDS,	08-Nov-2023	14-Nov-2023	22-Nov-2023	✓	14-Nov-2023	22-Nov-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) BH104R, BH112R	BH107R,	08-Nov-2023	14-Nov-2023	22-Nov-2023	✓	15-Nov-2023	22-Nov-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) HINDS, KEMDS	HINUS,	09-Nov-2023	14-Nov-2023	23-Nov-2023	✓	14-Nov-2023	23-Nov-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) KEMUS, ROPUS, SOUUS,	ROPDS, SOUDS, BH145R	09-Nov-2023	14-Nov-2023	23-Nov-2023	✓	15-Nov-2023	23-Nov-2023	✓
EP234A: OP Pesticides								
Amber Glass Bottle - Unpreserved (EP234-1) BADDS, BADUS, COSUS	BADMS, COSDS,	08-Nov-2023	----	----	----	13-Nov-2023	15-Nov-2023	✓
Amber Glass Bottle - Unpreserved (EP234-1) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	09-Nov-2023	----	----	----	13-Nov-2023	16-Nov-2023	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	6	55	10.91	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	55	10.91	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	EP008	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	59	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	4	47	8.51	8.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	8	55	14.55	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	8	55	14.55	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	6	26	23.08	15.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	EP008	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	59	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	3	47	6.38	6.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	55	5.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	55	5.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	59	5.08	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	32	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	30	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	32	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	26	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO ₄ DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
Chlorophyll a and Pheophytin a	EP008	WATER	In house: Referenced to APHA 10200 H. The pigments are extracted into aqueous acetone. The optical density of the extract before and after acidification at both 664 nm and 665 nm is determined spectrometrically.
Oil and Grease	EP020	WATER	In house: Referenced to APHA 5520 B. Oil & grease is a gravimetric procedure to determine the amount of dissolved or emulsified oil & grease residue in an aqueous sample. The sample is serially extracted three times n-hexane. The resultant extracts are combined, dehydrated and concentrated prior to gravimetric determination. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.



mgt

☒ **Sydney**

Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtilabmark.com.au

☐ **Brisbane**

Unit 1-21 Smallwood Place, Murrarie
Phone: +617 3902 4600
Email: enviro.bris@mgtilabmark.com.au

☐ **Melbourne**

2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtilabmark.com.au

CHAIN OF CUSTODY RECORD**CLIENT DETAILS**Page 1 of 1

Company Name : GHD Pty Ltd, Sydney	Contact Name : Emily Smith 0431 522 928	Purchase Order : 12554717	COC Number :
Office Address :	Project Manager: Henry Luo 0414 090 002	PROJECT Number : 12554717	Eurofins mgt quote ID :
Level 15, 133 Castlereagh Street, Sydney NSW 2000	Email for results : emily.smith@ghd.com; henry.luo@ghd.com; andrew.duval@ghd.com; esdat+ghd_au@esdatlabsync.net	PROJECT Name : M12 Water Sampling	Data output format: ESDAT

				Analytes							Some common holding times (with correct preservation). For further information contact the lab									
Special Directions & Comments : Eurofins mgt DI water batch number:				Dissolved metals	Total metals						Waters					Soils				
											BTEX, MAH, VOC		14 days	BTEX, MAH, VOC		14 days				
											TRH, PAH, Phenols, Pesticides		7 days	TRH, PAH, Phenols, Pesticides		14 days				
											Heavy Metals		6 months	Heavy Metals		6 months				
											Mercury, CrVI		28 days	Mercury, CrVI		28 days				
Microbiological testing		24 hours	Microbiological testing								72 hours									
BOD, Nitrate, Nitrite, Total N		2 days	Anions								28 days									
Solids - TSS, TDS etc		7 days	SPOCAS, pH Field and FOX, CrS								24 hours									
Ferrous iron		7 days	ASLP, TCLP								7 days									
Containers:																	Sample comments:			
500P	250P	60P	1LA	40mL vial	200mL A	Jar	Bag													
1	SWDUP2	5/12/2023	Water		X								1							
2	GWDUP2	6/12/2023	Water	X									1							
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

		Laboratory Staff		Method Of Shipment		Temperature on arrival:	
Relinquished By: Andrew Duval		Received By:		☐ Courier ☐ Hand Delivered ☐ Postal Courier Consignment # :		Report number:	
Date & Time : 6/12/2023 - 5pm		Date & Time :					
Signature:		Signature:					



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2342516**

Client : **GHD PTY LTD**
Contact : **MR HENRY LUO**
Address : **LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW, AUSTRALIA 2000**

Laboratory : **Environmental Division Sydney**
Contact : **Sarah Mathew**
Address : **277-289 Woodpark Road Smithfield
NSW Australia 2164**

E-mail : **henry.luo@ghd.com**
Telephone : **+61 02 9239 7100**
Facsimile : **+61 02 9239 7199**

E-mail : **sarah.mathew@alsglobal.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Project : **12554717**
Order number : **12554717**
C-O-C number : **----**
Site : **----**
Sampler : **ANDREW DUVAL, EMILY SMITH**

Page : **1 of 3**
Quote number : **ES2021GHDSE0026 (SY/322/21)**
QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **06-Dec-2023 17:15**
Client Requested Due : **14-Dec-2023**
Date

Issue Date : **08-Dec-2023**
Scheduled Reporting Date : **14-Dec-2023**

Delivery Details

Mode of Delivery : **Client Drop Off**
No. of coolers/boxes : **7**

Security Seal : **Not Available**
Temperature : **10.6, 11.5, 10.8°C - Ice present**

Receipt Detail :
No. of samples received / analysed : **14 / 14**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- This is an updated SRN which indicates corrected project ID.
- This is an updated SRN which indicates the correction of sample ID for sample 10, ROPDS.
- **Sample SWDUP2 has been forwarded to Eurofins.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA025H Suspended Solids - Standard Level	WATER - EG020T Total Metals by ICP/MS (including digestion)	WATER - EP008 Chlorophyll a	WATER - EP020 Oil & Grease (O&G)	WATER - EP074DEFG VOC - Fumigants, Hal Aromatics,	WATER - W-02T 8 metals (Total)	WATER - W-14A PAH/Phenols (SIM)
ES2342516-001	06-Dec-2023 00:00	BADDS	✓	✓	✓	✓	✓	✓	✓
ES2342516-002	06-Dec-2023 00:00	BADMS	✓	✓	✓	✓	✓	✓	✓
ES2342516-003	06-Dec-2023 00:00	BADUS	✓	✓	✓	✓	✓	✓	✓
ES2342516-004	06-Dec-2023 00:00	COSDS	✓	✓	✓	✓	✓	✓	✓
ES2342516-005	06-Dec-2023 00:00	COSUS	✓	✓	✓	✓	✓	✓	✓
ES2342516-006	05-Dec-2023 00:00	HINDS	✓	✓	✓	✓	✓	✓	✓
ES2342516-007	05-Dec-2023 00:00	HINUS	✓	✓	✓	✓	✓	✓	✓
ES2342516-008	05-Dec-2023 00:00	KEMDS	✓	✓	✓	✓	✓	✓	✓
ES2342516-009	05-Dec-2023 00:00	KEMUS	✓	✓	✓	✓	✓	✓	✓
ES2342516-010	05-Dec-2023 00:00	ROPDS	✓	✓	✓	✓	✓	✓	✓
ES2342516-011	05-Dec-2023 00:00	ROPUS	✓	✓	✓	✓	✓	✓	✓
ES2342516-012	05-Dec-2023 00:00	SOUUS	✓	✓	✓	✓	✓	✓	✓
ES2342516-013	05-Dec-2023 00:00	SOUUS	✓	✓	✓	✓	✓	✓	✓
ES2342516-014	05-Dec-2023 00:00	SWDUP1						✓	

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EP080 BTEXN	WATER - EP234AX Organophosphorus Pesticides - Extended List (50)	WATER - NT-08A Total Nitrogen + NO2 + NO3 + NH3 + Total P +
ES2342516-001	06-Dec-2023 00:00	BADDS	✓	✓	✓	✓
ES2342516-002	06-Dec-2023 00:00	BADMS	✓	✓	✓	✓
ES2342516-003	06-Dec-2023 00:00	BADUS	✓	✓	✓	✓
ES2342516-004	06-Dec-2023 00:00	COSDS	✓	✓	✓	✓
ES2342516-005	06-Dec-2023 00:00	COSUS	✓	✓	✓	✓
ES2342516-006	05-Dec-2023 00:00	HINDS	✓	✓	✓	✓
ES2342516-007	05-Dec-2023 00:00	HINUS	✓	✓	✓	✓
ES2342516-008	05-Dec-2023 00:00	KEMDS	✓	✓	✓	✓
ES2342516-009	05-Dec-2023 00:00	KEMUS	✓	✓	✓	✓
ES2342516-010	05-Dec-2023 00:00	ROPDS	✓	✓	✓	✓

Proactive Holding Time Report

Requested Deliverables

Email accountspayableAU@ghd.com

[illegible][illegible]

Email esdat+ghd_au@esdatlabsync.net

[illegible]



CERTIFICATE OF ANALYSIS

Work Order : **ES2342516**
Client : **GHD PTY LTD**
Contact : **MR HENRY LUO**
Address : **LEVEL 15, 133 CASTLEREAGH STREET**
SYDNEY NSW, AUSTRALIA 2000
Telephone : **+61 02 9239 7100**
Project : **12554717**
Order number : **12554717**
C-O-C number : **----**
Sampler : **ANDREW DUVAL, EMILY SMITH**
Site : **----**
Quote number : **SY/322/21**
No. of samples received : **14**
No. of samples analysed : **14**

Page : 1 of 27
Laboratory : Environmental Division Sydney
Contact : Sarah Mathew
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 06-Dec-2023 17:15
Date Analysis Commenced : 07-Dec-2023
Issue Date : 15-Dec-2023 10:49



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences and high matrix spike recovery has been noted for particular compounds due to ion enhancement.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EK071G: It has been noted that Reactive P is greater than Total P on sample 2, however this difference is within the limits of experimental variation.

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	
Compound	CAS Number	LOR	Unit	ES2342516-001	ES2342516-002	ES2342516-003	ES2342516-004	ES2342516-005	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	486	448	984	1460	1430	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	32	34	19	52	12	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.002	<0.001	<0.001	0.002	0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	0.041	<0.005	
Manganese	7439-96-5	0.001	mg/L	0.171	0.193	0.330	0.978	0.804	
Iron	7439-89-6	0.05	mg/L	0.47	0.50	0.51	0.95	0.33	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	<0.01	0.01	0.06	0.04	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	0.20	0.06	0.02	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.20	0.06	0.02	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.6	0.7	0.6	0.6	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.7	0.6	0.9	0.7	0.6	
EK067G: Total Phosphorus as P by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-001	ES2342516-002	ES2342516-003	ES2342516-004	ES2342516-005
				Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser - Continued								
Total Phosphorus as P	----	0.01	mg/L	0.07	0.07	0.03	0.04	0.02
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.08	<0.01	<0.01	<0.01
EP008: Chlorophyll a & Pheophytin a								
Chlorophyll a	----	1	mg/m ³	5	6	9	<1	1
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	6	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-001	ES2342516-002	ES2342516-003	ES2342516-004	ES2342516-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-001	ES2342516-002	ES2342516-003	ES2342516-004	ES2342516-005
				Result	Result	Result	Result	Result
EP074G: Trihalomethanes - Continued								
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-001	ES2342516-002	ES2342516-003	ES2342516-004	ES2342516-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-001	ES2342516-002	ES2342516-003	ES2342516-004	ES2342516-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenclorophos (Ronnell)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Formothion	2540-82-1	20	µg/L	<20	<20	<20	<20	<20
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	<10	<10
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-001	ES2342516-002	ES2342516-003	ES2342516-004	ES2342516-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	109	101	108	103	107
Toluene-D8	2037-26-5	5	%	106	91.0	104	95.5	100
4-Bromofluorobenzene	460-00-4	5	%	112	99.4	111	104	106
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	24.6	29.0	23.0	28.4	27.0
2-Chlorophenol-D4	93951-73-6	1.0	%	47.4	56.4	47.1	54.0	53.1
2,4,6-Tribromophenol	118-79-6	1.0	%	54.2	68.4	52.6	64.6	63.0
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	53.9	68.6	54.4	66.5	64.7
Anthracene-d10	1719-06-8	1.0	%	83.9	99.5	79.0	94.5	93.1
4-Terphenyl-d14	1718-51-0	1.0	%	71.2	86.1	64.4	80.9	76.8



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time					06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00	06-Dec-2023 00:00
Compound	CAS Number	LOR	Unit		ES2342516-001	ES2342516-002	ES2342516-003	ES2342516-004	ES2342516-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		101	93.8	100	95.8	99.2
Toluene-D8	2037-26-5	2	%		97.1	83.6	94.8	87.6	91.6
4-Bromofluorobenzene	460-00-4	2	%		119	107	118	112	113

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	
Compound	CAS Number	LOR	Unit	ES2342516-006	ES2342516-007	ES2342516-008	ES2342516-009	ES2342516-010	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	364	432	428	445	482	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	12	76	30	69	10	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	0.001	0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	0.001	0.004	0.004	0.003	
Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	0.001	0.002	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	0.002	0.001	0.002	<0.001	
Zinc	7440-66-6	0.005	mg/L	<0.005	0.010	0.014	0.022	0.009	
Manganese	7439-96-5	0.001	mg/L	0.419	0.442	0.052	0.083	0.253	
Iron	7439-89-6	0.05	mg/L	0.47	2.64	0.98	0.86	0.36	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.04	0.04	0.06	0.04	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	1.47	1.30	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	1.47	1.30	<0.01	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	1.4	0.8	0.9	0.6	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.0	1.4	2.3	2.2	0.6	
EK067G: Total Phosphorus as P by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-006	ES2342516-007	ES2342516-008	ES2342516-009	ES2342516-010
				Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser - Continued								
Total Phosphorus as P	----	0.01	mg/L	0.03	0.08	0.40	0.46	0.03
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.34	0.33	0.02
EP008: Chlorophyll a & Pheophytin a								
Chlorophyll a	----	1	mg/m ³	2	5	<1	<1	5
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-006	ES2342516-007	ES2342516-008	ES2342516-009	ES2342516-010
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-006	ES2342516-007	ES2342516-008	ES2342516-009	ES2342516-010
				Result	Result	Result	Result	Result
EP074G: Trihalomethanes - Continued								
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-006	ES2342516-007	ES2342516-008	ES2342516-009	ES2342516-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-006	ES2342516-007	ES2342516-008	ES2342516-009	ES2342516-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenclorophos (Ronnell)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Formothion	2540-82-1	20	µg/L	<20	<20	<20	<20	<20
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	<10	<10
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00
Compound	CAS Number	LOR	Unit	ES2342516-006	ES2342516-007	ES2342516-008	ES2342516-009	ES2342516-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	101	87.8	103	95.0	100
Toluene-D8	2037-26-5	5	%	97.6	81.0	98.1	88.3	93.8
4-Bromofluorobenzene	460-00-4	5	%	103	86.1	101	98.2	102
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	25.6	18.8	23.8	28.3	26.8
2-Chlorophenol-D4	93951-73-6	1.0	%	49.9	36.6	46.8	57.1	51.0
2,4,6-Tribromophenol	118-79-6	1.0	%	57.4	44.1	51.9	63.7	61.5
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	61.1	56.4	59.0	69.1	70.1
Anthracene-d10	1719-06-8	1.0	%	87.4	70.2	62.6	96.5	94.3
4-Terphenyl-d14	1718-51-0	1.0	%	70.8	60.3	64.2	79.2	78.3



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time					05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00
Compound	CAS Number	LOR	Unit		ES2342516-006	ES2342516-007	ES2342516-008	ES2342516-009	ES2342516-010
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		94.0	89.7	95.6	88.0	92.6
Toluene-D8	2037-26-5	2	%		89.5	83.7	89.8	81.0	86.2
4-Bromofluorobenzene	460-00-4	2	%		110	98.2	109	104	109

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	----	
Compound	CAS Number	LOR	Unit	ES2342516-011	ES2342516-012	ES2342516-013	ES2342516-014	-----	
				Result	Result	Result	Result	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	269	558	518	----	----	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	42	22	75	----	----	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	0.001	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.004	<0.001	----	
Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.002	<0.001	----	
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	0.002	<0.001	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.007	<0.005	----	
Manganese	7439-96-5	0.001	mg/L	1.07	0.210	0.237	----	----	
Iron	7439-89-6	0.05	mg/L	2.87	0.70	1.23	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.16	0.16	0.14	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.05	0.05	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.04	0.85	0.79	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.04	0.90	0.84	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	1.1	0.9	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.2	2.0	1.7	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time					05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	----
Compound	CAS Number	LOR	Unit		ES2342516-011	ES2342516-012	ES2342516-013	ES2342516-014	-----
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		0.06	0.23	0.25	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	0.12	0.11	----	----
EP008: Chlorophyll a & Pheophytin a									
Chlorophyll a	----	1	mg/m ³		7	7	6	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	----	----
1,2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	----	----
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	----	----
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	----	----
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	----	----
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	----	----
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	----	----
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	----	----
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	----	----
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	----	----
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	----	----
1,1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	----	----
1,1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2342516-011	ES2342516-012	ES2342516-013	ES2342516-014	-----
				Result	Result	Result	Result	----
EP074E: Halogenated Aliphatic Compounds - Continued								
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	----	----
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	----	----
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	----	----
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	----	----
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	----	----
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	----	----
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	----	----
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	----	----
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	----	----
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	----	----
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	----	----
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	----	----
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	----	----
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	----	----
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	----	----
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	----	----
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2342516-011	ES2342516-012	ES2342516-013	ES2342516-014	-----
				Result	Result	Result	Result	----
EP074G: Trihalomethanes - Continued								
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	----	----
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	----	----
Bromoform	75-25-2	5	µg/L	<5	<5	<5	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2342516-011	ES2342516-012	ES2342516-013	ES2342516-014	-----
				Result	Result	Result	Result	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	----	----
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2342516-011	ES2342516-012	ES2342516-013	ES2342516-014	-----
				Result	Result	Result	Result	----
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenclorophos (Ronnell)	299-84-3	10	µg/L	<10	<10	<10	----	----
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Formothion	2540-82-1	20	µg/L	<20	<20	<20	----	----
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time				05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2342516-011	ES2342516-012	ES2342516-013	ES2342516-014	-----
				Result	Result	Result	Result	----
EP234A: OP Pesticides - Continued								
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	102	98.6	103	----	----
Toluene-D8	2037-26-5	5	%	98.0	89.4	99.5	----	----
4-Bromofluorobenzene	460-00-4	5	%	103	97.0	102	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	23.0	28.1	27.0	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	45.3	56.9	53.0	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	55.6	67.9	60.5	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	59.1	77.4	71.0	----	----
Anthracene-d10	1719-06-8	1.0	%	79.2	94.6	88.7	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	65.0	83.8	73.3	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time					05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	05-Dec-2023 00:00	----
Compound	CAS Number	LOR	Unit		ES2342516-011	ES2342516-012	ES2342516-013	ES2342516-014	-----
					Result	Result	Result	Result	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		94.5	91.2	94.9	----	----
Toluene-D8	2037-26-5	2	%		89.8	81.8	91.4	----	----
4-Bromofluorobenzene	460-00-4	2	%		109	104	110	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



QUALITY CONTROL REPORT

Work Order	: ES2342516	Page	: 1 of 22
Client	: GHD PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR HENRY LUO	Contact	: Sarah Mathew
Address	: LEVEL 15, 133 CASTLEREAGH STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9239 7100	Telephone	: +61-2-8784 8555
Project	: 12554717	Date Samples Received	: 06-Dec-2023
Order number	: 12554717	Date Analysis Commenced	: 07-Dec-2023
C-O-C number	: ----	Issue Date	: 15-Dec-2023
Sampler	: ANDREW DUVAL, EMILY SMITH		
Site	: ----		
Quote number	: SY/322/21		
No. of samples received	: 14		
No. of samples analysed	: 14		



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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5487058)									
ES2342200-013	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	356	335	5.9	0% - 20%
ES2342402-011	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	285	300	5.1	0% - 20%
ES2342437-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	382	394	3.1	0% - 20%
ES2342516-006	HINDS	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	364	344	5.8	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5487059)									
ES2342200-013	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	40	38	4.4	No Limit
ES2342402-011	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	8	6	34.5	No Limit
ES2342437-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	32	29	10.5	No Limit
ES2342516-006	HINDS	EA025H: Suspended Solids (SS)	----	5	mg/L	12	9	23.8	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 5485692)									
ES2342373-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.022	0.020	7.4	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	0.002	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.43	0.43	0.0	No Limit
		EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2342516-003	BADUS	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 5485692) - continued									
ES2342516-003	BADUS	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.330	0.328	0.6	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.51	0.48	6.7	0% - 50%
EG020T: Total Metals by ICP-MS (QC Lot: 5485693)									
ES2342516-013	SOUUS	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.003	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.237	0.240	1.5	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.007	0.008	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	1.23	1.28	4.2	0% - 20%
EW2305471-004	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.023	0.021	8.5	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.42	0.44	5.7	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5489774)									
ES2342435-021	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2342516-010	ROPDS	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5482642)									
ES2342516-001	BADDS	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.03	0.0	No Limit
ES2342516-010	ROPDS	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.05	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5485366)									
ES2342516-011	ROPUS	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.16	0.15	0.0	0% - 50%
ES2342868-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.04	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5477151)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5477151) - continued									
ES2342362-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2342105-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5477157)									
ES2342516-009	KEMUS	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5478857)									
ES2342516-001	BADDS	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2342343-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5482643)									
ES2342516-001	BADDS	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2342516-010	ROPDS	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5485365)									
ES2342516-011	ROPUS	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.04	0.04	0.0	No Limit
ES2342868-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5482638)									
ES2342469-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (1.0)*	mg/L	38.3	35.9	6.5	0% - 20%
ES2342516-006	HINDS	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	1.0	0.0	0% - 50%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5485369)									
ES2342516-011	ROPUS	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	1.2	0.0	0% - 50%
ES2342868-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.3	2.2	5.9	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5482640)									
ES2342516-006	HINDS	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.04	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5485370)									
ES2342516-011	ROPUS	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.06	0.06	0.0	No Limit
ES2342868-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.32	0.31	0.0	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 5477152)									
ES2342083-003	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01 (0.10)*	mg/L	<0.10	<0.10	0.0	No Limit
ES2342516-009	KEMUS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.33	0.34	0.0	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 5478861)									
ES2342516-001	BADDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EW2305481-003	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP074D: Fumigants (QC Lot: 5478095)									
ES2342516-001	BADDS	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074D: Fumigants (QC Lot: 5478095) - continued									
ES2342516-011	ROPUS	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5478095)									
ES2342516-001	BADDs	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES2342516-011	ROPUS	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5478095) - continued									
ES2342516-011	ROPUS	EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 5478095)									
ES2342516-001	BADDS	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES2342516-011	ROPUS	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 5478095) - continued									
ES2342516-011	ROPUS	EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 5478095)									
ES2342516-001	BADDS	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES2342516-011	ROPUS	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 5478145)									
ES2342516-001	BADDS	EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	0.0	No Limit
ES2342516-011	ROPUS	EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	0.0	No Limit		

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)	
EP075(SIM)A: Phenolic Compounds (QC Lot: 5478145) - continued										
ES2342516-011	ROPUS	EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	0.0	No Limit	
		EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	0.0	No Limit	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5478145)										
ES2342516-001	BADDS	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.0	No Limit	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.0	No Limit			
ES2342516-011	ROPUS	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.0	No Limit	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.0	No Limit			
EP080: BTEXN (QC Lot: 5478096)										



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 5478096) - continued									
ES2342516-001	BADD5	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES2342516-011	ROPUS	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit		
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit		
EP234A: OP Pesticides (QC Lot: 5477775)									
ES2342516-007	HINUS	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
			5-0						
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5477775) - continued									
ES2342516-007	HINUS	EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	<10	0.0	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit
EB2337972-002	Anonymous	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfotthion	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofenthothion	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5477775) - continued									
EB2337972-002	Anonymous	EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5 (2.0)*	µg/L	<2.0	<2.0	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	<10	0.0	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit
EP234A: OP Pesticides (QC Lot: 5477778)									
ES2342516-007	HINUS	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Naftalofos	1491-41-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	0.0	No Limit
		EP234-1x: Formothion	2540-82-1	20	µg/L	<20	<20	0.0	No Limit
EB2337972-002	Anonymous	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5477778) - continued									
EB2337972-002	Anonymous	EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Naftalofos	1491-41-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	0.0	No Limit
		EP234-1x: Formothion	2540-82-1	20	µg/L	<20	<20	0.0	No Limit

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

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5487058)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	96.5	87.0	109
				<10	293 mg/L	102	75.2	126
				<10	2470 mg/L	97.9	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5487059)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	100	83.0	129
				<5	1000 mg/L	95.8	82.0	110
				<5	841 mg/L	103	83.0	118
EG020T: Total Metals by ICP-MS (QCLot: 5485692)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	94.2	82.0	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	93.8	84.0	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.4	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.6	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.0	85.0	115
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	99.8	85.0	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	90.2	84.0	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.9	79.0	117
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	97.4	85.0	117
EG020T: Total Metals by ICP-MS (QCLot: 5485693)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.6	82.0	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.2	84.0	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.2	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.6	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.5	85.0	115
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.9	85.0	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	90.9	84.0	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.2	79.0	117
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.4	85.0	117
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5489774)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	89.2	77.0	111
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5482642)								

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5482642) - continued								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	110	90.0	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5485366)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	108	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5477151)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	82.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5477157)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	102	82.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5478857)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	96.8	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5482643)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5485365)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	107	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5482638)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	94.2	69.0	101
				<0.1	1 mg/L	88.6	70.0	118
				<0.1	5 mg/L	84.9	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5485369)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	101	69.0	101
				<0.1	1 mg/L	99.5	70.0	118
				<0.1	5 mg/L	106	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5482640)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	99.4	71.3	126
				<0.01	0.442 mg/L	85.3	71.3	126
				<0.01	1 mg/L	99.7	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5485370)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	97.1	71.3	126
				<0.01	0.442 mg/L	94.3	71.3	126
				<0.01	1 mg/L	104	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5477152)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	106	85.0	117
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5478861)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	85.0	117
EP008: Chlorophyll (QCLot: 5480159)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP008: Chlorophyll (QCLot: 5480159) - continued								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	92.5	70.0	130
EP008: Chlorophyll (QCLot: 5480160)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	88.4	70.0	130
EP020: Oil and Grease (O&G) (QCLot: 5489287)								
EP020: Oil & Grease	----	5	mg/L	<5	5000 mg/L	105	81.0	121
EP074D: Fumigants (QCLot: 5478095)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	104	68.0	122
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	103	76.0	118
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	98.7	62.0	120
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	104	60.0	114
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	103	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 5478095)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	114	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	107	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	105	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	110	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	105	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	103	69.0	131
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	101	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	113	70.2	128
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	98.9	74.0	118
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	102	74.0	120
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	100	77.0	119
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	101	67.0	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	102	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	100	62.0	120
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	101	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	99.3	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	104	73.0	119
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	104	72.0	126
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	99.2	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	101	72.0	124
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	99.9	66.0	114
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	93.7	60.0	120



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP074E: Halogenated Aliphatic Compounds (QCLot: 5478095) - continued								
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	96.5	70.6	128
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	103	70.0	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	102	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	107	71.8	126
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	103	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	107	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5478095)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	102	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	101	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	104	73.0	119
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	98.6	75.0	117
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	101	74.0	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	100	75.0	117
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	106	61.0	125
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	104	67.0	123
EP074G: Trihalomethanes (QCLot: 5478095)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	99.9	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	104	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	103	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	99.8	73.5	126
EP075(SIM)A: Phenolic Compounds (QCLot: 5478145)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	42.1	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	66.7	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	72.0	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	58.8	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	66.6	48.0	100
EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	77.9	49.0	99.0
EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	68.0	53.0	105
EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	70.0	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	70.1	53.0	99.0
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	92.5	50.0	106
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	70.5	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	40.9	10.0	95.0



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5478145)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	68.1	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	66.8	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	68.2	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	68.2	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	97.6	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	98.5	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	97.2	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	92.6	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	83.8	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	89.4	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	83.9	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	94.7	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	84.9	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	89.4	59.9	118
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	90.7	61.2	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	85.8	59.1	118
EP080: BTEXN (QCLot: 5478096)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	87.5	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	99.3	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	98.3	73.8	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	99.7	73.0	122
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	106	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	80.1	75.5	124
EP234A: OP Pesticides (QCLot: 5477775)								
EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	0.2 µg/L	93.2	77.0	129
EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	0.2 µg/L	99.6	75.0	135
EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	1 µg/L	114	70.0	130
EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	0.2 µg/L	103	70.0	130
EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	0.2 µg/L	101	74.0	134
EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	0.2 µg/L	102	70.0	130
EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	2 µg/L	101	70.0	130
EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	0.1 µg/L	103	70.0	130
EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	0.05 µg/L	98.4	64.0	134



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP234A: OP Pesticides (QCLot: 5477775) - continued								
EP234-1: Demeton-O & Demeton-S	298-03-3/12 6-75-0	0.02	µg/L	<0.02	0.1 µg/L	97.0	79.0	127
EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	0.05 µg/L	95.6	63.0	135
EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	0.2 µg/L	95.8	70.0	128
EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	0.1 µg/L	101	68.0	138
EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	2 µg/L	96.3	76.0	128
EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	0.2 µg/L	125	75.0	127
EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	0.5 µg/L	105	72.0	134
EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	0.5 µg/L	118	70.0	130
EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	0.2 µg/L	108	70.0	130
EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	0.1 µg/L	100	78.0	128
EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	0.1 µg/L	103	71.0	135
EP234-1: Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	100 µg/L	106	70.0	130
EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	20 µg/L	106	64.0	136
EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	0.1 µg/L	101	79.0	125
EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	0.5 µg/L	96.1	70.0	130
EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	0.2 µg/L	119	70.0	130
EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	0.2 µg/L	105	77.0	123
EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	0.2 µg/L	105	75.0	129
EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	0.1 µg/L	96.7	74.0	130
EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	2 µg/L	133	69.0	139
EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	20 µg/L	89.7	66.0	140
EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	1 µg/L	99.7	68.0	136
EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	0.1 µg/L	98.9	70.0	130
EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	0.1 µg/L	98.5	71.0	137
EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	0.1 µg/L	102	70.0	130
EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	1 µg/L	123	70.0	130
EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	0.05 µg/L	98.8	71.0	137
EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	0.5 µg/L	112	70.0	130
EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	0.2 µg/L	100	70.0	130
EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	0.1 µg/L	103	70.0	130
EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	0.1 µg/L	102	74.0	128
EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	0.05 µg/L	94.8	77.0	131
EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	0.2 µg/L	82.8	70.0	130
EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	5 µg/L	114	63.0	139

Matrix Spike (MS) Report

Sub-Matrix: WATER

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 5485692)							
ES2342373-003	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	86.8	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	91.0	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	89.3	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	91.4	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	92.2	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	90.9	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	85.1	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	88.1	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 5485693)							
ES2342516-014	SWDUP1	EG020A-T: Arsenic	7440-38-2	1 mg/L	95.4	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	102	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	99.1	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	99.5	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	102	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	100	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	94.9	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	98.2	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5489774)							
ES2342516-001	BADDS	EG035T: Mercury	7439-97-6	0.01 mg/L	90.6	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5482642)							

Page : 20 of 22
 Work Order : ES2342516
 Client : GHD PTY LTD
 Project : 12554717



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5482642) - continued							
ES2342516-001	BADDS	EK055G: Ammonia as N	7664-41-7	1 mg/L	117	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5485366)							
ES2342516-011	ROPUS	EK055G: Ammonia as N	7664-41-7	1 mg/L	118	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5477151)							
ES2342105-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	104	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5477157)							
ES2342516-009	KEMUS	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	106	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5478857)							
ES2342343-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	99.9	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5482643)							
ES2342516-001	BADDS	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	118	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5485365)							
ES2342516-011	ROPUS	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	108	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5482638)							
ES2342469-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	50 mg/L	82.6	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5485369)							
ES2342516-012	SOUDS	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	100	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5482640)							
ES2342516-002	BADMS	EK067G: Total Phosphorus as P	----	1 mg/L	88.1	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5485370)							
ES2342516-012	SOUDS	EK067G: Total Phosphorus as P	----	1 mg/L	107	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5477152)							
ES2342083-003	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	74.0	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5478861)							
ES2342516-001	BADDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	102	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 5478095)							
ES2342516-001	BADDS	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	79.0	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	91.8	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5478095)							
ES2342516-001	BADDS	EP074: Chlorobenzene	108-90-7	25 µg/L	101	70.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 5478145)							
ES2342516-002	BADMS	EP075(SIM): Phenol	108-95-2	20 µg/L	33.6	20.0	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	76.0	60.0	130



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 5478145) - continued							
ES2342516-002	BADMS	EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	74.7	60.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	79.5	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	47.4	20.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5478145)							
ES2342516-002	BADMS	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	83.8	70.0	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	83.7	70.0	130
EP080: BTEXN (QCLot: 5478096)							
ES2342516-001	BADDS	EP080: Benzene	71-43-2	25 µg/L	92.1	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	100	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	104	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	103	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	110	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	95.9	70.0	130
EP234A: OP Pesticides (QCLot: 5477775)							
EB2337972-002	Anonymous	EP234-1: Azinphos-methyl	86-50-0	0.2 µg/L	72.2	70.0	130
		EP234-1: Azinphos-ethyl	2642-71-9	0.2 µg/L	88.1	70.0	130
		EP234-1: Bromophos-ethyl	4824-78-6	1 µg/L	97.2	70.0	130
		EP234-1: Carbofenothion	786-19-6	0.2 µg/L	75.2	70.0	130
		EP234-1: Chlorfenvinphos	470-90-6	0.2 µg/L	80.9	70.0	130
		EP234-1: Chlorpyrifos	2921-88-2	0.2 µg/L	100	70.0	130
		EP234-1: Chlorpyrifos-methyl	5598-13-0	2 µg/L	86.2	58.0	136
		EP234-1: Coumaphos	56-72-4	0.1 µg/L	87.1	70.0	130
		EP234-1: Demeton-O	298-03-3	0.05 µg/L	98.2	70.0	130
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.1 µg/L	94.1	69.0	129
		EP234-1: Demeton-S	126-75-0	0.05 µg/L	93.2	70.0	130
		EP234-1: Demeton-S-methyl	919-86-8	0.2 µg/L	83.0	70.0	130
		EP234-1: Diazinon	333-41-5	0.1 µg/L	87.5	70.0	130
		EP234-1: Dichlorvos	62-73-7	2 µg/L	90.8	70.0	130
		EP234-1: Dimethoate	60-51-5	0.2 µg/L	79.7	69.0	131
		EP234-1: Disulfoton	298-04-4	0.5 µg/L	91.2	70.0	130
		EP234-1: EPN	2104-64-5	0.5 µg/L	110	70.0	130
		EP234-1: Ethion	563-12-2	0.2 µg/L	88.5	70.0	130
		EP234-1: Ethoprophos	13194-48-4	0.1 µg/L	80.8	70.0	132
		EP234-1: Fenamiphos	22224-92-6	0.1 µg/L	92.5	70.0	130
		EP234-1: Fenchlorphos (Ronnell)	299-84-3	100 µg/L	77.5	71.0	133
		EP234-1: Fenitrothion	122-14-5	20 µg/L	# 37.1	64.0	136



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP234A: OP Pesticides (QCLot: 5477775) - continued							
EB2337972-002	Anonymous	EP234-1: Fensulfothion	115-90-2	0.1 µg/L	96.6	83.0	123
		EP234-1: Fenthion	55-38-9	0.5 µg/L	# 66.8	70.0	130
		EP234-1: Malathion	121-75-5	0.2 µg/L	91.6	70.0	130
		EP234-1: Mevinphos	7786-34-7	0.2 µg/L	88.2	69.0	125
		EP234-1: Monocrotophos	6923-22-4	0.2 µg/L	89.5	70.0	128
		EP234-1: Omethoate	1113-02-6	0.1 µg/L	81.0	70.0	130
		EP234-1: Parathion	56-38-2	2 µg/L	# 49.7	70.0	130
		EP234-1: Parathion-methyl	298-00-0	20 µg/L	97.4	70.0	140
		EP234-1: Phorate	298-02-2	1 µg/L	78.6	70.0	130
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.1 µg/L	88.5	70.0	130
		EP234-1: Pirimiphos-methyl	29232-93-7	0.1 µg/L	85.7	70.0	130
		EP234-1: Profenofos	41198-08-7	0.1 µg/L	80.3	70.0	130
		EP234-1: Prothiofos	34643-46-4	1 µg/L	107	70.0	130
		EP234-1: Sulfotep	3689-24-5	0.05 µg/L	85.4	63.0	135
		EP234-1: Sulprofos	35400-43-2	0.5 µg/L	85.8	70.0	130
		EP234-1: Temephos	3383-96-8	0.2 µg/L	89.6	70.0	130
		EP234-1: Terbufos	13071-79-9	0.1 µg/L	81.9	70.0	130
		EP234-1: Tetrachlorvinphos	22248-79-9	0.1 µg/L	# 76.0	77.0	125
		EP234-1: Triazophos	24017-47-8	0.05 µg/L	96.2	74.0	132
		EP234-1: Trichlorfon	52-68-6	0.2 µg/L	# 49.8	70.0	130
		EP234-1: Trichloronate	327-98-0	5 µg/L	112	63.0	139
EP234A: OP Pesticides (QCLot: 5477778)							
EB2337972-002	Anonymous	EP234-1x: Acephate	30560-19-1	5 µg/L	82.8	70.0	130
		EP234-1x: Bensulide	741-58-2	5 µg/L	98.0	70.0	130
		EP234-1x: Fosetyl Aluminium	39148-24-8	5 µg/L	# 23.2	70.0	130
		EP234-1x: Methidathion	950-37-8	5 µg/L	80.8	70.0	130
		EP234-1x: Naftalofos	1491-41-4	5 µg/L	# 66.5	70.0	130
		EP234-1x: Pyrazophos	13457-18-6	5 µg/L	91.9	70.0	130
		EP234-1x: Thiometon	640-15-3	5 µg/L	83.6	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2342516	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR HENRY LUO	Telephone	: +61-2-8784 8555
Project	: 12554717	Date Samples Received	: 06-Dec-2023
Site	: ----	Issue Date	: 15-Dec-2023
Sampler	: ANDREW DUVAL, EMILY SMITH	No. of samples received	: 14
Order number	: 12554717	No. of samples analysed	: 14

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP234A: OP Pesticides	EB2337972--002	Anonymous	Fenitrothion	122-14-5	37.1 %	64.0-136%	Recovery less than lower data quality objective
EP234A: OP Pesticides	EB2337972--002	Anonymous	Fenthion	55-38-9	66.8 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	EB2337972--002	Anonymous	Parathion	56-38-2	49.7 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	EB2337972--002	Anonymous	Tetrachlorvinphos	22248-79-9	76.0 %	77.0-125%	Recovery less than lower data quality objective
EP234A: OP Pesticides	EB2337972--002	Anonymous	Trichlorfon	52-68-6	49.8 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	EB2337972--002	Anonymous	Fosetyl Aluminium	39148-24-8	23.2 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	EB2337972--002	Anonymous	Naftalofos	1491-41-4	66.5 %	70.0-130%	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP008: Chlorophyll a & Pheophytin a							
White Plastic Bottle - Unpreserved							
HINDS,	HINUS,	----	----	----	08-Dec-2023	07-Dec-2023	1
KEMDS,	KEMUS,						
ROPDS,	ROPUS,						
SOUUS,	SOUUS						

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Control Samples (LCS)						
Oil and Grease	EP020	2	35	5.71	8.00	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)						
Oil and Grease	EP020	2	35	5.71	6.00	NEPM 2013 B3 & ALS QC Standard

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

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

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

Matrix: **WATER** Evaluation: **x** = Holding time breach ; **✓** = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)		05-Dec-2023	----	----	----	12-Dec-2023	12-Dec-2023	✓
HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS							
Clear Plastic Bottle - Natural (EA015H)		06-Dec-2023	----	----	----	12-Dec-2023	13-Dec-2023	✓
BADDS, BADUS, COSUS	BADMS, COSDS,							
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H)		05-Dec-2023	----	----	----	12-Dec-2023	12-Dec-2023	✓
HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS							
Clear Plastic Bottle - Natural (EA025H)		06-Dec-2023	----	----	----	12-Dec-2023	13-Dec-2023	✓
BADDS, BADUS, COSUS	BADMS, COSDS,							
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)		05-Dec-2023	12-Dec-2023	02-Jun-2024	✓	12-Dec-2023	02-Jun-2024	✓
HINDS, KEMDS, ROPDS, SOUUS, SWDUP1	HINUS, KEMUS, ROPUS, SOUUS,							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)		06-Dec-2023	12-Dec-2023	03-Jun-2024	✓	12-Dec-2023	03-Jun-2024	✓
BADDS, BADUS, COSUS	BADMS, COSDS,							

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) HINDS, KEMDS, ROPDS, SOUUS, SWDUP1	HINUS, KEMUS, ROPUS, SOUUS,	05-Dec-2023	----	----	----	14-Dec-2023	02-Jan-2024	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	----	----	----	14-Dec-2023	03-Jan-2024	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) HINDS, KEMDS, ROPDS	HINUS, KEMUS,	05-Dec-2023	----	----	----	11-Dec-2023	02-Jan-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) ROPUS, SOUUS	SOUUS,	05-Dec-2023	----	----	----	12-Dec-2023	02-Jan-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	----	----	----	11-Dec-2023	03-Jan-2024	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	05-Dec-2023	----	----	----	07-Dec-2023	07-Dec-2023	✓
Clear Plastic Bottle - Natural (EK057G) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	----	----	----	08-Dec-2023	08-Dec-2023	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) HINDS, KEMDS, ROPDS	HINUS, KEMUS,	05-Dec-2023	----	----	----	11-Dec-2023	02-Jan-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) ROPUS, SOUS	SOUS,	05-Dec-2023	----	----	----	12-Dec-2023	02-Jan-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	----	----	----	11-Dec-2023	03-Jan-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) HINDS, KEMDS, ROPDS	HINUS, KEMUS,	05-Dec-2023	11-Dec-2023	02-Jan-2024	✓	11-Dec-2023	02-Jan-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) ROPUS, SOUS	SOUS,	05-Dec-2023	12-Dec-2023	02-Jan-2024	✓	12-Dec-2023	02-Jan-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	11-Dec-2023	03-Jan-2024	✓	11-Dec-2023	03-Jan-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G) HINDS, KEMDS, ROPDS	HINUS, KEMUS,	05-Dec-2023	11-Dec-2023	02-Jan-2024	✓	11-Dec-2023	02-Jan-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G) ROPUS, SOUS	SOUS,	05-Dec-2023	12-Dec-2023	02-Jan-2024	✓	12-Dec-2023	02-Jan-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	11-Dec-2023	03-Jan-2024	✓	11-Dec-2023	03-Jan-2024	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	05-Dec-2023	----	----	----	07-Dec-2023	07-Dec-2023	✓
Clear Plastic Bottle - Natural (EK071G) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	----	----	----	08-Dec-2023	08-Dec-2023	✓
EP008: Chlorophyll a & Pheophytin a								
White Plastic Bottle - Unpreserved (EP008) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	05-Dec-2023	----	----	----	08-Dec-2023	07-Dec-2023	✗
White Plastic Bottle - Unpreserved (EP008) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	----	----	----	08-Dec-2023	08-Dec-2023	✓
EP020: Oil and Grease (O&G)								
Amber Jar - Sulfuric Acid or Sodium Bisulfate (EP020) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	05-Dec-2023	----	----	----	13-Dec-2023	02-Jan-2024	✓
Amber Jar - Sulfuric Acid or Sodium Bisulfate (EP020) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	----	----	----	13-Dec-2023	03-Jan-2024	✓
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS	HINUS, KEMUS,	05-Dec-2023	12-Dec-2023	19-Dec-2023	✓	12-Dec-2023	19-Dec-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) ROPUS, SOUUS	SOUDS,	05-Dec-2023	12-Dec-2023	19-Dec-2023	✓	13-Dec-2023	19-Dec-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	12-Dec-2023	20-Dec-2023	✓	12-Dec-2023	20-Dec-2023	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS	HINUS, KEMUS,	05-Dec-2023	12-Dec-2023	19-Dec-2023	✓	12-Dec-2023	19-Dec-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) ROPUS, SOUUS	SOUDS,	05-Dec-2023	12-Dec-2023	19-Dec-2023	✓	13-Dec-2023	19-Dec-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	12-Dec-2023	20-Dec-2023	✓	12-Dec-2023	20-Dec-2023	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS	HINUS, KEMUS,	05-Dec-2023	12-Dec-2023	19-Dec-2023	✓	12-Dec-2023	19-Dec-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) ROPUS, SOUUS	SOUDS,	05-Dec-2023	12-Dec-2023	19-Dec-2023	✓	13-Dec-2023	19-Dec-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	12-Dec-2023	20-Dec-2023	✓	12-Dec-2023	20-Dec-2023	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS	HINUS, KEMUS,	05-Dec-2023	12-Dec-2023	19-Dec-2023	✓	12-Dec-2023	19-Dec-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) ROPUS, SOUUS	SOUDS,	05-Dec-2023	12-Dec-2023	19-Dec-2023	✓	13-Dec-2023	19-Dec-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	12-Dec-2023	20-Dec-2023	✓	12-Dec-2023	20-Dec-2023	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM)) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	05-Dec-2023	08-Dec-2023	12-Dec-2023	✔	13-Dec-2023	17-Jan-2024	✔
Amber Glass Bottle - Unpreserved (EP075(SIM)) BADDS		06-Dec-2023	08-Dec-2023	13-Dec-2023	✔	12-Dec-2023	17-Jan-2024	✔
Amber Glass Bottle - Unpreserved (EP075(SIM)) BADMS, COSDS,	BADUS, COSUS	06-Dec-2023	08-Dec-2023	13-Dec-2023	✔	13-Dec-2023	17-Jan-2024	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	05-Dec-2023	08-Dec-2023	12-Dec-2023	✔	13-Dec-2023	17-Jan-2024	✔
Amber Glass Bottle - Unpreserved (EP075(SIM)) BADDS		06-Dec-2023	08-Dec-2023	13-Dec-2023	✔	12-Dec-2023	17-Jan-2024	✔
Amber Glass Bottle - Unpreserved (EP075(SIM)) BADMS, COSDS,	BADUS, COSUS	06-Dec-2023	08-Dec-2023	13-Dec-2023	✔	13-Dec-2023	17-Jan-2024	✔
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) HINDS, KEMDS, ROPDS	HINUS, KEMUS,	05-Dec-2023	12-Dec-2023	19-Dec-2023	✔	12-Dec-2023	19-Dec-2023	✔
Amber VOC Vial - Sulfuric Acid (EP080) ROPUS, SOUUS	SOUUS,	05-Dec-2023	12-Dec-2023	19-Dec-2023	✔	13-Dec-2023	19-Dec-2023	✔
Amber VOC Vial - Sulfuric Acid (EP080) BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	12-Dec-2023	20-Dec-2023	✔	12-Dec-2023	20-Dec-2023	✔

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP234A: OP Pesticides									
Amber Glass Bottle - Unpreserved (EP234-1)	HINDS, KEMDS, ROPDS, SOUUS	HINUS, KEMUS, ROPUS, SOUUS	05-Dec-2023	----	----	----	08-Dec-2023	12-Dec-2023	✓
Amber Glass Bottle - Unpreserved (EP234-1)	BADDS, BADUS, COSUS	BADMS, COSDS,	06-Dec-2023	----	----	----	08-Dec-2023	13-Dec-2023	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	5	40	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	4	23	17.39	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	30	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	EP008	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	40	7.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	2	35	5.71	8.00	✗	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	6	35	17.14	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	6	30	20.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	EP008	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	40	7.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	2	35	5.71	6.00	✗	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	3	40	7.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C. This method is compliant with NEPM Schedule B(3)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G. Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Chlorophyll a and Pheophytin a	EP008	WATER	In house: Referenced to APHA 10200 H. The pigments are extracted into aqueous acetone. The optical density of the extract before and after acidification at both 664 nm and 665 nm is determined spectrometrically.
Oil and Grease	EP020	WATER	In house: Referenced to APHA 5520 B. Oil & grease is a gravimetric procedure to determine the amount of dissolved or emulsified oil & grease residue in an aqueous sample. The sample is serially extracted three times n-hexane. The resultant extracts are combined, dehydrated and concentrated prior to gravimetric determination. This method is compliant with NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

Lab / Analysis: Eurofins - SWDUP2

Organised By / Date:

Relinquished By / Date: _____

ALS Laboratory: **Connote / Courier**
please tick →



CHAIN OF CUSTODY

WO No:	TURNAROUND REQUIREMENT ☐ Standard TAT (List due date):

(Standard TAT may be longer for
Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:	SY/322/21

COC SEQUENCE NUMBER (Circle)

COC:	1	2	3	4	5	6	7

OF: 1 2 3 4 5 6

CONTACT PH: Henry Luo 0414 090 002

CLIENT: GHD Pty Ltd

WO No:

OFFICE: Sydney

Attached By PO / Internal Sheet

PROJECT: M12 Surface Water

ORDER NUMBER: 12554717

PROJECT MANAGER: Henry Luo

SAMPLER: Emily Smith, Andrew Duval

SAMPLER MOBILE: 0431 522 928

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED B

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default): ESDAT

Andrew Duval - GHD

Email Reports to: emily.smith@ghd.com; andrew.duval@ghd.com; henry.luo@ghd.com,
ghdlabreports@ghd.com

DATE/TIME:

DATE/TIME:

DATE/TIME.

19-01-2024

19/1/24 1718

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

PLEASE DO NOT LOG ALL SAMPLES RECEIVED IN ONE WORKORDER. LOG AS TWO SEPARATE WORKORDERS AS PER THE TWO COCs PROVIDED.

[illegible]



mgt

☒ **Sydney**
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtlabmark.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murrarie
Phone: +617 3902 4600
Email: enviro.bris@mgtlabmark.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3186
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Page 1 of 1

Company Name : GHD Pty Ltd, Sydney	Contact Name : Emily Smith 0431 522 928	Purchase Order : 12554717	COC Number :
Office Address :	Project Manager: Henry Luo 0414 090 002	PROJECT Number : 12554717	Eurofins mgt quote ID :
Level 15, 133 Castlereagh Street, Sydney NSW 2000	Email for results : emily.smith@ghd.com; andrew.duval@ghd.com; henry.luo@ghd.com; ghdlabreports@ghd.com	PROJECT Name : M12 Water Sampling	Data output format: ESDAT

	Analytes							Some common holding times (with correct preservation). For further information contact the lab			
Special Directions & Comments :	Dissolved metals	Total metals						Waters		Soils	
								BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
								TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
								Heavy Metals	6 months	Heavy Metals	6 months
								Mercury, CrVI	28 days	Mercury, CrVI	28 days
								Microbiological testing	24 hours	Microbiological testing	72 hours
								BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
								Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
								Ferrous iron	7 days	ASLP, TCLP	7 days
Eurofins I mgt DI water batch number:											

	Sample ID	Date	Matrix	Dissolved metals	Total metals						Containers:								Sample comments:
											500P	250P	60P	1LA	40mL vial	200mL A	Jar	Bag	
1	SWDUP2	19/01/2024	Water										1						
2	GWDUP2	19/01/2024	Water										1						
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

		Laboratory Staff		Method Of Shipment		Temperature on arrival:
Relinquished By: Andrew Duval - GHD		Received By:		☐ Courier ☐ Hand Delivered ☐ Postal Courier Consignment # :		Report number:
Date & Time : 19-01-2024		Date & Time :				
Signature: Duval		Signature:				



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2401980**

Client : **GHD PTY LTD**
Contact : **MR HENRY LUO**
Address : **LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW, AUSTRALIA 2000**

Laboratory : **Environmental Division Sydney**
Contact : **Sarah Mathew**
Address : **277-289 Woodpark Road Smithfield
NSW Australia 2164**

E-mail : **henry.luo@ghd.com**
Telephone : **+61 02 9239 7100**
Facsimile : **+61 02 9239 7199**

E-mail : **sarah.mathew@alsglobal.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Project : **12554717**
Order number : **12554717**
C-O-C number : **----**
Site : **----**
Sampler : **ANDREW DUVAL, EMILY SMITH**

Page : **1 of 4**
Quote number : **ES2021GHDSE0026 (SY/322/21)**
QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **19-Jan-2024 17:18**
Client Requested Due : **29-Jan-2024**
Date

Issue Date : **19-Jan-2024**
Scheduled Reporting Date : **29-Jan-2024**

Delivery Details

Mode of Delivery : **Client Drop Off**
No. of coolers/boxes : **7**

Security Seal : **Not Available**
Temperature : **9.2, 11.0, 11.8°C - Ice
present**

Receipt Detail :
No. of samples received / analysed : **14 / 14**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Sample SWDUP2 has been forwarded to Eurofins.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EG020T Total Metals by ICP/MS (including digestion)	WATER - EP008 Chlorophyll a	WATER - EP020 Oil & Grease (O&G)	WATER - EP074DEFG VOC - Fumigants, Hal Aliphatics, Hal Aromatics,	WATER - NT-08A Total Nitrogen + NO ₂ + NO ₃ + NH ₃ + Total P +	WATER - UTO-9W Ultratrace OC/OP (extended) Pesticides	WATER - W-02T 8 metals (Total)
ES2401980-001	19-Jan-2024 00:00	BADDS	✓	✓	✓	✓	✓	✓	✓
ES2401980-002	19-Jan-2024 00:00	BADMS	✓	✓	✓	✓	✓	✓	✓
ES2401980-003	19-Jan-2024 00:00	BADUS	✓	✓	✓	✓	✓	✓	✓
ES2401980-004	19-Jan-2024 00:00	COSDS	✓	✓	✓	✓	✓	✓	✓
ES2401980-005	19-Jan-2024 00:00	COSUS	✓	✓	✓	✓	✓	✓	✓
ES2401980-006	18-Jan-2024 00:00	HINDS	✓	✓	✓	✓	✓	✓	✓
ES2401980-007	18-Jan-2024 00:00	HINUS	✓	✓	✓	✓	✓	✓	✓
ES2401980-008	18-Jan-2024 00:00	KEMDS	✓	✓	✓	✓	✓	✓	✓
ES2401980-009	18-Jan-2024 00:00	KEMUS	✓	✓	✓	✓	✓	✓	✓
ES2401980-010	18-Jan-2024 00:00	ROPDS	✓	✓	✓	✓	✓	✓	✓
ES2401980-011	18-Jan-2024 00:00	ROPUS	✓	✓	✓	✓	✓	✓	✓
ES2401980-012	18-Jan-2024 00:00	SOUUS	✓	✓	✓	✓	✓	✓	✓
ES2401980-013	18-Jan-2024 00:00	SOUUS	✓	✓	✓	✓	✓	✓	✓
ES2401980-014	19-Jan-2024 00:00	SWDUP1							✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EA025H Suspended Solids - Standard Level	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EP080 BTEXN	WATER - EP131B-ST Super Ultra Trace PCB's to Meet ANZECC and	WATER - W-02 8 Metals	WATER - W-14A PAH/Phenols (SIM)
ES2401980-001	19-Jan-2024 00:00	BADDS	✓	✓		✓	✓		✓
ES2401980-002	19-Jan-2024 00:00	BADMS	✓	✓		✓	✓		✓
ES2401980-003	19-Jan-2024 00:00	BADUS	✓	✓		✓	✓		✓
ES2401980-004	19-Jan-2024 00:00	COSDS	✓	✓		✓	✓		✓
ES2401980-005	19-Jan-2024 00:00	COSUS	✓	✓		✓	✓		✓
ES2401980-006	18-Jan-2024 00:00	HINDS	✓	✓		✓	✓		✓
ES2401980-007	18-Jan-2024 00:00	HINUS	✓	✓		✓	✓		✓
ES2401980-008	18-Jan-2024 00:00	KEMDS	✓	✓		✓	✓		✓
ES2401980-009	18-Jan-2024 00:00	KEMUS	✓	✓		✓	✓		✓
ES2401980-010	18-Jan-2024 00:00	ROPDS	✓	✓		✓	✓		✓



			WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EA025H Suspended Solids - Standard Level	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EP080 BTEXN	WATER - EP131B-ST Super Ultra Trace PCB's to Meet ANZECC and	WATER - W-02 8 Metals	WATER - W-14A PAH/Phenols (SIM)
ES2401980-011	18-Jan-2024 00:00	ROPUS	✓	✓	✓	✓	✓	✓	✓
ES2401980-012	18-Jan-2024 00:00	SOUUS	✓	✓		✓	✓		✓
ES2401980-013	18-Jan-2024 00:00	SOUUS	✓	✓		✓	✓		✓

Matrix: **WATER**

Laboratory sample ID Sampling date / time Sample ID

ES2401980-011	18-Jan-2024 00:00	ROPUS	WATER - EA065 Total Hardness as CaCO3

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Accounts Payable Australia

Email accountspayableAU@ghd.com

Email andrew.duval@ghd.com

- [illegible]

Email emily.smith@ghd.com

- [illegible]

Email ghdlabreports@ghd.com

- [illegible]

Email henry.luo@ghd.com

- [illegible]



CERTIFICATE OF ANALYSIS

Work Order : **ES2401980**
Client : **GHD PTY LTD**
Contact : **MR HENRY LUO**
Address : **LEVEL 15, 133 CASTLEREAGH STREET**
SYDNEY NSW, AUSTRALIA 2000
Telephone : **+61 02 9239 7100**
Project : **12554717**
Order number : **12554717**
C-O-C number : **----**
Sampler : **ANDREW DUVAL, EMILY SMITH**
Site : **----**
Quote number : **SY/322/21**
No. of samples received : **14**
No. of samples analysed : **14**

Page : 1 of 31
Laboratory : Environmental Division Sydney
Contact : Sarah Mathew
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 19-Jan-2024 17:18
Date Analysis Commenced : 19-Jan-2024
Issue Date : 30-Jan-2024 14:51



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences and high matrix spike recovery has been noted for particular compounds due to ion enhancement.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP131A: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG020: Poor matrix spike recovery was obtained for several elements on sample ES2401920-#009. Confirmed by reanalysis.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADD5	BADMS	BADUS	COSDS	COSUS
Sampling date / time				19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	
Compound	CAS Number	LOR	Unit	ES2401980-001	ES2401980-002	ES2401980-003	ES2401980-004	ES2401980-005	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C		----	10	mg/L	1120	1070	1020	584	589
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)		----	5	mg/L	113	62	25	36	17
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.002	0.001	0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.004	0.003	0.002	0.002	0.002	
Copper	7440-50-8	0.001	mg/L	0.007	0.007	0.004	0.004	0.003	
Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.003	0.003	0.002	
Lead	7439-92-1	0.001	mg/L	0.003	0.003	0.002	0.002	0.001	
Zinc	7440-66-6	0.005	mg/L	0.023	0.020	0.009	0.019	0.010	
Manganese	7439-96-5	0.001	mg/L	0.198	0.178	0.218	0.148	0.121	
Iron	7439-89-6	0.05	mg/L	4.00	3.50	2.42	2.93	2.00	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.04	0.05	0.02	0.02	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.02	0.02	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.15	0.12	0.29	0.14	0.14	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.15	0.14	0.31	0.14	0.14	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	1.2	1.0	0.7	0.6	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.4	1.3	1.3	0.8	0.7	
EK067G: Total Phosphorus as P by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time					19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00
Compound	CAS Number	LOR	Unit		ES2401980-001	ES2401980-002	ES2401980-003	ES2401980-004	ES2401980-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		0.20	0.17	0.14	0.10	0.08
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	0.01	<0.01	<0.01
EP008: Chlorophyll a & Pheophytin a									
Chlorophyll a	----	1	mg/m ³		6	3	3	2	3
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-001	ES2401980-002	ES2401980-003	ES2401980-004	ES2401980-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-001	ES2401980-002	ES2401980-003	ES2401980-004	ES2401980-005
				Result	Result	Result	Result	Result
EP074G: Trihalomethanes - Continued								
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-001	ES2401980-002	ES2401980-003	ES2401980-004	ES2401980-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
alpha-BHC	319-84-6	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
beta-BHC	319-85-7	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
delta-BHC	319-86-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4'-DDD	72-54-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4'-DDE	72-55-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4'-DDT	50-29-3	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-001	ES2401980-002	ES2401980-003	ES2401980-004	ES2401980-005	
				Result	Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Dieldrin	60-57-1	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
alpha-Endosulfan	959-98-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
beta-Endosulfan	33213-65-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endosulfan sulfate	1031-07-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
^ Endosulfan (sum)	115-29-7	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin	72-20-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin aldehyde	7421-93-4	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin ketone	53494-70-5	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Heptachlor	76-44-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor epoxide	1024-57-3	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobenzene (HCB)	118-74-1	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
gamma-BHC	58-89-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	72-43-5	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
cis-Chlordane	5103-71-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
trans-Chlordane	5103-74-2	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
^ Total Chlordane (sum)	----	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Oxychlordane	27304-13-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
EP131B: Polychlorinated Biphenyls (as Aroclors)									
Total Polychlorinated biphenyls	----	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aroclor 1016	12674-11-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aroclor 1221	11104-28-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aroclor 1232	11141-16-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aroclor 1242	53469-21-9	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aroclor 1248	12672-29-6	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aroclor 1254	11097-69-1	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aroclor 1260	11096-82								



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-001	ES2401980-002	ES2401980-003	ES2401980-004	ES2401980-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Formothion	2540-82-1	20	µg/L	<20	<20	<20	<20	<20



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time					19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00
Compound	CAS Number	LOR	Unit		ES2401980-001	ES2401980-002	ES2401980-003	ES2401980-004	ES2401980-005
					Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued									
Fosetyl Aluminium	39148-24-8	10	µg/L		<10	<10	<10	<10	<10
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Methidathion	950-37-8	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Naftalofos	1491-41-4	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L		<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Pyrazophos	13457-18-6	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Thiometon	640-15-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		98.9	105	103	100	96.5
Toluene-D8	2037-26-5	5	%		89.2	98.3	99.7	91.6	87.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time					19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00	19-Jan-2024 00:00
Compound	CAS Number	LOR	Unit		ES2401980-001	ES2401980-002	ES2401980-003	ES2401980-004	ES2401980-005
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	5	%		93.7	98.4	102	94.1	90.2
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		23.8	19.5	29.6	28.4	28.5
2-Chlorophenol-D4	93951-73-6	1.0	%		45.9	39.1	58.0	55.7	55.7
2.4.6-Tribromophenol	118-79-6	1.0	%		40.7	38.0	56.2	53.2	52.4
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		51.6	60.6	67.2	66.3	64.1
Anthracene-d10	1719-06-8	1.0	%		60.9	57.9	79.6	75.7	70.5
4-Terphenyl-d14	1718-51-0	1.0	%		63.9	62.4	79.3	75.0	72.2
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		98.8	105	103	99.4	96.0
Toluene-D8	2037-26-5	2	%		86.6	95.6	97.4	89.5	85.0
4-Bromofluorobenzene	460-00-4	2	%		99.1	104	110	102	98.3
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.010	%		95.5	67.5	106	79.8	71.5
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.010	%		127	73.3	131	127	107



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-006	ES2401980-007	ES2401980-008	ES2401980-009	ES2401980-010
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	----	----	473	----	----
Total Dissolved Solids @180°C	----	10	mg/L	345	520	----	565	552
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	9	6	40	24	11
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	0.002	0.002	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.002	0.002	0.002
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.007	0.007	0.008
Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	0.003	0.003	0.002
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.002	0.001	0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.016	0.017	0.018
Manganese	7439-96-5	0.001	mg/L	0.244	0.407	0.143	0.061	0.132
Iron	7439-89-6	0.05	mg/L	0.76	1.71	1.98	1.58	1.50
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.01	0.03	0.04	0.04
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.02	0.02	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.02	2.56	3.02	0.23
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	2.58	3.04	0.23
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	1.3	1.2	1.3	0.9
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.4	1.3	3.8	4.3	1.1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time					18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit		ES2401980-006	ES2401980-007	ES2401980-008	ES2401980-009	ES2401980-010
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.10	0.08	0.88	0.90	0.12
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	0.71	0.71	0.02
EP008: Chlorophyll a & Pheophytin a									
Chlorophyll a	----	1	mg/m ³		10	5	2	2	<1
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-006	ES2401980-007	ES2401980-008	ES2401980-009	ES2401980-010
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-006	ES2401980-007	ES2401980-008	ES2401980-009	ES2401980-010
				Result	Result	Result	Result	Result
EP074G: Trihalomethanes - Continued								
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-006	ES2401980-007	ES2401980-008	ES2401980-009	ES2401980-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
alpha-BHC	319-84-6	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
beta-BHC	319-85-7	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
delta-BHC	319-86-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4'-DDD	72-54-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4'-DDE	72-55-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4'-DDT	50-29-3	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010

Sub-Matrix: WATER
(Matrix: WATER)

EP234A: OP Pesticides



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-006	ES2401980-007	ES2401980-008	ES2401980-009	ES2401980-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Formothion	2540-82-1	20	µg/L	<20	<20	<20	<20	<20



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-006	ES2401980-007	ES2401980-008	ES2401980-009	ES2401980-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	<10	<10
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	0.04	<0.02
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	100	101	109	100	93.6
Toluene-D8	2037-26-5	5	%	90.7	86.5	98.2	89.0	80.4



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit	ES2401980-006	ES2401980-007	ES2401980-008	ES2401980-009	ES2401980-010
				Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	5	%	94.4	92.2	102	94.2	86.9
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	28.9	26.4	23.0	27.5	23.0
2-Chlorophenol-D4	93951-73-6	1.0	%	54.8	51.3	46.0	55.6	45.7
2,4,6-Tribromophenol	118-79-6	1.0	%	50.5	47.6	44.0	51.2	41.4
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	64.4	62.6	58.4	67.0	56.9
Anthracene-d10	1719-06-8	1.0	%	72.0	66.3	62.7	71.4	58.2
4-Terphenyl-d14	1718-51-0	1.0	%	74.3	66.9	65.0	74.0	58.3
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	99.5	100	109	102	92.9
Toluene-D8	2037-26-5	2	%	88.1	83.9	95.5	87.0	78.4
4-Bromofluorobenzene	460-00-4	2	%	101	99.2	110	102	89.8
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.010	%	83.8	78.7	95.3	103	83.6
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.010	%	109	124	120	120	118



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	19-Jan-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2401980-011	ES2401980-012	ES2401980-013	ES2401980-014	-----
				Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	262	520	494	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	34	19	54	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	44	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.002	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.606	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.31	----	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	0.002	<0.001	----
Copper	7440-50-8	0.001	mg/L	0.002	0.003	0.005	<0.001	----
Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.003	<0.001	----
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	0.002	<0.001	----
Zinc	7440-66-6	0.005	mg/L	<0.005	0.007	0.010	<0.005	----
Manganese	7439-96-5	0.001	mg/L	0.714	0.160	0.218	----	----
Iron	7439-89-6	0.05	mg/L	3.10	1.20	2.45	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	19-Jan-2024 00:00	----	
Compound	CAS Number	LOR	Unit	ES2401980-011	ES2401980-012	ES2401980-013	ES2401980-014	-----	
				Result	Result	Result	Result	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.07	0.07	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.05	0.02	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	2.97	1.95	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	3.02	1.97	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	1.6	1.1	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.6	4.6	3.1	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.11	0.51	0.44	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.30	0.21	----	----	
EP008: Chlorophyll a & Pheophytin a									
Chlorophyll a	----	1	mg/m³	19	12	23	----	----	
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L	<5	<5	<5	----	----	
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	----	----	
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	----	----	
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	----	----	
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	----	----	
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	----	----	
EP074E: Halogenated Aliphatic Compounds									



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	19-Jan-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2401980-011	ES2401980-012	ES2401980-013	ES2401980-014	-----
				Result	Result	Result	Result	----
EP074E: Halogenated Aliphatic Compounds - Continued								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	----	----
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	----	----
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	----	----
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	----	----
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	----	----
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	----	----
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	----	----
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	----	----
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	----	----
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	----	----
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	----	----
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	----	----
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	----	----
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	----	----
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	----	----
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	----	----
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	19-Jan-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2401980-011	ES2401980-012	ES2401980-013	ES2401980-014	-----
				Result	Result	Result	Result	----
EP074E: Halogenated Aliphatic Compounds - Continued								
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	----	----
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	----	----
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	----	----
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	----	----
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	----	----
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	----	----
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	----	----
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	----	----
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	----	----
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	----	----
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	----	----
Bromoform	75-25-2	5	µg/L	<5	<5	<5	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time					18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	19-Jan-2024 00:00	----
Compound	CAS Number	LOR	Unit		ES2401980-011	ES2401980-012	ES2401980-013	ES2401980-014	-----
					Result	Result	Result	Result	----
EP075(SIM)A: Phenolic Compounds - Continued									
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	19-Jan-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2401980-011	ES2401980-012	ES2401980-013	ES2401980-014	-----
				Result	Result	Result	Result	----
EP080: BTEXN - Continued								
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.010	µg/L	<0.010	<0.010	<0.010	----	----
alpha-BHC	319-84-6	0.010	µg/L	<0.010	<0.010	<0.010	----	----
beta-BHC	319-85-7	0.010	µg/L	<0.010	<0.010	<0.010	----	----
delta-BHC	319-86-8	0.010	µg/L	<0.010	<0.010	<0.010	----	----
4,4'-DDD	72-54-8	0.010	µg/L	<0.010	<0.010	<0.010	----	----
4,4'-DDE	72-55-9	0.010	µg/L	<0.010	<0.010	<0.010	----	----
4,4'-DDT	50-29-3	0.010	µg/L	<0.010	<0.010	<0.010	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.010	µg/L	<0.010	<0.010	<0.010	----	----
Dieldrin	60-57-1	0.010	µg/L	<0.010	<0.010	<0.010	----	----
alpha-Endosulfan	959-98-8	0.010	µg/L	<0.010	<0.010	<0.010	----	----
beta-Endosulfan	33213-65-9	0.010	µg/L	<0.010	<0.010	<0.010	----	----
Endosulfan sulfate	1031-07-8	0.010	µg/L	<0.010	<0.010	<0.010	----	----
^ Endosulfan (sum)	115-29-7	0.010	µg/L	<0.010	<0.010	<0.010	----	----
Endrin	72-20-8	0.010	µg/L	<0.010	<0.010	<0.010	----	----
Endrin aldehyde	7421-93-4	0.010	µg/L	<0.010	<0.010	<0.010	----	----
Endrin ketone	53494-70-5	0.010	µg/L	<0.010	<0.010	<0.010	----	----
Heptachlor	76-44-8	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Heptachlor epoxide	1024-57-3	0.010	µg/L	<0.010	<0.010	<0.010	----	----
Hexachlorobenzene (HCB)	118-74-1	0.010	µg/L	<0.010	<0.010	<0.010	----	----
gamma-BHC	58-89-9	0.010	µg/L	<0.010	<0.010	<0.010	----	----
Methoxychlor	72-43-5	0.010	µg/L	<0.010	<0.010	<0.010	----	----
cis-Chlordane	5103-71-9	0.010	µg/L	<0.010	<0.010	<0.010	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	19-Jan-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2401980-011	ES2401980-012	ES2401980-013	ES2401980-014	-----
				Result	Result	Result	Result	----
EP131A: Organochlorine Pesticides - Continued								
trans-Chlordane	5103-74-2	0.010	µg/L	<0.010	<0.010	<0.010	----	----
[^] Total Chlordane (sum)	----	0.010	µg/L	<0.010	<0.010	<0.010	----	----
Oxychlordane	27304-13-8	0.010	µg/L	<0.010	<0.010	<0.010	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
Total Polychlorinated biphenyls	----	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Aroclor 1016	12674-11-2	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Aroclor 1221	11104-28-2	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Aroclor 1232	11141-16-5	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Aroclor 1242	53469-21-9	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Aroclor 1248	12672-29-6	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Aroclor 1254	11097-69-1	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Aroclor 1260	11096-82-5	0.005	µg/L	<0.005	<0.005	<0.005	----	----
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	----	----
Carbofenthion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	----	----
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	19-Jan-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2401980-011	ES2401980-012	ES2401980-013	ES2401980-014	-----
				Result	Result	Result	Result	----
EP234A: OP Pesticides - Continued								
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	0.05	0.02	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenclorophos (Ronnell)	299-84-3	10	µg/L	<10	<10	<10	----	----
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Formothion	2540-82-1	20	µg/L	<20	<20	<20	----	----
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----

Sub-Matrix: WATER
(Matrix: WATER)

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	19-Jan-2024 00:00	----	
Compound	CAS Number	LOR	Unit	ES2401980-011	ES2401980-012	ES2401980-013	ES2401980-014	-----	
				Result	Result	Result	Result	----	
EP234A: OP Pesticides - Continued									
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	----	----	
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	----	----	
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	----	----	
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%	103	104	102	----	----	
Toluene-D8	2037-26-5	5	%	91.2	92.7	92.1	----	----	
4-Bromofluorobenzene	460-00-4	5	%	95.0	95.7	96.1	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%	26.7	19.7	20.2	----	----	
2-Chlorophenol-D4	93951-73-6	1.0	%	52.3	39.8	41.2	----	----	
2,4,6-Tribromophenol	118-79-6	1.0	%	45.8	34.3	45.0	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%	62.1	57.2	61.1	----	----	
Anthracene-d10	1719-06-8	1.0	%	64.6	73.0	71.6	----	----	
4-Terphenyl-d14	1718-51-0	1.0	%	63.3	63.5	60.5	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	103	104	101	----	----	
Toluene-D8	2037-26-5	2	%	88.6	90.3	89.7	----	----	
4-Bromofluorobenzene	460-00-4	2	%	102	102	103	----	----	
EP131S: OC Pesticide Surrogate									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time					18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	19-Jan-2024 00:00	----
Compound	CAS Number	LOR	Unit		ES2401980-011	ES2401980-012	ES2401980-013	ES2401980-014	-----
					Result	Result	Result	Result	----
EP131S: OC Pesticide Surrogate - Continued									
Dibromo-DDE	21655-73-2	0.010	%		86.0	74.2	87.7	----	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.010	%		120	113	111	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	14	166
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164



QUALITY CONTROL REPORT

Work Order : **ES2401980**

Page : 1 of 20

Client : **GHD PTY LTD**

Contact : **MR HENRY LUO**

Address : **LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW, AUSTRALIA 2000**

Telephone : **+61 02 9239 7100**

Project : **12554717**

Order number : **12554717**

C-O-C number : **----**

Sampler : **ANDREW DUVAL, EMILY SMITH**

Site : **----**

Quote number : **SY/322/21**

No. of samples received : **14**

No. of samples analysed : **14**

Laboratory : **Environmental Division Sydney**

Contact : **Sarah Mathew**

Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**

Telephone : **+61-2-8784 8555**

Date Samples Received : **19-Jan-2024**

Date Analysis Commenced : **19-Jan-2024**

Issue Date : **30-Jan-2024**



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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5556490)									
ES2401377-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	58	59	3.0	No Limit
ES2401980-001	BADDS	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1120	1150	2.0	0% - 20%
ES2401980-011	ROPUS	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	262	278	6.1	0% - 20%
ES2401923-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4850	4770	1.7	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5556491)									
ES2401377-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2401980-001	BADDS	EA025H: Suspended Solids (SS)	----	5	mg/L	113	105	7.1	0% - 20%
ES2401980-011	ROPUS	EA025H: Suspended Solids (SS)	----	5	mg/L	34	36	5.0	No Limit
ES2401923-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	36	51	34.7	0% - 50%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5555704)									
ES2401920-012	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0002	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.420	0.418	0.4	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.027	0.027	0.0	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.072	0.071	0.0	0% - 50%
		EG020A-F: Iron	7439-89-6	0.05	mg/L	1.08	1.08	0.0	0% - 20%
EW2400285-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Page : 3 of 20
 Work Order : ES2401980
 Client : GHD PTY LTD
 Project : 12554717



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5555704) - continued									
EW2400285-002	Anonymous	EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.043	0.042	0.0	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 5557506)									
ES2401851-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.007	0.008	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.017	0.018	0.0	0% - 50%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.016	0.017	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	3.36	3.37	0.0	0% - 20%
ES2401980-006	HINDS	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.244	0.255	4.3	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.76	0.80	6.1	0% - 50%
EG035F: Dissolved Mercury by FIMS (QC Lot: 5555703)									
ES2401920-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2401920-012	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5553381)									
ES2401746-006	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2401980-005	COSUS	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5559936)									
ES2401980-001	BADDS	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.04	0.0	No Limit
ES2401980-010	ROPDS	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.04	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5552417)									
EW2400282-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.0	No Limit
ES2401944-008	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.04	0.04	0.0	No Limit

Page : 4 of 20
 Work Order : ES2401980
 Client : GHD PTY LTD
 Project : 12554717



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5552543)									
ES2401980-001	BADDS	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2401980-013	SOUUS	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.02	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5559937)									
ES2401980-001	BADDS	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.15	0.15	0.0	0% - 50%
ES2401980-010	ROPDS	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.23	0.22	0.0	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5559941)									
ES2401980-001	BADDS	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	1.3	0.0	0% - 50%
ES2401980-011	ROPUS	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	1.5	0.0	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5559940)									
ES2401980-001	BADDS	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.20	0.19	0.0	0% - 50%
ES2401980-011	ROPUS	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.11	0.12	0.0	0% - 50%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 5552410)									
ES2401834-003	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.04	127	No Limit
ES2401661-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 5552418)									
ES2401980-008	KEMDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.71	0.74	3.5	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 5552542)									
ES2401980-001	BADDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2401980-013	SOUUS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.21	0.22	0.0	0% - 20%
EP074D: Fumigants (QC Lot: 5555052)									
ES2401980-001	BADDS	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES2401980-010	ROPDS	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5555052)									
ES2401980-001	BADDS	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5555052) - continued									
ES2401980-001	BADDs	EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES2401980-010	ROPDS	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5555052) - continued									
ES2401980-010	ROPDS	EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 5555052)									
ES2401980-001	BADDS	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES2401980-010	ROPDS	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 5555052)									
ES2401980-001	BADDS	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)		
EP074G: Trihalomethanes (QC Lot: 5555052) - continued											
ES2401980-010	ROPDS	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit		
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit		
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit		
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit		
EP080: BTEXN (QC Lot: 5555051)											
ES2401980-001	BADDS	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit		
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit		
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit		
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit		
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit		
ES2401980-010	ROPDS	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit		
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit		
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit		
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit		
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit		
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit		
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit		
		EP234A: OP Pesticides (QC Lot: 5555825)									
		ES2401980-001	BADDS	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
				EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit
				EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP234-1x: Acephate	30560-19-1			0.5	µg/L	<0.5	<0.5	0.0	No Limit		
EP234-1x: Thiometon	640-15-3			0.5	µg/L	<0.5	<0.5	0.0	No Limit		
EP234-1x: Naftalofofos	1491-41-4			1	µg/L	<1.0	<1.0	0.0	No Limit		
EP234-1x: Fosetyl Aluminium	39148-24-8			10	µg/L	<10	<10	0.0	No Limit		
EP234-1x: Formothion	2540-82-1			20	µg/L	<20	<20	0.0	No Limit		
ES2401980-011	ROPUS	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
		EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
		EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
		EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit		
		EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit		
		EP234-1x: Naftalofofos	1491-41-4	1	µg/L	<1.0	<1.0	0.0	No Limit		
		EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	0.0	No Limit		
		EP234-1x: Formothion	2540-82-1	20	µg/L	<20	<20	0.0	No Limit		
EP234A: OP Pesticides (QC Lot: 5555826)											
ES2401980-001	BADDS	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit		



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5555826) - continued									
ES2401980-001	BADD5	EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofenthion	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5555826) - continued									
ES2401980-001	BADD5	EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronne)	299-84-3	10	µg/L	<10	<10	0.0	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit
ES2401980-011	ROPUS	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfotio	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofentho	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5555826) - continued									
ES2401980-011	ROPUS	EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	0.0	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit

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

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
	Spike	Spike Recovery (%)	Acceptable Limits (%)	
	Concentration	LCS	Low	High
Result				
<10	2000 mg/L	96.6	87.0	109
<10	293 mg/L	100	75.2	126
<10	2470 mg/L	91.9	83.0	124
<5	150 mg/L	106	83.0	129
<5	1000 mg/L	99.9	82.0	110
<5	841 mg/L	115	83.0	118
<0.001	0.1 mg/L	94.7	85.0	114
<0.0001	0.1 mg/L	92.5	84.0	110
<0.001	0.1 mg/L	95.6	85.0	111
<0.001	0.1 mg/L	91.5	81.0	111
<0.001	0.1 mg/L	90.5	83.0	111
<0.001	0.1 mg/L	95.7	82.0	110
<0.001	0.1 mg/L	87.4	82.0	112
<0.005	0.1 mg/L	91.7	81.0	117
<0.05	0.5 mg/L	103	82.0	112
<0.001	0.1 mg/L	109	82.0	114
<0.0001	0.1 mg/L	103	84.0	112
<0.001	0.1 mg/L	101	86.0	116
<0.001	0.1 mg/L	103	83.0	118
<0.001	0.1 mg/L	103	85.0	115
<0.001	0.1 mg/L	104	85.0	113
<0.001	0.1 mg/L	102	84.0	116
<0.005	0.1 mg/L	102	79.0	117
<0.05	0.5 mg/L	107	85.0	117
<0.0001	0.01 mg/L	93.3	83.0	105

Page : 12 of 20
 Work Order : ES2401980
 Client : GHD PTY LTD
 Project : 12554717



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5553381) - continued								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	104	77.0	111
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5559936)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	103	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5552417)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	82.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5552543)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	100	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5559937)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5559941)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	80.9	69.0	101
				<0.1	1 mg/L	93.0	70.0	118
				<0.1	5 mg/L	86.9	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5559940)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	89.1	71.3	126
				<0.01	0.442 mg/L	102	71.3	126
				<0.01	1 mg/L	104	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5552410)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	101	85.0	117
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5552418)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	101	85.0	117
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5552542)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	99.6	85.0	117
EP008: Chlorophyll (QCLot: 5552075)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	100	70.0	130
EP008: Chlorophyll (QCLot: 5552076)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	96.8	70.0	130
EP020: Oil and Grease (O&G) (QCLot: 5560990)								
EP020: Oil & Grease	----	5	mg/L	<5	5000 mg/L	97.8	81.0	121
				<5	4000 mg/L	99.4	70.0	110
EP074D: Fumigants (QCLot: 5555052)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	90.0	68.0	122
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	90.9	76.0	118
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	93.3	62.0	120



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074D: Fumigants (QCLot: 5555052) - continued								
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	90.6	60.0	114
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	89.7	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 5555052)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	93.4	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	97.8	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	100	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	94.5	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	96.1	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	93.8	69.0	131
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	95.3	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	88.4	70.2	128
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	94.3	74.0	118
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	93.9	74.0	120
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	94.2	77.0	119
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	92.2	67.0	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	93.6	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	91.6	62.0	120
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	91.2	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	90.3	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	95.4	73.0	119
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	91.3	72.0	126
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	89.5	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	92.2	72.0	124
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	89.3	66.0	114
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	83.6	60.0	120
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	84.7	70.6	128
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	84.3	70.0	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	86.8	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	90.1	71.8	126
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	85.9	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	90.3	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5555052)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	92.8	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	89.6	76.0	116



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074F: Halogenated Aromatic Compounds (QCLot: 5555052) - continued								
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	88.9	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	90.1	73.0	119
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	90.5	75.0	117
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	89.2	74.0	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	90.2	75.0	117
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	83.4	61.0	125
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	92.4	67.0	123
EP074G: Trihalomethanes (QCLot: 5555052)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	93.6	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	87.0	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	91.7	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	88.1	73.5	126
EP075(SIM)A: Phenolic Compounds (QCLot: 5553887)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	35.6	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	67.3	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	76.7	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	62.7	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	73.4	48.0	100
EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	74.6	49.0	99.0
EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	73.9	53.0	105
EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	68.2	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	71.6	53.0	99.0
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	66.1	50.0	106
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	70.1	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	36.0	10.0	95.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5553887)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	71.7	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	70.6	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	72.4	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	70.3	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	75.4	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	76.3	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	75.8	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	75.6	63.1	118



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5553887) - continued								
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	70.0	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	76.7	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	74.6	61.7	119
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	83.6	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	72.8	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	68.9	59.9	118
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	68.0	61.2	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	67.7	59.1	118
EP080: BTEXN (QCLot: 5555051)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	93.0	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	98.8	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	73.8	122
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	106	73.0	122
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	108	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	114	75.5	124
EP131A: Organochlorine Pesticides (QCLot: 5554702)								
EP131A: Aldrin	309-00-2	0.01	µg/L	<0.010	1.1 µg/L	104	34.0	145
EP131A: alpha-BHC	319-84-6	0.01	µg/L	<0.010	1.1 µg/L	104	27.2	131
EP131A: beta-BHC	319-85-7	0.01	µg/L	<0.010	1.1 µg/L	81.9	28.6	133
EP131A: delta-BHC	319-86-8	0.01	µg/L	<0.010	1.1 µg/L	101	36.0	131
EP131A: 4,4'-DDD	72-54-8	0.01	µg/L	<0.010	1.1 µg/L	114	36.0	142
EP131A: 4,4'-DDE	72-55-9	0.01	µg/L	<0.010	1.1 µg/L	97.6	30.4	112
EP131A: 4,4'-DDT	50-29-3	0.01	µg/L	<0.010	1.1 µg/L	68.5	29.5	142
EP131A: Dieldrin	60-57-1	0.01	µg/L	<0.010	1.1 µg/L	107	28.1	122
EP131A: alpha-Endosulfan	959-98-8	0.01	µg/L	<0.010	1.1 µg/L	88.4	34.0	119
EP131A: beta-Endosulfan	33213-65-9	0.01	µg/L	<0.010	1.1 µg/L	103	31.6	128
EP131A: Endosulfan sulfate	1031-07-8	0.01	µg/L	<0.010	1.1 µg/L	86.9	35.0	159
EP131A: Endrin	72-20-8	0.01	µg/L	<0.010	1.1 µg/L	107	21.5	165
EP131A: Endosulfan (sum)	115-29-7	0.01	µg/L	<0.022	----	----	----	----
EP131A: Endrin aldehyde	7421-93-4	0.01	µg/L	<0.010	1.1 µg/L	94.9	22.7	123
EP131A: Endrin ketone	53494-70-5	0.01	µg/L	<0.010	1.1 µg/L	100	16.3	144
EP131A: Heptachlor	76-44-8	0.005	µg/L	<0.005	1.1 µg/L	92.0	33.0	160
EP131A: Heptachlor epoxide	1024-57-3	0.01	µg/L	<0.010	1.1 µg/L	87.1	33.0	117



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP131A: Organochlorine Pesticides (QCLot: 5554702) - continued								
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.01	µg/L	<0.010	1.1 µg/L	79.1	23.6	126
EP131A: gamma-BHC	58-89-9	0.01	µg/L	<0.010	1.1 µg/L	99.9	28.7	134
EP131A: Methoxychlor	72-43-5	0.01	µg/L	<0.010	1.1 µg/L	95.4	29.5	150
EP131A: cis-Chlordane	5103-71-9	0.01	µg/L	<0.010	1.1 µg/L	90.7	27.0	116
EP131A: trans-Chlordane	5103-74-2	0.01	µg/L	<0.010	1.1 µg/L	93.5	31.2	119
EP131A: Total Chlordane (sum)	----	0.01	µg/L	<0.022	----	----	----	----
EP131A: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.01	µg/L	<0.022	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 5554703)								
EP131B-ST: Aroclor 1254	11097-69-1	0.005	µg/L	<0.005	0.00022 µg/L	91.9	61.6	123
EP234A: OP Pesticides (QCLot: 5555825)								
EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	5 µg/L	102	70.0	130
EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	5 µg/L	87.6	70.0	130
EP234-1x: Formothion	2540-82-1	20	µg/L	<20	----	----	----	----
EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	5 µg/L	104	70.0	130
EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	5 µg/L	94.7	70.0	130
EP234-1x: Naftalofos	1491-41-4	1	µg/L	<1.0	5 µg/L	75.0	70.0	130
EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	5 µg/L	119	70.0	130
EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	5 µg/L	83.7	70.0	130
EP234A: OP Pesticides (QCLot: 5555826)								
EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	0.2 µg/L	92.9	77.0	129
EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	0.2 µg/L	116	75.0	135
EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	1 µg/L	83.0	70.0	130
EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	0.2 µg/L	85.6	70.0	130
EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	0.2 µg/L	77.7	74.0	134
EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	0.2 µg/L	108	70.0	130
EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	2 µg/L	97.5	70.0	130
EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	0.1 µg/L	113	70.0	130
EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	0.05 µg/L	106	64.0	134
EP234-1: Demeton-O & Demeton-S	298-03-3/12 6-75-0	0.02	µg/L	<0.02	0.1 µg/L	101	79.0	127
EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	0.05 µg/L	95.6	63.0	135
EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	0.2 µg/L	79.1	70.0	128
EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	0.1 µg/L	98.8	68.0	138
EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	2 µg/L	121	76.0	128



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP234A: OP Pesticides (QCLot: 5555826) - continued								
EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	0.2 µg/L	114	75.0	127
EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	0.5 µg/L	101	72.0	134
EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	0.5 µg/L	126	70.0	130
EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	0.2 µg/L	97.0	70.0	130
EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	0.1 µg/L	115	78.0	128
EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	0.1 µg/L	81.7	71.0	135
EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	100 µg/L	117	70.0	130
EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	20 µg/L	87.8	64.0	136
EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	0.1 µg/L	111	79.0	125
EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	0.5 µg/L	125	70.0	130
EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	0.2 µg/L	93.0	70.0	130
EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	0.2 µg/L	98.4	77.0	123
EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	0.2 µg/L	96.0	75.0	129
EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	0.1 µg/L	102	74.0	130
EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	2 µg/L	129	69.0	139
EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	20 µg/L	121	66.0	140
EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	1 µg/L	105	68.0	136
EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	0.1 µg/L	102	70.0	130
EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	0.1 µg/L	122	71.0	137
EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	0.1 µg/L	81.7	70.0	130
EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	1 µg/L	112	70.0	130
EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	0.05 µg/L	126	71.0	137
EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	0.5 µg/L	115	70.0	130
EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	0.2 µg/L	84.9	70.0	130
EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	0.1 µg/L	98.7	70.0	130
EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	0.1 µg/L	112	74.0	128
EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	0.05 µg/L	110	77.0	131
EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	0.2 µg/L	91.7	70.0	130
EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	5 µg/L	117	63.0	139

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Matrix Spike (MS) Report



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 5555704)							
ES2401920-009	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	95.2	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	# 45.5	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	72.5	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	# 31.2	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	76.8	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	85.1	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	72.5	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	# 59.8	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 5557506)							
ES2401851-004	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	110	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	103	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	94.9	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	103	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	103	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	76.6	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	101	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	90.6	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 5555703)							
ES2401918-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	75.2	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5553381)							
ES2401765-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	91.3	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5559936)							
ES2401980-001	BADDS	EK055G: Ammonia as N	7664-41-7	1 mg/L	97.5	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5552417)							
ES2401944-008	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	102	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5552543)							
ES2401980-001	BADDS	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	100	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5559937)							
ES2401980-001	BADDS	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	101	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5559941)							
ES2401980-002	BADMS	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	76.4	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5559940)							
ES2401980-002	BADMS	EK067G: Total Phosphorus as P	----	1 mg/L	83.7	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5552410)							
ES2401661-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	96.1	70.0	130



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5552418)							
ES2401980-008	KEMDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	98.3	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5552542)							
ES2401980-001	BADDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	102	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 5555052)							
ES2401980-001	BADDS	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	82.5	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	80.4	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5555052)							
ES2401980-001	BADDS	EP074: Chlorobenzene	108-90-7	25 µg/L	79.9	70.0	130
EP080: BTEXN (QCLot: 5555051)							
ES2401980-001	BADDS	EP080: Benzene	71-43-2	25 µg/L	87.9	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	92.5	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	96.7	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	101	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	104	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	113	70.0	130
EP234A: OP Pesticides (QCLot: 5555825)							
ES2401980-001	BADDS	EP234-1x: Acephate	30560-19-1	5 µg/L	81.2	70.0	130
		EP234-1x: Bensulide	741-58-2	5 µg/L	112	70.0	130
		EP234-1x: Fosetyl Aluminium	39148-24-8	5 µg/L	# 4.7	70.0	130
		EP234-1x: Methidathion	950-37-8	5 µg/L	93.8	70.0	130
		EP234-1x: Naftalofos	1491-41-4	5 µg/L	87.0	70.0	130
		EP234-1x: Pyrazophos	13457-18-6	5 µg/L	110	70.0	130
		EP234-1x: Thiometon	640-15-3	5 µg/L	84.5	70.0	130
EP234A: OP Pesticides (QCLot: 5555826)							
ES2401980-001	BADDS	EP234-1: Azinphos-methyl	86-50-0	0.2 µg/L	107	70.0	130
		EP234-1: Azinphos-ethyl	2642-71-9	0.2 µg/L	125	70.0	130
		EP234-1: Bromophos-ethyl	4824-78-6	1 µg/L	87.0	70.0	130
		EP234-1: Carbofenothion	786-19-6	0.2 µg/L	85.5	70.0	130
		EP234-1: Chlorfenvinphos	470-90-6	0.2 µg/L	102	70.0	130
		EP234-1: Chlorpyrifos	2921-88-2	0.2 µg/L	102	70.0	130
		EP234-1: Chlorpyrifos-methyl	5598-13-0	2 µg/L	92.8	58.0	136
		EP234-1: Coumaphos	56-72-4	0.1 µg/L	124	70.0	130
		EP234-1: Demeton-O	298-03-3	0.05 µg/L	115	70.0	130
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.1 µg/L	112	69.0	129
		EP234-1: Demeton-S	126-75-0	0.05 µg/L	109	70.0	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP234A: OP Pesticides (QCLot: 5555826) - continued							
ES2401980-001	BADDS	EP234-1: Demeton-S-methyl	919-86-8	0.2 µg/L	96.6	70.0	130
		EP234-1: Diazinon	333-41-5	0.1 µg/L	114	70.0	130
		EP234-1: Dichlorvos	62-73-7	2 µg/L	114	70.0	130
		EP234-1: Dimethoate	60-51-5	0.2 µg/L	98.2	69.0	131
		EP234-1: Disulfoton	298-04-4	0.5 µg/L	92.5	70.0	130
		EP234-1: EPN	2104-64-5	0.5 µg/L	94.2	70.0	130
		EP234-1: Ethion	563-12-2	0.2 µg/L	116	70.0	130
		EP234-1: Ethoprophos	13194-48-4	0.1 µg/L	122	70.0	132
		EP234-1: Fenamiphos	22224-92-6	0.1 µg/L	93.4	70.0	130
		EP234-1: Fenchlorphos (Ronnell)	299-84-3	100 µg/L	123	71.0	133
		EP234-1: Fenitrothion	122-14-5	20 µg/L	# 61.0	64.0	136
		EP234-1: Fensulfothion	115-90-2	0.1 µg/L	106	83.0	123
		EP234-1: Fenthion	55-38-9	0.5 µg/L	98.3	70.0	130
		EP234-1: Malathion	121-75-5	0.2 µg/L	96.3	70.0	130
		EP234-1: Mevinphos	7786-34-7	0.2 µg/L	93.2	69.0	125
		EP234-1: Monocrotophos	6923-22-4	0.2 µg/L	108	70.0	128
		EP234-1: Omethoate	1113-02-6	0.1 µg/L	84.6	70.0	130
		EP234-1: Parathion	56-38-2	2 µg/L	72.9	70.0	130
		EP234-1: Parathion-methyl	298-00-0	20 µg/L	132	70.0	140
		EP234-1: Phorate	298-02-2	1 µg/L	102	70.0	130
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.1 µg/L	102	70.0	130
		EP234-1: Pirimiphos-methyl	29232-93-7	0.1 µg/L	123	70.0	130
		EP234-1: Profenofos	41198-08-7	0.1 µg/L	# 55.0	70.0	130
		EP234-1: Prothiofos	34643-46-4	1 µg/L	83.5	70.0	130
		EP234-1: Sulfotep	3689-24-5	0.05 µg/L	110	63.0	135
		EP234-1: Sulprofos	35400-43-2	0.5 µg/L	102	70.0	130
		EP234-1: Temephos	3383-96-8	0.2 µg/L	105	70.0	130
		EP234-1: Terbufos	13071-79-9	0.1 µg/L	114	70.0	130
		EP234-1: Tetrachlorvinphos	22248-79-9	0.1 µg/L	87.2	77.0	125
		EP234-1: Triazophos	24017-47-8	0.05 µg/L	105	74.0	132
		EP234-1: Trichlorfon	52-68-6	0.2 µg/L	119	70.0	130
		EP234-1: Trichloronate	327-98-0	5 µg/L	109	63.0	139



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2401980	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR HENRY LUO	Telephone	: +61-2-8784 8555
Project	: 12554717	Date Samples Received	: 19-Jan-2024
Site	: ----	Issue Date	: 30-Jan-2024
Sampler	: ANDREW DUVAL, EMILY SMITH	No. of samples received	: 14
Order number	: 12554717	No. of samples analysed	: 14

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG020F: Dissolved Metals by ICP-MS	ES2401920--009	Anonymous	Cadmium	7440-43-9	45.5 %	70.0-130%	Recovery less than lower data quality objective
EG020F: Dissolved Metals by ICP-MS	ES2401920--009	Anonymous	Copper	7440-50-8	31.2 %	70.0-130%	Recovery less than lower data quality objective
EG020F: Dissolved Metals by ICP-MS	ES2401920--009	Anonymous	Zinc	7440-66-6	59.8 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2401980--001	BADDS	Fenitrothion	122-14-5	61.0 %	64.0-136%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2401980--001	BADDS	Profenofos	41198-08-7	55.0 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2401980--001	BADDS	Fosetyl Aluminium	39148-24-8	4.7 %	70.0-130%	Recovery less than lower data quality objective

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Organochlorine Pesticides (Ultra-trace)	EP131A	0	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	17	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace) for Catchment Monitoring	EP131B-ST	0	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Organochlorine Pesticides (Ultra-trace)	EP131A	0	13	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	17	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace) for Catchment Monitoring	EP131B-ST	0	13	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	----	----	----	23-Jan-2024	25-Jan-2024	✓
Clear Plastic Bottle - Natural (EA015H) BADDs, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	----	----	----	23-Jan-2024	26-Jan-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	----	----	----	23-Jan-2024	25-Jan-2024	✓
Clear Plastic Bottle - Natural (EA025H) BADDs, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	----	----	----	23-Jan-2024	26-Jan-2024	✓
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) ROPUS		18-Jan-2024	----	----	----	23-Jan-2024	16-Jul-2024	✓
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	23-Jan-2024	16-Jul-2024	✓	23-Jan-2024	16-Jul-2024	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) BADDs, BADUS, COSUS,	BADMS, COSDS, SWDUP1	19-Jan-2024	23-Jan-2024	17-Jul-2024	✓	23-Jan-2024	17-Jul-2024	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) ROPUS		18-Jan-2024	----	----	----	24-Jan-2024	15-Feb-2024	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	----	----	----	22-Jan-2024	15-Feb-2024	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) BADDS, BADUS, COSUS,	BADMS, COSDS, SWDUP1	19-Jan-2024	----	----	----	22-Jan-2024	16-Feb-2024	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	----	----	----	24-Jan-2024	15-Feb-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	----	----	----	24-Jan-2024	16-Feb-2024	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	----	----	----	20-Jan-2024	20-Jan-2024	✓
Clear Plastic Bottle - Natural (EK057G) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	----	----	----	20-Jan-2024	21-Jan-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	----	----	----	24-Jan-2024	15-Feb-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	----	----	----	24-Jan-2024	16-Feb-2024	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	24-Jan-2024	15-Feb-2024	✓	24-Jan-2024	15-Feb-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	24-Jan-2024	16-Feb-2024	✓	24-Jan-2024	16-Feb-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	24-Jan-2024	15-Feb-2024	✓	24-Jan-2024	15-Feb-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	24-Jan-2024	16-Feb-2024	✓	24-Jan-2024	16-Feb-2024	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	----	----	----	20-Jan-2024	20-Jan-2024	✓
Clear Plastic Bottle - Natural (EK071G) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	----	----	----	20-Jan-2024	21-Jan-2024	✓
EP008: Chlorophyll a & Pheophytin a								
White Plastic Bottle - Unpreserved (EP008) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	----	----	----	19-Jan-2024	20-Jan-2024	✓
White Plastic Bottle - Unpreserved (EP008) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	----	----	----	19-Jan-2024	21-Jan-2024	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP020: Oil and Grease (O&G)								
Amber Jar - Sulfuric Acid or Sodium Bisulfate (EP020) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	----	----	----	25-Jan-2024	15-Feb-2024	✓
Amber Jar - Sulfuric Acid or Sodium Bisulfate (EP020) BADDs, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	----	----	----	25-Jan-2024	16-Feb-2024	✓
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	25-Jan-2024	01-Feb-2024	✓	25-Jan-2024	01-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP074) BADDs, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	25-Jan-2024	02-Feb-2024	✓	25-Jan-2024	02-Feb-2024	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	25-Jan-2024	01-Feb-2024	✓	25-Jan-2024	01-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP074) BADDs, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	25-Jan-2024	02-Feb-2024	✓	25-Jan-2024	02-Feb-2024	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	25-Jan-2024	01-Feb-2024	✓	25-Jan-2024	01-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP074) BADDs, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	25-Jan-2024	02-Feb-2024	✓	25-Jan-2024	02-Feb-2024	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	25-Jan-2024	01-Feb-2024	✓	25-Jan-2024	01-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	25-Jan-2024	02-Feb-2024	✓	25-Jan-2024	02-Feb-2024	✓
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM)) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	23-Jan-2024	25-Jan-2024	✓	24-Jan-2024	03-Mar-2024	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	23-Jan-2024	26-Jan-2024	✓	24-Jan-2024	03-Mar-2024	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	23-Jan-2024	25-Jan-2024	✓	24-Jan-2024	03-Mar-2024	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	23-Jan-2024	26-Jan-2024	✓	24-Jan-2024	03-Mar-2024	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	25-Jan-2024	01-Feb-2024	✓	25-Jan-2024	01-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	25-Jan-2024	02-Feb-2024	✓	25-Jan-2024	02-Feb-2024	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP131A: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP131A) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	22-Jan-2024	25-Jan-2024	✓	26-Jan-2024	02-Mar-2024	✓
Amber Glass Bottle - Unpreserved (EP131A) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	22-Jan-2024	26-Jan-2024	✓	26-Jan-2024	02-Mar-2024	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)								
Amber Glass Bottle - Unpreserved (EP131B-ST) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	22-Jan-2024	25-Jan-2024	✓	23-Jan-2024	02-Mar-2024	✓
Amber Glass Bottle - Unpreserved (EP131B-ST) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	22-Jan-2024	26-Jan-2024	✓	23-Jan-2024	02-Mar-2024	✓
EP234A: OP Pesticides								
Amber Glass Bottle - Unpreserved (EP234-1x) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	18-Jan-2024	----	----	----	23-Jan-2024	25-Jan-2024	✓
Amber Glass Bottle - Unpreserved (EP234-1x) BADDS, BADUS, COSUS	BADMS, COSDS,	19-Jan-2024	----	----	----	23-Jan-2024	26-Jan-2024	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	4	28	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	0	13	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	17	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace) for Catchment Monitoring	EP131B-ST	0	13	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	5	33	15.15	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	EP008	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	4	50	8.00	8.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace) for Catchment Monitoring	EP131B-ST	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	3	33	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	EP008	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	3	50	6.00	6.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace) for Catchment Monitoring	EP131B-ST	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	3	33	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	0	13	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	17	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace) for Catchment Monitoring	EP131B-ST	0	13	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	3	33	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C. This method is compliant with NEPM Schedule B(3)
Hardness as CaCO3	EA065	WATER	In house: Referenced to APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + No _x) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Chlorophyll a and Pheophytin a	EP008	WATER	In house: Referenced to APHA 10200 H. The pigments are extracted into aqueous acetone. The optical density of the extract before and after acidification at both 664 nm and 665 nm is determined spectrometrically.
Oil and Grease	EP020	WATER	In house: Referenced to APHA 5520 B. Oil & grease is a gravimetric procedure to determine the amount of dissolved or emulsified oil & grease residue in an aqueous sample. The sample is serially extracted three times n-hexane. The resultant extracts are combined, dehydrated and concentrated prior to gravimetric determination. This method is compliant with NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Organochlorine Pesticides (Ultra-trace)	EP131A	WATER	In house: Referenced to USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/μECD/uECD). This method is compliant with NEPM Schedule B(3)
PCB's (Ultra-trace) for Catchment Monitoring	EP131B-ST	WATER	In house: Referenced to USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/μECD/μECD). This method is compliant with NEPM Schedule B(3)
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Preparation Methods	Method	Matrix	Method Descriptions



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Sep. Funnel Extraction of Liquids (Ultra-trace pesticides.)	ORG14-UTP	WATER	In house: Referenced to USEPA 3510 Samples are extracted into dichloromethane, concentrated and exchanged into an appropriate solvent for GPC and florisil cleanup as required. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

Connote / Courier:

Environmental Division
Sydney

Work Order Reference

ES2404913



Telephone : + 61-2-8784 8555



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

CLIENT: SHD Pty Ltd

OFFICE: Sydney

PROJECT M12 Surface Water

ORDER NUMBER: 12554717

PROJECT MANAGER: Henry Luo

SAMPLER: Andrew Duval, Jackson Miller

SAMPLER MOBILE: 0468301344

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default): ESDAT

Email Reports to: emily.smith@ghd.com; andrew.duval@ghd.com; henry.luo@ghd.com,
ghdiabreports@ghd.com

RELINQUISHED BY:

Jackson Miller

DATE/TIME:

14/02/2024 3:15PM

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY: _____

DATE/TIME:

15/2/24 10:25

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

PLEASE DO NOT LOG ALL SAMPLES RECEIVED IN ONE WORKORDER. LOG AS TWO SEPARATE WORKORDERS AS PER THE TWO COCs PROVIDED.

[illegible]



Dr. Mackay 7814-100, Box 100, Mackay, QLD 4880, Ross Gurr Road, Warabrook NSW 2204
 08 9392 7814 Fax 08 9392 7815 Email: mackay@chemlink.com.au www.chemlink.com.au
 08 9392 7814 Fax 08 9392 7815 Email: mackay@chemlink.com.au www.chemlink.com.au
 08 9392 7814 Fax 08 9392 7815 Email: mackay@chemlink.com.au www.chemlink.com.au
 Ph 02 8472 5206 E mackay@chemlink.com.au 0205 7655 E samples.perth@alegal.com.au

LLOYD WILLIAMS 17289 Vonderburg Road Smithfield NSW 2164
 PH 02 9246 3000 E williams_lloyd@aisglobal.com
 LLOYD WONG 88 Kenny Street Wallingford NSW 2500
 PH 02 4225 5125 E porkembia@aisglobal.com

CLIENT: GHD Pty Ltd		TURNAROUND REQUIREMENT: ☐ Standard TAT (List due date):		STANDARD TAT		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Sydney		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):				Custody Seal Intact? No N/A	
PROJECT: M12 Surface Water		ALS QUOTE NO.: SY322/21				Free ice / frozen ice bricks present upon receipt? No N/A	
ORDER NUMBER: 12554717				1 2 3 4 5 6 7		Random Sample Temperature on Receipt °C	
PROJECT MANAGER: Henry Luo		CONTACT PH: Henry Luo 0414 090 002		1 2 3 4 5 6 7		Other comment:	
SAMPLER: Andrew Duval, Jackson Miller		SAMPLER MOBILE: 0468301344		RELINQUISHED BY:		RELINQUISHED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default): ESDAT		Jackson Miller		DATE/TIME:	
Email Reports to: emily.smith@ghd.com; andrew.duval@ghd.com; henry.luo@ghd.com, ghdlabreports@ghd.com				DATE/TIME:		DATE/TIME:	
				14/02/2024 3:15PM		14/2/24 15	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

PLEASE DO NOT LOG ALL SAMPLES RECEIVED IN ONE WORKORDER. LOG AS TWO SEPARATE WORKORDERS AS PER THE TWO COCs PROVIDED.

[illegible]



mgt

☒ **Sydney**

Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
 Phone: +612 9900 8400
 Email: enviro.syd@mgtilabmark.com.au

☐ **Brisbane**

Unit 1-21 Smallwood Place, Murrarie
 Phone: +617 3902 4600
 Email: enviro.bris@mgtilabmark.com.au

☐ **Melbourne**

2 Kingston Town Close, Oakleigh, VIC 3166
 Phone: +613 8564 5000 Fax: +613 8564 5090
 Email: enquiries.melb@mgtilabmark.com.au

CHAIN OF CUSTODY RECORD**CLIENT DETAILS**Page 1 of 1

Company Name : GHD Pty Ltd, Sydney	Contact Name : Andrew Duval 0468 301 344	Purchase Order : 12554717	COC Number :
Office Address :	Project Manager: Henry Luo 0414 090 002	PROJECT Number : 12554717	Eurofins mgt quote ID :
Level 15, 133 Castlereagh Street, Sydney NSW 2000	Email for results : emily.smith@ghd.com; andrew.duval@ghd.com; henry.luo@ghd.com; ghdlabreports@ghd.com	PROJECT Name : M12 Water Sampling	Data output format: ESDAT

Special Directions & Comments :	Analytes						Some common holding times (with correct preservation). For further information contact the lab			
	Dissolved metals	Total metals	Waters			Soils				
			BTEX, MAH, VOC	14 days		BTEX, MAH, VOC	14 days			
			TRH, PAH, Phenols, Pesticides	7 days		TRH, PAH, Phenols, Pesticides	14 days			
			Heavy Metals	6 months		Heavy Metals	6 months			
			Mercury, CrVI	28 days		Mercury, CrVI	28 days			
			Microbiological testing	24 hours		Microbiological testing	72 hours			
			BOD, Nitrate, Nitrite, Total N	2 days		Anions	28 days			
			Solids - TSS, TDS etc	7 days		SPOCAS, pH Field and FOX, CrS	24 hours			
			Ferrous iron	7 days		ASLP, TCLP	7 days			

Eurofins | mgt DJ water batch number:

	Sample ID	Date	Matrix	Dissolved metals	Total metals	Containers:								Sample comments:
						500P	250P	60P	1LA	40mL vial	200mL A	Jar	Bag	
1	SWDUP2	14/02/2024	Water					1						
2	GWDUP2	13/02/2024	Water					1						
3														
4														
5														
6														
7														
8														
9														
10														

		Laboratory Staff		Method Of Shipment		Temperature on arrival:	
Relinquished By:		Received By:		☐ Courier ☐ Hand Delivered ☐ Postal Courier Consignment # :		Report number:	
Date & Time :		Date & Time :					
Signature:		Signature:					



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2404913**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR HENRY LUO	Contact	: Samiksha Sathish
Address	: LEVEL 15, 133 CASTLEREAGH STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: henry.luo@ghd.com	E-mail	: samiksha.sathish@alsglobal.com
Telephone	: +61 02 9239 7100	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 9239 7199	Facsimile	: +61-2-8784 8500
Project	: M12 SURFACE WATER	Page	: 1 of 4
Order number	: 12554717	Quote number	: ES2021GHDSE0026 (SY/322/21)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: ANDREW DUVAL, Jackson Miller		

Dates

Date Samples Received	: 14-Feb-2024 15:09	Issue Date	: 16-Feb-2024
Client Requested Due Date	: 21-Feb-2024	Scheduled Reporting Date	: 21-Feb-2024

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 7	Temperature	: 9.1, 6.2, 12.1°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 14 / 14

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- This is an updated SRN which indicates the removal of OC pesticides analysis.
- This is an updated SRN which indicates the correction of sample ID & sampling dates
- **Sample SWDUP2 has been forwarded to Eurofins.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EG020T Total Metals by ICP/MS (including digestion)	WATER - EP008 Chlorophyll a	WATER - EP020 Oil & Grease (O&G)	WATER - EP074DEFG VOC - Fumigants, Hal Aliphatics, Hal Aromatics,	WATER - EP234AX Organophosphorus Pesticides - Extended List (50	WATER - W-02T 8 metals (Total)	WATER - W-14A PAH/Phenols (SIM)
ES2404913-001	13-Feb-2024 00:00	BADDS	✓	✓	✓	✓	✓	✓	✓
ES2404913-002	13-Feb-2024 00:00	BADMS	✓	✓	✓	✓	✓	✓	✓
ES2404913-003	13-Feb-2024 00:00	BADUS	✓	✓	✓	✓	✓	✓	✓
ES2404913-004	13-Feb-2024 00:00	COSDS	✓	✓	✓	✓	✓	✓	✓
ES2404913-005	13-Feb-2024 00:00	COSUS	✓	✓	✓	✓	✓	✓	✓
ES2404913-006	14-Feb-2024 00:00	HINDS	✓	✓	✓	✓	✓	✓	✓
ES2404913-007	14-Feb-2024 00:00	HINUS	✓	✓	✓	✓	✓	✓	✓
ES2404913-008	14-Feb-2024 00:00	KEMDS	✓	✓	✓	✓	✓	✓	✓
ES2404913-009	14-Feb-2024 00:00	KEMUS	✓	✓	✓	✓	✓	✓	✓
ES2404913-010	14-Feb-2024 00:00	ROPDS	✓	✓	✓	✓	✓	✓	✓
ES2404913-011	14-Feb-2024 00:00	ROPUS	✓	✓	✓	✓	✓	✓	✓
ES2404913-012	14-Feb-2024 00:00	SOUUS	✓	✓	✓	✓	✓	✓	✓
ES2404913-013	14-Feb-2024 00:00	SOUUS	✓	✓	✓	✓	✓	✓	✓
ES2404913-014	13-Feb-2024 00:00	SWDUP1						✓	

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EP080 BTEXN	WATER - NT-08A Total Nitrogen + NO2 + NO3 + NH3 + Total P +
ES2404913-001	13-Feb-2024 00:00	BADDS	✓	✓	✓
ES2404913-002	13-Feb-2024 00:00	BADMS	✓	✓	✓
ES2404913-003	13-Feb-2024 00:00	BADUS	✓	✓	✓
ES2404913-004	13-Feb-2024 00:00	COSDS	✓	✓	✓
ES2404913-005	13-Feb-2024 00:00	COSUS	✓	✓	✓
ES2404913-006	14-Feb-2024 00:00	HINDS	✓	✓	✓
ES2404913-007	14-Feb-2024 00:00	HINUS	✓	✓	✓
ES2404913-008	14-Feb-2024 00:00	KEMDS	✓	✓	✓
ES2404913-009	14-Feb-2024 00:00	KEMUS	✓	✓	✓
ES2404913-010	14-Feb-2024 00:00	ROPDS	✓	✓	✓

Issue Date : 16-Feb-2024
Page : 4 of 4
Work Order : ES2404913 Amendment 0
Client : GHD PTY LTD





CERTIFICATE OF ANALYSIS

Work Order : **ES2404913**
Client : **GHD PTY LTD**
Contact : **MR HENRY LUO**
Address : **LEVEL 15, 133 CASTLEREAGH STREET**
SYDNEY NSW, AUSTRALIA 2000
Telephone : **+61 02 9239 7100**
Project : **M12 SURFACE WATER**
Order number : **12554717**
C-O-C number : **----**
Sampler : **ANDREW DUVAL, Jackson Miller**
Site : **----**
Quote number : **SY/322/21**
No. of samples received : **14**
No. of samples analysed : **14**

Page : 1 of 27
Laboratory : Environmental Division Sydney
Contact : Samiksha Sathish
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 14-Feb-2024 15:09
Date Analysis Commenced : 15-Feb-2024
Issue Date : 21-Feb-2024 15:55



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences and high matrix spike recovery has been noted for particular compounds due to ion enhancement.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP131A: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	
Compound	CAS Number	LOR	Unit	ES2404913-001	ES2404913-002	ES2404913-003	ES2404913-004	ES2404913-005	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	664	668	637	762	774	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	153	90	144	91	8	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	0.003	0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.002	0.001	0.005	0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.004	0.002	0.008	0.001	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.004	0.003	0.005	0.003	<0.001	
Lead	7439-92-1	0.001	mg/L	0.003	0.002	0.012	0.002	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.014	0.007	0.028	0.046	<0.005	
Manganese	7439-96-5	0.001	mg/L	0.368	0.278	0.635	0.425	0.173	
Iron	7439-89-6	0.05	mg/L	2.96	1.97	5.89	2.46	0.47	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.04	0.04	0.05	0.04	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.14	0.11	0.05	0.04	0.05	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.14	0.11	0.05	0.04	0.05	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.5	1.2	1.7	0.9	0.5	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.6	1.3	1.8	0.9	0.6	
EK067G: Total Phosphorus as P by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-001	ES2404913-002	ES2404913-003	ES2404913-004	ES2404913-005
				Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser - Continued								
Total Phosphorus as P	----	0.01	mg/L	0.20	0.22	0.32	0.08	0.02
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP008: Chlorophyll a & Pheophytin a								
Chlorophyll a	----	1	mg/m ³	26	29	37	2	2
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	6	<5	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-001	ES2404913-002	ES2404913-003	ES2404913-004	ES2404913-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-001	ES2404913-002	ES2404913-003	ES2404913-004	ES2404913-005
				Result	Result	Result	Result	Result
EP074G: Trihalomethanes - Continued								
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-001	ES2404913-002	ES2404913-003	ES2404913-004	ES2404913-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-001	ES2404913-002	ES2404913-003	ES2404913-004	ES2404913-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenclorophos (Ronnell)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Formothion	2540-82-1	20	µg/L	<20	<20	<20	<20	<20
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	<10	<10
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time				13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-001	ES2404913-002	ES2404913-003	ES2404913-004	ES2404913-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	96.2	104	99.4	86.2	94.3
Toluene-D8	2037-26-5	5	%	85.0	97.3	95.3	83.8	80.5
4-Bromofluorobenzene	460-00-4	5	%	84.5	94.4	92.7	89.8	81.7
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	24.8	24.4	27.4	33.3	29.2
2-Chlorophenol-D4	93951-73-6	1.0	%	49.3	45.2	50.0	59.8	54.5
2,4,6-Tribromophenol	118-79-6	1.0	%	54.7	47.1	52.2	77.4	59.3
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	51.1	53.7	55.1	54.3	57.6
Anthracene-d10	1719-06-8	1.0	%	68.2	62.6	70.0	92.0	73.6
4-Terphenyl-d14	1718-51-0	1.0	%	73.3	67.4	71.8	96.3	76.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BADDS	BADMS	BADUS	COSDS	COSUS
Sampling date / time					13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00	13-Feb-2024 00:00
Compound	CAS Number	LOR	Unit		ES2404913-001	ES2404913-002	ES2404913-003	ES2404913-004	ES2404913-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		101	109	104	90.1	98.6
Toluene-D8	2037-26-5	2	%		87.9	101	98.7	77.1	83.3
4-Bromofluorobenzene	460-00-4	2	%		85.8	94.2	96.0	76.8	82.8

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	
Compound	CAS Number	LOR	Unit	ES2404913-006	ES2404913-007	ES2404913-008	ES2404913-009	ES2404913-010	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	538	650	798	565	1030	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	7	10	56	42	6	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	0.002	0.002	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.002	0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.007	0.005	<0.001	
Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	0.002	0.002	0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.001	0.002	<0.001	
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.019	0.018	<0.005	
Manganese	7439-96-5	0.001	mg/L	0.261	0.343	0.095	0.072	0.859	
Iron	7439-89-6	0.05	mg/L	0.44	2.05	1.49	1.42	0.36	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.03	0.07	0.07	0.06	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.05	0.03	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	5.55	2.12	0.02	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	5.60	2.15	0.02	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	1.5	1.9	1.5	0.6	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.2	1.5	7.5	3.6	0.6	
EK067G: Total Phosphorus as P by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-006	ES2404913-007	ES2404913-008	ES2404913-009	ES2404913-010
				Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser - Continued								
Total Phosphorus as P	----	0.01	mg/L	0.05	0.08	1.26	0.77	0.06
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	1.04	0.59	0.02
EP008: Chlorophyll a & Pheophytin a								
Chlorophyll a	----	1	mg/m ³	53	18	2	4	6
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-006	ES2404913-007	ES2404913-008	ES2404913-009	ES2404913-010
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-006	ES2404913-007	ES2404913-008	ES2404913-009	ES2404913-010
				Result	Result	Result	Result	Result
EP074G: Trihalomethanes - Continued								
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-006	ES2404913-007	ES2404913-008	ES2404913-009	ES2404913-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-006	ES2404913-007	ES2404913-008	ES2404913-009	ES2404913-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.60	0.13	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenclorophos (Ronnell)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Formothion	2540-82-1	20	µg/L	<20	<20	<20	<20	<20
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	<10	<10
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.24	0.06	<0.02
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00
Compound	CAS Number	LOR	Unit	ES2404913-006	ES2404913-007	ES2404913-008	ES2404913-009	ES2404913-010
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	101	106	86.9	107	99.1
Toluene-D8	2037-26-5	5	%	92.7	95.7	91.8	103	80.4
4-Bromofluorobenzene	460-00-4	5	%	89.1	91.5	89.3	96.9	84.2
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	29.0	25.7	27.2	22.3	21.9
2-Chlorophenol-D4	93951-73-6	1.0	%	51.0	45.2	49.1	41.5	39.9
2,4,6-Tribromophenol	118-79-6	1.0	%	49.3	56.5	51.8	46.0	42.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	57.8	50.3	53.0	53.1	54.3
Anthracene-d10	1719-06-8	1.0	%	73.9	74.1	69.6	57.2	58.6
4-Terphenyl-d14	1718-51-0	1.0	%	78.1	81.7	76.8	59.5	64.7



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HINDS	HINUS	KEMDS	KEMUS	ROPDS
Sampling date / time					14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00
Compound	CAS Number	LOR	Unit		ES2404913-006	ES2404913-007	ES2404913-008	ES2404913-009	ES2404913-010
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		106	111	91.0	112	104
Toluene-D8	2037-26-5	2	%		96.1	99.3	84.3	106	83.4
4-Bromofluorobenzene	460-00-4	2	%		91.9	93.2	76.0	98.4	85.4

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	13-Feb-2024 00:00	-----	
Compound	CAS Number	LOR	Unit	ES2404913-011	ES2404913-012	ES2404913-013	ES2404913-014	-----	
				Result	Result	Result	Result	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	325	485	507	----	----	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	38	30	24	----	----	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	0.001	0.002	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.003	----	
Copper	7440-50-8	0.001	mg/L	<0.001	0.001	<0.001	0.004	----	
Nickel	7440-02-0	0.001	mg/L	0.001	0.002	0.002	0.004	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.003	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	0.016	----	
Manganese	7439-96-5	0.001	mg/L	0.520	0.220	0.304	----	----	
Iron	7439-89-6	0.05	mg/L	2.10	1.16	0.95	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.04	0.07	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.02	0.02	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.61	0.76	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.63	0.78	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.1	1.7	1.1	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	2.1	2.3	1.9	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time					14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	13-Feb-2024 00:00	----
Compound	CAS Number	LOR	Unit		ES2404913-011	ES2404913-012	ES2404913-013	ES2404913-014	-----
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		0.12	0.25	0.22	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	0.05	0.06	----	----
EP008: Chlorophyll a & Pheophytin a									
Chlorophyll a	----	1	mg/m ³		50	82	22	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	----	----
1,2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	----	----
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	----	----
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	----	----
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	----	----
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	----	----
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	----	----
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	----	----
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	----	----
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	----	----
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	----	----
1,1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	----	----
1,1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	13-Feb-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2404913-011	ES2404913-012	ES2404913-013	ES2404913-014	-----
				Result	Result	Result	Result	----
EP074E: Halogenated Aliphatic Compounds - Continued								
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	----	----
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	----	----
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	----	----
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	----	----
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	----	----
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	----	----
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	----	----
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	----	----
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	----	----
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	----	----
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	----	----
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	----	----
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	----	----
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	----	----
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	----	----
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	----	----
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	13-Feb-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2404913-011	ES2404913-012	ES2404913-013	ES2404913-014	-----
				Result	Result	Result	Result	----
EP074G: Trihalomethanes - Continued								
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	----	----
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	----	----
Bromoform	75-25-2	5	µg/L	<5	<5	<5	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	13-Feb-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2404913-011	ES2404913-012	ES2404913-013	ES2404913-014	-----
				Result	Result	Result	Result	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	----	----
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	13-Feb-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2404913-011	ES2404913-012	ES2404913-013	ES2404913-014	-----
				Result	Result	Result	Result	----
EP234A: OP Pesticides - Continued								
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	0.04	0.03	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenclorophos (Ronnell)	299-84-3	10	µg/L	<10	<10	<10	----	----
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Formothion	2540-82-1	20	µg/L	<20	<20	<20	----	----
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				ROPUS	SOUDS	SOUUS	SWDUP1	----
Sampling date / time				14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	13-Feb-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2404913-011	ES2404913-012	ES2404913-013	ES2404913-014	-----
				Result	Result	Result	Result	----
EP234A: OP Pesticides - Continued								
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	99.8	96.1	102	----	----
Toluene-D8	2037-26-5	5	%	90.7	88.6	97.4	----	----
4-Bromofluorobenzene	460-00-4	5	%	88.3	84.9	92.0	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	25.1	21.6	20.5	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	45.6	39.5	36.4	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	47.3	42.0	34.2	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	58.5	55.2	56.4	----	----
Anthracene-d10	1719-06-8	1.0	%	65.3	63.1	63.0	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	65.6	66.7	56.6	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ROPUS	SODS	SOUUS	SWDUP1	----
Sampling date / time					14-Feb-2024 00:00	14-Feb-2024 00:00	14-Feb-2024 00:00	13-Feb-2024 00:00	----
Compound	CAS Number	LOR	Unit		ES2404913-011	ES2404913-012	ES2404913-013	ES2404913-014	-----
					Result	Result	Result	Result	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		104	101	107	----	----
Toluene-D8	2037-26-5	2	%		94.1	91.6	101	----	----
4-Bromofluorobenzene	460-00-4	2	%		89.0	86.2	93.9	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



QUALITY CONTROL REPORT

Work Order : **ES2404913**

Page : 1 of 22

Client : **GHD PTY LTD**

Laboratory : Environmental Division Sydney

Contact : **MR HENRY LUO**

Contact : Samiksha Sathish

Address : **LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW, AUSTRALIA 2000**

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 9239 7100

Telephone : +61-2-8784 8555

Project : **M12 SURFACE WATER**

Date Samples Received : 14-Feb-2024

Order number : 12554717

Date Analysis Commenced : 15-Feb-2024

C-O-C number : ----

Issue Date : 21-Feb-2024

Sampler : **ANDREW DUVAL, Jackson Miller**

Site : ----

Quote number : SY/322/21

No. of samples received : 14

No. of samples analysed : 14



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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

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

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5608727)									
ES2404509-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	9880	9970	0.9	0% - 20%
ES2404581-011	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	645	640	0.9	0% - 20%
ES2404670-006	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6170	6370	3.2	0% - 20%
ES2404913-001	BADDS	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	664	690	3.8	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5610386)									
ES2404493-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	610	610	0.2	0% - 20%
ES2404821-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	11	9.5	No Limit
ES2404859-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4110	4100	0.4	0% - 20%
ES2404913-013	SOUUS	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	507	486	4.3	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5609873)									
ES2404734-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	658	645	2.0	0% - 20%
ES2404758-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2404913-002	BADMS	EA025H: Suspended Solids (SS)	----	5	mg/L	90	96	6.2	0% - 50%
ES2405170-007	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	584	592	1.4	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5610387)									
ES2404493-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	42	36	12.8	No Limit
ES2404821-003	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2404859-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	95	94	0.0	0% - 50%
ES2404913-013	SOUUS	EA025H: Suspended Solids (SS)	----	5	mg/L	24	26	5.9	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 5606492)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 5606492) - continued									
ES2403957-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.026	0.026	0.0	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.083	0.084	0.0	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.032	0.026	19.5	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.09	0.08	12.0	No Limit
ES2404847-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.351	0.348	0.8	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.040	0.040	0.0	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.087	0.086	0.0	0% - 50%
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.19	0.19	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 5606495)									
ES2404913-005	COSUS	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.173	0.173	0.0	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.47	0.45	3.2	No Limit
ES2404944-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0003	0.0003	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.026	0.025	0.0	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.150	0.144	4.6	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.134	0.124	7.6	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.059	0.057	4.1	0% - 20%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	1.28	1.25	2.8	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.119	0.116	2.7	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.304	0.287	5.7	0% - 20%
		EG020A-T: Iron	7439-89-6	0.05	mg/L	66.4	64.3	3.3	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5606906)									
ES2404658-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2404887-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5606907)									
ES2404913-004	COSDS	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2404913-014	SWDUP1	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5608071)									
ES2404913-001	BADDS	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.05	0.0	No Limit
ES2404913-010	ROPDS	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.05	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5604377)									
ES2404661-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2404913-001	BADDS	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5608072)									
ES2404913-001	BADDS	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.14	0.14	0.0	0% - 50%
ES2404913-010	ROPDS	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5608074)									
ES2404913-001	BADDS	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (1.0)*	mg/L	1.5	1.1	32.4	No Limit
ES2404913-011	ROPUS	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.1	2.0	0.0	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5608073)									
ES2404913-001	BADDS	EK067G: Total Phosphorus as P	----	0.01 (0.10)*	mg/L	0.20	0.30	39.0	No Limit
ES2404913-011	ROPUS	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.12	0.11	9.3	0% - 50%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 5604380)									
ES2404913-010	ROPDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	0.02	0.0	No Limit
ES2404913-001	BADDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP074D: Fumigants (QC Lot: 5605379)									
ES2404913-006	HINDS	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES2404835-002	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5605379)									
ES2404913-006	HINDS	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5605379) - continued									
ES2404913-006	HINDS	EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES2404835-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	14	14	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit

EP074G: Trihalomethanes (QC Lot: 5605379)



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074G: Trihalomethanes (QC Lot: 5605379) - continued									
ES2404913-006	HINDS	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES2404835-002	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 5604343)									
ES2404913-003	BADUS	EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	0.0	No Limit
ES2404913-012	SOUDS	EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5604343)									
ES2404913-003	BADUS	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5604343) - continued									
ES2404913-003	BADUS	EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.0	No Limit
ES2404913-012	SOUDS	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP080: BTEXN (QC Lot: 5605378)							
ES2404913-006	HINDS	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
		106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 5605378) - continued									
ES2404913-006	HINDS	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2404835-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
		106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP234A: OP Pesticides (QC Lot: 5605111)									
ES2404913-001	BADDs	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofenthion	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5605111) - continued									
ES2404913-001	BADD5	EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	<10	0.0	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit
ES2404913-009	KEMUS	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Fensulfotthion	115-90-2	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP234A: OP Pesticides (QC Lot: 5605111) - continued									
ES2404913-009	KEMUS	EP234-1: Dimethoate	60-51-5	0.02	µg/L	0.13	0.14	9.2	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	0.06	0.05	0.0	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.0	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.0	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1: Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	<10	0.0	No Limit
EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.0	No Limit		
EP234A: OP Pesticides (QC Lot: 5605112)									
ES2404913-001	BADDS	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Naftalofofos	1491-41-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	0.0	No Limit
		EP234-1x: Formothion	2540-82-1	20	µg/L	<20	<20	0.0	No Limit
ES2404913-009	KEMUS	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP234-1x: Naftalofofos	1491-41-4	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	0.0	No Limit
		EP234-1x: Formothion	2540-82-1	20	µg/L	<20	<20	0.0	No Limit

Page : 12 of 22
Work Order : ES2404913
Client : GHD PTY LTD
Project : M12 SURFACE WATER



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)



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

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

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5608727)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	87.0	109
				<10	293 mg/L	104	75.2	126
				<10	2470 mg/L	95.9	83.0	124
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5610386)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	103	87.0	109
				<10	293 mg/L	111	75.2	126
				<10	2470 mg/L	102	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5609873)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	101	83.0	129
				<5	1000 mg/L	98.4	82.0	110
				<5	841 mg/L	113	83.0	118
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5610387)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	98.0	83.0	129
				<5	1000 mg/L	97.0	82.0	110
				<5	841 mg/L	108	83.0	118
EG020T: Total Metals by ICP-MS (QCLot: 5606492)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	82.0	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.6	84.0	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	99.2	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.0	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.0	85.0	115
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	100	85.0	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.6	84.0	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.0	79.0	117
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	100	85.0	117
EG020T: Total Metals by ICP-MS (QCLot: 5606495)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.6	82.0	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	99.4	84.0	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	98.5	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.6	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.5	85.0	115



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020T: Total Metals by ICP-MS (QCLot: 5606495) - continued								
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	101	85.0	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.5	84.0	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.4	79.0	117
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	99.4	85.0	117
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5606906)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	104	77.0	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5606907)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	106	77.0	111
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5608071)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	99.6	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5604377)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	94.4	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5608072)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5608074)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	91.9	69.0	101
				<0.1	1 mg/L	94.2	70.0	118
				<0.1	5 mg/L	101	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5608073)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	98.7	71.3	126
				<0.01	0.442 mg/L	96.8	71.3	126
				<0.01	1 mg/L	107	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5604380)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	85.0	117
EP008: Chlorophyll (QCLot: 5604603)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	84.2	70.0	130
EP020: Oil and Grease (O&G) (QCLot: 5610391)								
EP020: Oil & Grease	----	5	mg/L	<5	5000 mg/L	102	81.0	121
				<5	4000 mg/L	105	70.0	110
EP074D: Fumigants (QCLot: 5605379)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	97.2	68.0	122
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	99.3	76.0	118
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	97.4	62.0	120
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	97.8	60.0	114



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074D: Fumigants (QCLot: 5605379) - continued								
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	99.3	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 5605379)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	91.2	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	95.0	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	93.4	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	95.3	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	98.5	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	95.2	69.0	131
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	97.1	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	108	70.2	128
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	97.8	74.0	118
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	98.6	74.0	120
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	98.7	77.0	119
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	96.8	67.0	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	96.7	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	95.4	62.0	120
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	101	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	96.9	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	100	73.0	119
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	97.5	72.0	126
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	100	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	97.2	72.0	124
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	96.9	66.0	114
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	102	60.0	120
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	97.1	70.6	128
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	99.5	70.0	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	99.9	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	94.9	71.8	126
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	95.5	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	102	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5605379)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	98.7	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	98.0	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	96.1	73.0	119



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074F: Halogenated Aromatic Compounds (QCLot: 5605379) - continued								
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	97.3	73.0	119
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	97.0	75.0	117
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	96.4	74.0	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	98.0	75.0	117
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	101	61.0	125
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	102	67.0	123
EP074G: Trihalomethanes (QCLot: 5605379)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	99.2	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	96.7	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	96.4	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	96.1	73.5	126
EP075(SIM)A: Phenolic Compounds (QCLot: 5604343)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	42.2	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	75.9	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	72.5	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	67.5	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	74.3	48.0	100
EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	77.5	49.0	99.0
EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	73.3	53.0	105
EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	83.5	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	81.9	53.0	99.0
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	84.5	50.0	106
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	77.7	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	39.0	10.0	95.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5604343)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	72.8	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	86.3	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	86.7	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	86.8	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	91.6	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	93.4	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	98.6	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	96.4	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	86.9	64.1	117



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5604343) - continued								
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	101	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	100	61.7	119
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	98.5	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	96.2	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	96.0	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	94.8	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	93.0	59.1	118
EP080: BTEXN (QCLot: 5605378)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	92.8	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	88.2	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	90.8	73.8	122
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	88.0	73.0	122
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	92.0	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	99.1	75.5	124
EP234A: OP Pesticides (QCLot: 5605111)								
EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	0.2 µg/L	119	77.0	129
EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	0.2 µg/L	102	75.0	135
EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	1 µg/L	110	70.0	130
EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	0.2 µg/L	106	70.0	130
EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	0.2 µg/L	116	74.0	134
EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	0.2 µg/L	111	70.0	130
EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	2 µg/L	89.9	70.0	130
EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	0.1 µg/L	123	70.0	130
EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	0.05 µg/L	91.2	64.0	134
EP234-1: Demeton-O & Demeton-S	298-03-3/12	0.02	µg/L	<0.02	0.1 µg/L	97.1	79.0	127
	6-75-0							
EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	0.05 µg/L	103	63.0	135
EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	0.2 µg/L	102	70.0	128
EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	0.1 µg/L	96.4	68.0	138
EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	2 µg/L	124	76.0	128
EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	0.2 µg/L	117	75.0	127
EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	0.5 µg/L	108	72.0	134
EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	0.5 µg/L	116	70.0	130



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP234A: OP Pesticides (QCLot: 5605111) - continued								
EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	0.2 µg/L	117	70.0	130
EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	0.1 µg/L	114	78.0	128
EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	0.1 µg/L	117	71.0	135
EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	100 µg/L	128	70.0	130
EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	20 µg/L	108	64.0	136
EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	0.1 µg/L	119	79.0	125
EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	0.5 µg/L	113	70.0	130
EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	0.2 µg/L	94.2	70.0	130
EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	0.2 µg/L	110	77.0	123
EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	0.2 µg/L	108	75.0	129
EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	0.1 µg/L	101	74.0	130
EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	2 µg/L	95.7	69.0	139
EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	20 µg/L	76.0	66.0	140
EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	1 µg/L	87.9	68.0	136
EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	0.1 µg/L	102	70.0	130
EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	0.1 µg/L	103	71.0	137
EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	0.1 µg/L	122	70.0	130
EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	1 µg/L	105	70.0	130
EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	0.05 µg/L	94.0	71.0	137
EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	0.5 µg/L	116	70.0	130
EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	0.2 µg/L	121	70.0	130
EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	0.1 µg/L	101	70.0	130
EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	0.1 µg/L	117	74.0	128
EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	0.05 µg/L	120	77.0	131
EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	0.2 µg/L	98.2	70.0	130
EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	5 µg/L	111	63.0	139
EP234A: OP Pesticides (QCLot: 5605112)								
EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	5 µg/L	103	70.0	130
EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	5 µg/L	124	70.0	130
EP234-1x: Formothion	2540-82-1	20	µg/L	<20	----	----	----	----
EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	5 µg/L	128	70.0	130
EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	5 µg/L	103	70.0	130
EP234-1x: Naftalofos	1491-41-4	1	µg/L	<1.0	5 µg/L	108	70.0	130
EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	5 µg/L	128	70.0	130

Matrix Spike (MS) Report

Sub-Matrix: WATER

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 5606492)							
ES2404847-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	109	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	109	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	113	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	115	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	116	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	# Not Determined	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	112	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	107	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 5606495)							
ES2404913-006	HINDS	EG020A-T: Arsenic	7440-38-2	1 mg/L	96.0	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	94.6	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	96.7	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	98.8	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	97.1	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	97.9	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	91.0	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	92.8	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5606906)							
ES2404660-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	96.0	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5606907)							
ES2404913-005	COSUS	EG035T: Mercury	7439-97-6	0.01 mg/L	83.6	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5608071)							
ES2404913-001	BADDS	EK055G: Ammonia as N	7664-41-7	1 mg/L	99.9	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5604377)							
ES2404661-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	103	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5608072)							

Page : 20 of 22
 Work Order : ES2404913
 Client : GHD PTY LTD
 Project : M12 SURFACE WATER



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5608072) - continued							
ES2404913-001	BADDS	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	99.6	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5608074)							
ES2404913-002	BADMS	EK061G: Total Kjeldahl Nitrogen as N	----	50 mg/L	99.3	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5608073)							
ES2404913-002	BADMS	EK067G: Total Phosphorus as P	----	10 mg/L	104	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5604380)							
ES2404913-001	BADDS	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	98.5	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 5605379)							
ES2404835-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	91.0	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	94.7	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5605379)							
ES2404835-002	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	103	70.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 5604343)							
ES2404913-004	COSDS	EP075(SIM): Phenol	108-95-2	20 µg/L	33.4	20.0	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	78.1	60.0	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	72.4	60.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	85.7	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	44.0	20.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5604343)							
ES2404913-004	COSDS	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	94.1	70.0	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	93.5	70.0	130
EP080: BTEXN (QCLot: 5605378)							
ES2404835-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	103	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	94.9	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	98.8	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	95.9	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	94.9	70.0	130
	EP080: Naphthalene	91-20-3	25 µg/L	89.2	70.0	130	
EP234A: OP Pesticides (QCLot: 5605111)							
ES2404913-001	BADDS	EP234-1: Azinphos-methyl	86-50-0	0.2 µg/L	129	70.0	130
		EP234-1: Azinphos-ethyl	2642-71-9	0.2 µg/L	127	70.0	130
		EP234-1: Bromophos-ethyl	4824-78-6	1 µg/L	# 173	70.0	130
		EP234-1: Carbofenothion	786-19-6	0.2 µg/L	113	70.0	130
		EP234-1: Chlorfenvinphos	470-90-6	0.2 µg/L	123	70.0	130
		EP234-1: Chlorpyrifos	2921-88-2	0.2 µg/L	119	70.0	130

Matrix Spike (MS) Report

EP234A: OP Pesticides (QCLot: 5605112)



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
Laboratory sample ID	Sample ID	Method: Compound	CAS Number				
EP234A: OP Pesticides (QCLot: 5605112) - continued							
ES2404913-001	BADDS	EP234-1x: Acephate	30560-19-1	5 µg/L	96.7	70.0	130
		EP234-1x: Bensulide	741-58-2	5 µg/L	110	70.0	130
		EP234-1x: Fosetyl Aluminium	39148-24-8	5 µg/L	# 0.5	70.0	130
		EP234-1x: Methidathion	950-37-8	5 µg/L	112	70.0	130
		EP234-1x: Naftalofos	1491-41-4	5 µg/L	116	70.0	130
		EP234-1x: Pyrazophos	13457-18-6	5 µg/L	130	70.0	130
		EP234-1x: Thiometon	640-15-3	5 µg/L	# 64.6	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2404913	Page	: 1 of 11
Client	: GHD PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR HENRY LUO	Telephone	: +61-2-8784 8555
Project	: M12 SURFACE WATER	Date Samples Received	: 14-Feb-2024
Site	: ----	Issue Date	: 21-Feb-2024
Sampler	: ANDREW DUVAL, Jackson Miller	No. of samples received	: 14
Order number	: 12554717	No. of samples analysed	: 14

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG020T: Total Metals by ICP-MS	ES2404847--002	Anonymous	Manganese	7439-96-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP234A: OP Pesticides	ES2404913--001	BADDS	Bromophos-ethyl	4824-78-6	173 %	70.0-130%	Recovery greater than upper data quality objective
EP234A: OP Pesticides	ES2404913--001	BADDS	Demeton-O	298-03-3	131 %	70.0-130%	Recovery greater than upper data quality objective
EP234A: OP Pesticides	ES2404913--001	BADDS	EPN	2104-64-5	64.1 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2404913--001	BADDS	Ethoprophos	13194-48-4	31.4 %	70.0-132%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2404913--001	BADDS	Fenchlorphos (Ronnell)	299-84-3	150 %	71.0-133%	Recovery greater than upper data quality objective
EP234A: OP Pesticides	ES2404913--001	BADDS	Fensulfothion	115-90-2	156 %	83.0-123%	Recovery greater than upper data quality objective
EP234A: OP Pesticides	ES2404913--001	BADDS	Parathion-methyl	298-00-0	64.1 %	70.0-140%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2404913--001	BADDS	Prothiofos	34643-46-4	197 %	70.0-130%	Recovery greater than upper data quality objective
EP234A: OP Pesticides	ES2404913--001	BADDS	Trichloronate	327-98-0	187 %	63.0-139%	Recovery greater than upper data quality objective
EP234A: OP Pesticides	ES2404913--001	BADDS	Fosetyl Aluminium	39148-24-8	0.5 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES2404913--001	BADDS	Thiometon	640-15-3	64.6 %	70.0-130%	Recovery less than lower data quality objective

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	----	----	----	19-Feb-2024	20-Feb-2024	✓
Clear Plastic Bottle - Natural (EA015H) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	----	----	----	19-Feb-2024	21-Feb-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	----	----	----	19-Feb-2024	20-Feb-2024	✓
Clear Plastic Bottle - Natural (EA025H) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	----	----	----	19-Feb-2024	21-Feb-2024	✓
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) BADDS, BADUS, COSUS,	BADMS, COSDS, SWDUP1	13-Feb-2024	16-Feb-2024	11-Aug-2024	✓	16-Feb-2024	11-Aug-2024	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	16-Feb-2024	12-Aug-2024	✓	16-Feb-2024	12-Aug-2024	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) BADDS, BADUS, COSUS,	BADMS, COSDS, SWDUP1	13-Feb-2024	----	----	----	19-Feb-2024	12-Mar-2024	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	----	----	----	19-Feb-2024	13-Mar-2024	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	----	----	----	19-Feb-2024	12-Mar-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	----	----	----	19-Feb-2024	13-Mar-2024	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	----	----	----	15-Feb-2024	15-Feb-2024	✓
Clear Plastic Bottle - Natural (EK057G) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	----	----	----	15-Feb-2024	16-Feb-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	----	----	----	19-Feb-2024	12-Mar-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	----	----	----	19-Feb-2024	13-Mar-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	19-Feb-2024	12-Mar-2024	✓	19-Feb-2024	12-Mar-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	19-Feb-2024	13-Mar-2024	✓	19-Feb-2024	13-Mar-2024	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	19-Feb-2024	12-Mar-2024	✓	19-Feb-2024	12-Mar-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	19-Feb-2024	13-Mar-2024	✓	19-Feb-2024	13-Mar-2024	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	----	----	----	15-Feb-2024	15-Feb-2024	✓
Clear Plastic Bottle - Natural (EK071G) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	----	----	----	15-Feb-2024	16-Feb-2024	✓
EP008: Chlorophyll a & Pheophytin a								
White Plastic Bottle - Unpreserved (EP008) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	----	----	----	15-Feb-2024	15-Feb-2024	✓
White Plastic Bottle - Unpreserved (EP008) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	----	----	----	15-Feb-2024	16-Feb-2024	✓
EP020: Oil and Grease (O&G)								
Amber Jar - Sulfuric Acid or Sodium Bisulfate (EP020) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	----	----	----	20-Feb-2024	12-Mar-2024	✓
Amber Jar - Sulfuric Acid or Sodium Bisulfate (EP020) HINDS, KEMDS, ROPDS, SOUDS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	----	----	----	20-Feb-2024	13-Mar-2024	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	16-Feb-2024	27-Feb-2024	✓	17-Feb-2024	27-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	16-Feb-2024	28-Feb-2024	✓	17-Feb-2024	28-Feb-2024	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	16-Feb-2024	27-Feb-2024	✓	17-Feb-2024	27-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	16-Feb-2024	28-Feb-2024	✓	17-Feb-2024	28-Feb-2024	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	16-Feb-2024	27-Feb-2024	✓	17-Feb-2024	27-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	16-Feb-2024	28-Feb-2024	✓	17-Feb-2024	28-Feb-2024	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	16-Feb-2024	27-Feb-2024	✓	17-Feb-2024	27-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP074) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	16-Feb-2024	28-Feb-2024	✓	17-Feb-2024	28-Feb-2024	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	16-Feb-2024	20-Feb-2024	✓	20-Feb-2024	27-Mar-2024	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	16-Feb-2024	21-Feb-2024	✓	20-Feb-2024	27-Mar-2024	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	16-Feb-2024	20-Feb-2024	✓	20-Feb-2024	27-Mar-2024	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	16-Feb-2024	21-Feb-2024	✓	20-Feb-2024	27-Mar-2024	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	16-Feb-2024	27-Feb-2024	✓	17-Feb-2024	27-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	16-Feb-2024	28-Feb-2024	✓	17-Feb-2024	28-Feb-2024	✓
EP234A: OP Pesticides								
Amber Glass Bottle - Unpreserved (EP234-1x) BADDS, BADUS, COSUS	BADMS, COSDS,	13-Feb-2024	----	----	----	16-Feb-2024	20-Feb-2024	✓
Amber Glass Bottle - Unpreserved (EP234-1x) HINDS, KEMDS, ROPDS, SOUUS,	HINUS, KEMUS, ROPUS, SOUUS	14-Feb-2024	----	----	----	16-Feb-2024	21-Feb-2024	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	8	80	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	8	79	10.13	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	EP008	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	4	50	8.00	8.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	10	80	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	10	79	12.66	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	19	15.79	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chlorophyll a and Pheophytin a	EP008	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	3	50	6.00	6.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	80	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	79	5.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C. This method is compliant with NEPM Schedule B(3)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G. Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Chlorophyll a and Pheophytin a	EP008	WATER	In house: Referenced to APHA 10200 H. The pigments are extracted into aqueous acetone. The optical density of the extract before and after acidification at both 664 nm and 665 nm is determined spectrometrically.
Oil and Grease	EP020	WATER	In house: Referenced to APHA 5520 B. Oil & grease is a gravimetric procedure to determine the amount of dissolved or emulsified oil & grease residue in an aqueous sample. The sample is serially extracted three times n-hexane. The resultant extracts are combined, dehydrated and concentrated prior to gravimetric determination. This method is compliant with NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Sep. Funnel Extraction of Liquids (Ultra-trace pesticides.)	ORG14-UTP	WATER	In house: Referenced to USEPA 3510 Samples are extracted into dichloromethane, concentrated and exchanged into an appropriate solvent for GPC and florisil cleanup as required. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

Appendix H

**Quality assurance / Quality control
program and assessment**

Data Quality Objectives (DQOs)

The Data Quality Objectives (DQOs) are based on guidance presented in:

- NEPC (2013) National Environment Protection (Assessment of Site Contamination) Amended Measure (NEPM) No. 1 – Schedule B2, Guideline on Site Characterisation.

The DQO process will be applied to the on-going monitoring to ensure that data collection activities are appropriate and achieve the project objectives. The DQO process involves seven steps as follows:

- Step 1: State the Problem
- Step 2: Identify the decision/goal of the study
- Step 3: Identify the information inputs
- Step 4: Define the boundaries of the Study
- Step 5: Develop the analytical approach
- Step 6: Specify performance or acceptance criteria
- Step 7: Develop the plan for obtaining data

An overview of the DQOs for the works are presented in the following steps.

Step 1: State the problem

The M12 Motorway (the project) is located between the M7 Motorway at Cecil Hills, and The Northern Road at Luddenham in Western Sydney, covering approximately 16 km. The intention of the project is to provide direct access between the Western Sydney International Airport at Badgerys Creek and Sydney's motorway network.

As part of the project approval conditions, TfNSW are required to prepare and implement a surface water baseline monitoring program for the M12 Motorway development.

Step 2: Identify the decision/goal of the study

The key goal of the baseline monitoring program is to collect background monitoring data to identify baseline conditions in at least the first 12 months "pre-construction", prior to commencement of construction of the M12 Motorway.

The baseline data would support the development of a surface water monitoring program and management plans for construction and operation of the project. The baseline data may also inform the design of construction and operational water quality control devices, such as sedimentation basins and vegetation swales.

Step 3: Identify the information inputs

The following inputs are required for the decision:

- Existing data obtained from previous Jacobs reports: Surface Water and hydrology assessment report (JAJV, 2018a), Contamination factual report (JAJV, 2018b) and groundwater assessment report (2018c).
- Sampling of thirteen surface water locations (BADDs, BADMS, BADUS, COSDS, COSUS, HINDS, HINUS, KEMDS, KEMUS, ROPDS, ROPUS, SOUDS and SOUUS) along the proposed project alignment.
- Analysis of surface water samples for the following analytes:
 - Total suspended solids (TSS)
 - Total dissolved solids (TDS)
 - Thermotolerant (faecal) coliforms and E. coli
 - Chlorophyll- a
 - Oil and grease
 - Nutrients (including ammonia (NH₃), nitrite (NO₂), Nitrate (NO₃), total nitrogen (TN), total kjeldahl nitrogen (TKN), total oxidised nitrogen (NO_x), total phosphorus (TP) and soluble reactive phosphorus (SRP).
 - Heavy metals (arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel and zinc)
 - Benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN)

- Ultra-trace polycyclic aromatic hydrocarbons (PAH)
- Total recoverable hydrocarbons (TRH)
- Phenols
- Volatile organic compounds (VOCs)
- Ultra-trace organophosphorus pesticides (OPPs) and ultra-trace organochlorine pesticides (OCPs)
- Super ultra-trace polychlorinated biphenyls (PCBs)
- Per- and polyfluoroalkyl substances (PFAS)
- Comparison of data with relevant public health and environmental water quality criteria to identify baseline conditions prior to commencement of the construction of the project.
- Confirmation that data generated by sampling and analysis are of a suitable quality to allow reliable comparison to baseline data as per the assessment of the data quality indicators (DQIs) (further discussed below).

Step 4: Define the boundaries of the study

The spatial and temporal boundaries of the study area are as follows:

- The lateral boundary of the project is defined as the extent of the surface water monitoring locations as shown in Figure 1, Appendix A.
- The vertical boundary of the project is defined as the depth of the maximum surface water sample, approximately 200 mm below the water's surface.
- The temporal boundary of the project is defined as the previous baseline and current construction monitoring period (April 2021 to March 2024).

Step 5: Develop the analytical approach

The degree of impact by contaminants and the associated decisions will be assessed with reference to assessment criteria, as discussed in Section 4. Acceptable relative percentage difference (RPD) limits for chemicals of potential concern (CoPC) detected in Quality Assurance and Quality Control (QA/QC) samples such as field duplicates, rinsate blanks, trip blanks and trip spikes and matrix spike and matrix spike duplicates are identified in the following sections. The decision rules to be applied are as follows:

- Monitoring data will be compared against relevant public health and environmental water quality guidelines to make this assessment.
- If the data has been collected in a manner from which it is possible to establish completeness, comparability, representativeness, precision and accuracy, the data will be considered suitable for the purposes of this assessment.
- If baseline data, either within or exceeding adopted assessment criteria, is considered suitable for interpretation, baseline conditions are able to be determined and support the development of a surface water monitoring program during future construction and operation of the project.
- If changes in water quality are observed between monitoring events during the construction and/or operational phases and previous baseline periods that cannot be plausibly explained by natural environmental fluctuations, and the concentrations of contaminants of potential concern have become elevated to levels in exceedance of the adopted public health and environmental water quality criteria, then further assessment may be required to evaluate the need for additional investigation and / or remediation / management activities.

Step 6: Specify performance or acceptance criteria

Data generated during this surface water monitoring program must be appropriate to allow decisions to be made with confidence. Specific limits have been adopted in accordance with the appropriate guidance from the AS4482.1, which includes appropriate indicators of data quality (DQIs used to assess QA/QC, and GHD's Standard Field Operating Procedures). The pre-determined DQIs established for the project are discussed below.

If any of the DQIs are not met, further investigation will be necessary to determine whether the non-conformance will significantly affect the usefulness of the data.

Step 7: Develop the plan for obtaining data

This step involves identifying the most resource effective sampling and analysis design which is required to satisfy the DQOs. The sampling and analysis plan which was developed to meet this objective is provided in Section 3.

Data quality indicators

Data generated during this investigation must be appropriate to allow decisions to be made with confidence. Specific limits for this investigation have been adopted in accordance with guidance from the AS4482.1 which includes appropriate indicators of data quality ((DQIs) used to assess QA/QC, and GHD's Standard Field Operating Procedures).

To assess the usability of the data prior to making decisions, the data was assessed against pre-determined DQIs. The DQIs including precision, accuracy, representativeness, comparability, and completeness, were reviewed at the completion of the investigation works to assess for the presence of decision errors.

The pre-determined DQIs established for the investigation are discussed below and shown in Table H1 below.

- Precision - measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the RPD of duplicate samples.
- Accuracy - measures the bias in a measurement system. The accuracy of the laboratory data that are generated during this investigation is a measure of the closeness of the analytical results obtained by a method to the 'true' (or standard) value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards.
- Representativeness - expresses the degree to which sample data accurately and precisely represent a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- Comparability - expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to collect samples; ensuring analysing laboratories use consistent analysis techniques and reporting methods.
- Completeness - is defined as the percentage of measurements made which are judged to be valid measurements.

Table H1 – Summary of quality assurance / quality control criteria - all media

Data quality indicator	Frequency	Data quality acceptance criteria
Precision		
Blind and split duplicates	1 / 10 samples (combined)	<30-50% RPD
Accuracy		
Surrogate spikes	All organic samples	70-130%
Laboratory control samples	1 per lab batch	<LOR
Matrix spikes	1 per lab batch	70-130%
Representativeness		
Sampling appropriate for media and analytes	All samples	-
Samples extracted and analysed within holding times	All samples	Organics (14 days) Inorganics (6 months)
Samples extracted and analysed within holding times	All samples	All samples
Comparability		
Consistent field conditions, sampling staff and laboratory analysis	All samples	All samples

Data quality indicator	Frequency	Data quality acceptance criteria
Standard operating procedures for sample collection & handling	All samples	All samples
Standard analytical methods used for all analyses	All samples	All samples
Completeness		
Sample description and COCs completed and appropriate	All Samples	All Samples
Appropriate documentation	All Samples	All Samples
Satisfactory frequency and result for QA/QC samples	All QA/QC samples	-
Data from critical samples is considered valid	-	Critical samples valid

If any of the DQIs are not met, further investigation will be necessary to determine whether the non-conformance will significantly affect the usefulness of the data.

Field QA/QC

An evaluation of the field and laboratory data quality was undertaken in accordance with the NEPM – Schedule B2, Assessment of data quality.

Each monitoring round, one blind duplicate and one split duplicate was collected from two different sampling locations and analysed as part of the project quality control program. Blind duplicate samples were analysed as an intra-laboratory duplicate at the primary laboratory (ALS Environmental). Split duplicates were analysed as inter-laboratory duplicates at the secondary laboratory (Eurofins). The duplicate samples and trip blanks are used by GHD to assess reliability of analytical results, with one of each generally collected during each monitoring event.

GHD note the following in relation to rinsates, trip blanks and trip spikes:

- Six intra-laboratory duplicate samples were collected during the current monitoring period and include the following:
 - ROPDS/SWDUP1 – 4 October 2023
 - BADUS/SWDUP1 – 8 November 2023
 - HINDS/SWDUP1 – 5 December 2023
 - HINDS/SWDUP1 – 19 January 2024
 - BADDS/SWDUP1 – 13 February 2024
 - BADDS/SWDUP1 – 15 March 2024
- Six inter-laboratory duplicate samples were collected during the current monitoring period and include the following:
 - KEMDS/SWDUP2 – 4 October 2023
 - HINDS/SWDUP2 – 9 November 2023
 - HINUS/SWDUP2 – 5 December 2023
 - BADMS/SWDUP2 – 19 January 2024
 - HINDS/SWDUP2 – 14 February 2024
 - KEMUS/SWDUP2 – 14 March 2024
- Seventy-seven primary samples were collected during October 2023 to March 2024. It was considered that the number of duplicates collected was adequate (12/77 samples = 16%).

Relative percentage difference calculations

Relative percentage difference (RPD) calculations are used to assess how closely primary and inter/intra duplicate sample results match. RPDs are a quantitative measure of the accuracy of the analytical results and are calculated in accordance with the procedure described in AS 4482.1 – 2005 (Standards Australia 2005). According to AS 4482.1 – 2005 typical RPDs are expected to range between 30% and 50%; however, this may be higher for organics and for low concentrations of analytes. GHD has adopted the following:

- 200% for concentrations within 1 to 10 times the analyte LOR.
- 50% for concentrations within 10 to 30 times the analyte LOR.
- 30% for concentrations greater than 30 times the analyte LOR.

Where a result is below the laboratory LOR for one of the paired samples, the concentration assigned to that sample is the LOR. Where both results are reported below laboratory LOR the RPD is not calculated.

There were no elevated RPDs between duplicate pairs in the current monitoring period.

RPD results are attached in Table H2, Appendix H.

Trip blanks and trip spikes

Trip blanks and trip spikes were submitted during every round of the current monitoring period, but were submitted in the same laboratory batch as the groundwater monitoring program that is conducted concurrently.

All trip blank results were below the LOR and all trip spike recoveries were within the acceptable range of recovery (70% to 130%). Trip blank and trip spike tables are attached in Table H3, Appendix H.

Rinsate blank

Rinsate blank samples were not collected during the current monitoring period as reusable equipment was not utilised during sample collection.

Laboratory QA/QC

The NATA certified laboratories utilised for this assessment (ALS Environmental and Eurofins) undertook their own quality assurance and quality control procedures for sample analysis. GHD has reviewed the internal laboratory control data provided within the laboratory reports (refer to Appendix G). It is noted comments have been provided by the laboratory where a failure result was reported in laboratory QA/QC procedures.

Laboratory holding time

Samples were extracted within the required holding time for chemical analysis as presented on laboratory reports in Appendix G with the exception of the following:

- Nitrite an N and Reactive Phosphorus during the October 2023 monitoring event for HINDS, HINUS, KEMDS, KEMUS, ROPDS, ROPUS, SOUDS, SOUUS by one day.
- Chlorophyll a & Pheophytin a during the December 2023 monitoring round for HINDS, HINUS, KEMDS, KEMUS, ROPDS, ROPUS, SOUDS, SOUUS by one day.

Matrix spikes

The majority of matrix spike recovery results were reported within the laboratory limits (70% - 130%), with the exception of the following:

- Eleven OPPs during the October 2023 monitoring event.
- Sulfate as SO₄, Nitrite plus Nitrate as N, and two OPPs during the November 2023 monitoring event.
- Seven OPPs during the December 2023 monitoring event.
- Cadmium, Copper, Zinc, and three OPPs during the January 2024 monitoring event.
- Manganese and eleven OPPs during the February 2024 monitoring event.
- Eleven OPPs during the March 2024 monitoring event.

Matrix spike recoveries for Sulfate as SO₄, Nitrite plus nitrate recoveries, and Manganese were not reported as the background level was equal to or greater than four times the matrix spike level.

Matrix spike recoveries of OPPs reported recoveries less than the lower data quality objective, or greater than the upper data quality objective.

Matrix spike recoveries of Cadmium, Copper, and Zinc less than the lower data quality objective.

As the majority of analytes reported matrix recoveries within laboratory limits during the monitoring period and recoveries were within limits for analyte outliers, described above, in preceding or subsequent events, the matrix spike outliers are not considered to have any impact on the outcome of the investigation, or interpretation of this round of data.

Laboratory control samples

All laboratory control samples (LCS) were within laboratory limits (70%-130%).

Surrogate spikes

All surrogate spike recoveries were within laboratory limits (50%-150%).

Duplicate samples

All laboratory duplicate samples were reported within the laboratory limits (30%).

Frequency of quality control samples

A sufficient frequency of quality control samples was reported by the laboratory during the monitoring period, with the exception of the following:

- Oil and Grease during the October 2023 monitoring event. Laboratory control sample actual rate = 7.5%, expected rate = 8%
- Oil and Grease during the November 2023 monitoring event. Laboratory control sample actual rate 5.71%%, expected rate = 6%. Method blank sample actual rate 5.71%, expected rate 8%.
- OPPs, PAHs, and PCBs during the January 2024 monitoring event. Laboratory duplicate sample actual rate 0%, expected rate 10%. Matrix spike sample actual rate = 0%, expected rate = 5%.
- Oil and Grease during the March 2024 monitoring event. Laboratory control sample actual rate 6.45%, expected rate 8%.

As quality control samples were collected during the monitoring period, it was considered that the reduced rate of collection of laboratory duplicate and matrix spikes did not have a material impact on the outcome of the investigation, or interpretation of this round of data.

QA/QC assessment outcome

The review of the QA/QC program and data indicates that the surface water analytical data are of an acceptable quality upon which to draw meaningful conclusions regarding impacts to surface water at the site.



Field ID Date Location Code Matrix Type Sample Type Lab Report Number	KEMDS		SWDUP2		RPD	ROPDS		SWDUP1		RPD	BADUS		SWDUP1		RPD	HINDS		SWDUP2		RPD	HINDS		SWDUP1		RPD	HINUS		SWDUP2		RPD				
	04 Oct 2023		04 Oct 2023			04 Oct 2023		04 Oct 2023			08 Nov 2023		08 Nov 2023			09 Nov 2023		09 Nov 2023			05 Dec 2023		05 Dec 2023			05 Dec 2023		05 Dec 2023						
	KEMDS		KEMDS			ROPDS		ROPDS			BADUS		BADUS			HINDS		HINDS			HINDS		HINDS			HINUS		HINUS						
	Water		Water			Water		Water			Water		Water			Water		Water			Water		Water			Water		Water						
	Normal		Interlab_D			Normal		Field_D			Normal		Field_D			Normal		Interlab_D			Normal		Field_D			Normal		Interlab_D						
		ES2334428		1033274		ES2334428		ES2334428		RPD		ES2338893-AE		ES2338893-AE		RPD		ES2338893-AE		1043528		RPD		ES2342516		ES2342516		RPD		ES2342516		1052387		RPD
	Unit	EQL																																
Metals																																		
Arsenic	mg/L	0.001	0.001	0.001	0	<0.001	<0.001	0	0.001	0.001	0	0.001	0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	0.002	0.003	40											
Arsenic (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
Cadmium	mg/L	0.0001	<0.0001	<0.0002	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0002	0	<0.0001	<0.0001	0	<0.0001	<0.0002	0											
Cadmium (filtered)	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
Chromium (III+VI)	mg/L	0.001	<0.001	<0.001	0	0.004	<0.001	120	0.002	0.002	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	0.002	67											
Chromium (III+VI) (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
Copper	mg/L	0.001	0.006	0.006	0	0.003	0.003	0	0.004	0.004	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	0.001	0.004	120											
Copper (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
Iron	mg/L	0.05	0.13	-	-	0.13	-	-	1.71	-	-	0.92	-	-	-	0.47	-	-	-	2.64	-	-												
Iron (filtered)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-													
Lead	mg/L	0.001	<0.001	<0.001	0	<0.001	<0.001	0	0.002	0.002	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	0.002	0.003	40											
Lead (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-													
Manganese	mg/L	0.001	0.044	-	-	0.982	-	-	0.250	-	-	0.319	-	-	-	0.419	-	-	-	0.442	-	-												
Manganese (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-													
Mercury	mg/L	0.0001	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0											
Mercury (filtered)	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-													
Nickel	mg/L	0.001	0.002	0.002	0	0.003	<0.001	100	0.002	0.003	40	0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	0.001	0.002	67											
Nickel (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-													
Zinc	mg/L	0.005	0.018	0.020	11	<0.005	0.009	57	0.006	0.023	117	<0.005	<0.005	0	<0.005	<0.005	0	<0.005	<0.005	0	0.010	0.006	50											
Zinc (filtered)	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-													

Field ID Date Location Code Matrix Type Sample Type Lab Report Number			HINDS	SWDUP1	RPD	BADMS	SWDUP2	RPD	BADDS	SWDUP1	RPD	HINDS	SWDUP2	RPD	KEMUS	SWDUP2	RPD	BADDS	SWDUP1	RPD
			18 Jan 2024	19 Jan 2024		19 Jan 2024	19 Jan 2024		13 Feb 2024	13 Feb 2024		14 Feb 2024	14 Feb 2024		14 Mar 2024	15 Mar 2024				
			HINDS	HINDS		BADMS	BADDS		HINDS	KEMUS		BADDS								
			Water	Water		Water	Water		Water	Water		Water								
			Normal	Field_D		Normal	Interlab_D		Normal	Field_D		Normal	Interlab_D							
			ES2401980	ES2401980		ES2404913	ES2404913		ES2404913	1069861		ES2408635	1079293		ES2408635	ES2408635				
	Unit	EQL																		
Metals																				
Arsenic	mg/L	0.001	<0.001	<0.001	0	0.002	0.002	0	0.002	0.002	0	0.001	0.002	67	0.002	0.002	0	0.001	0.001	0
Arsenic (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0001	<0.0001	<0.0001	0	<0.0001	<0.0002	0	<0.0001	<0.0001	0	<0.0001	<0.0002	0	<0.0001	<0.0002	0	<0.0001	<0.0001	0
Cadmium (filtered)	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (III+VI)	mg/L	0.001	<0.001	<0.001	0	0.003	0.002	40	0.002	0.003	40	<0.001	<0.001	0	<0.001	<0.001	0	0.002	0.001	67
Chromium (III+VI) (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/L	0.001	<0.001	<0.001	0	0.007	0.006	15	0.004	0.004	0	<0.001	<0.001	0	<0.001	0.004	120	0.004	0.002	67
Copper (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	0.05	0.76	-	-	3.50	-	-	2.96	-	-	0.44	-	-	0.37	-	-	2.79	-	-
Iron (filtered)	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/L	0.001	<0.001	<0.001	0	0.003	0.002	40	0.003	0.003	0	<0.001	<0.001	0	<0.001	0.001	0	0.003	0.002	40
Lead (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	mg/L	0.001	0.244	-	-	0.178	-	-	0.368	-	-	0.261	-	-	0.104	-	-	0.379	-	-
Manganese (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/L	0.0001	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0
Mercury (filtered)	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	0.001	<0.001	<0.001	0	0.004	0.003	29	0.004	0.004	0	<0.001	<0.001	0	0.002	0.002	0	0.003	0.003	0
Nickel (filtered)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	0.005	<0.005	<0.005	0	0.020	0.013	42	0.014	0.016	13	<0.005	0.007	33	<0.005	0.021	123	0.014	0.007	67
Zinc (filtered)	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix F
Table H3
Trip Blank and Trip Spike Results

Transport for NSW
M12 Motorway
M12 Motorway water quality and level monitoring

Sample Type Date Field ID Lab Report Number	Trip_B						Trip_S					
	03 Oct 2023	08 Nov 2023	30 Nov 2023	15 Jan 2024	05 Feb 2024	11 Mar 2024	03 Oct 2023	08 Nov 2023	30 Nov 2023	15 Jan 2024	05 Feb 2024	11 Mar 2024
	Trip Blank	TRIP BLANK	Trip blank	Trip Blank	Trip Blank	Trip Blank	Trip Spike	TRIP SPIKE	Trip spike	Trip Spike	Trip Spike	Trip Spike
	ES2334429	ES2338893-AF	ES2342531	ES2401985	ES2404914	ES2408629	ES2334429	ES2338893-AF	ES2342531	ES2401985	ES2404914	ES2408629

Chem Name	Unit	EQL												
BTEXN														
Benzene	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
	%								105	90	70	85	80	90
Toluene	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-	-	-	-
	%								90	80	75	85	85	75
Ethylbenzene	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-	-	-	-
	%								85	80	75	85	85	75
Xylene (o)	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-	-	-	-
	%								90	90	85	95	95	85
Xylene (m & p)	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-	-	-	-
	%								85	85	75	90	90	80
Xylene Total	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-	-	-	-
	%								87.5	87.5	80	92.5	92.5	82.5
Naphthalene (BTEXN suite)	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-	-
	%								100	105	85	95	90	95
TRH - NEPM 2013														
F1 (C6-C10 minus BTEX)	mg/L	0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	-	-	-	-	-	-
C6-C10 Fraction	mg/L	0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	-	-	-	-	-	-
TRH - NEPM 1999														
C6-C9 Fraction	mg/L	0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	-	-	-	-	-	-

*Trip blank concentrations greater than the LOR have been highlighted.

** Acceptable trip spike recoveries are in the range of 70 to 130 %



ghd.com

→ **The Power of Commitment**