

MEMO

Date: 9 August 2021
To: Simon Poggioli (Project Engineer)
From: Alan Foley
Pages: 9 inc. this page excluding attachments
Regarding: Surface Water Quality – Event #12 Summary

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Fremantle Swan River Crossing – Surface Water Quality Monitoring Event #12

Background

Laing O'Rourke on behalf of Fremantle Bridges Alliance (the Alliance), has commissioned RPS Australia West Pty Ltd (RPS) to provide environmental services to support the Swan River Crossing (SRC) project. The project includes the replacement of the Fremantle Traffic Bridge and the improvement/duplication of the Fremantle Rail Bridge. As detailed within the Preliminary Environmental Impact Assessment (Main Roads Western Australia, 2020), surface water quality has the potential to be impacted during new bridge construction and demolition of the old structure. As such, a baseline assessment of the surface water quality is being completed to inform a future Construction Environment Management Plan (CEMP) monitoring program.

RPS has previously undertaken eight monitoring events while contracted to Arup/MRWA. This memo provides details on the surface water monitoring Event #12, completed 15 July 2021, and is a continuation of the program undertaken by RPS for MRWA between August 2020 and March 2021. Due to COVID-19 lockdown restrictions, the July sampling event could not be completed earlier in the month as originally scheduled. Event #12 was the final proposed monthly event being undertaken as part of the initial baseline assessment for the CEMP. However, additional monitoring events may be completed on a strategic basis (e.g., to capture high-river flow events) as requested by the Alliance.

Sampling locations

The program includes collection of surface water samples from five locations. Further details on sampling locations are presented in Figure A and Table 1.

For previous sampling events, Event #1 (August 2020) and Event #2 (September 2020), the program was reduced to four locations with background location WS-5 excluded due to the project awaiting Department Biodiversity, Conservation and Attractions (DBCA) access approval. Approval was received for sampling within the Swan River DBCA control area on 5 October 2020. As such, all sampling locations have been included from Event #3 onwards.

A copy of the DBCA approval, 2020-1928 Permit P12652, has been included in Appendix A.

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Table 1: Surface water sampling locations summary

Sampling point	Swan River Bathymetry ^{1,2} (m)	Commentary
WS1	~4.0-6.0 ¹	<ul style="list-style-type: none">Central channel (northern side)Sample collected from Fremantle Traffic Bridge northern access point
WS2	~4.0-6.0 ¹	<ul style="list-style-type: none">Central channel (southern side)Sample collected from Fremantle Traffic Bridge southern access point
WS3	~2.0-4.0 ¹	<ul style="list-style-type: none">Northern shoreline
WS4	~4.0-5.0 ¹	<ul style="list-style-type: none">Southern shorelineSmall craft pen jetty
WS5	~2.0-6.0 ²	<ul style="list-style-type: none">Southern shorelinePublic jettyBackground location

Notes: 1. Results of a geophysical survey of the portions of the site was undertaken in 2012 (Marine & Earth Sciences, 2012), which was used inform the Arup reports (Arup, 2013a and 2013b)

2. Swan and Canning Rivers navigation chart 1:25,000. April 2014, Edition 7. Department of Transport
https://www.transport.wa.gov.au/imagery/coastaldata/nauticalcharts/pdfs/WA898_swan_and_canning_rivers.pdf.

Sampling program schedule overview

The proposed SWQS sampling program schedule is presented in Table 2.

Table 2: Sampling program

Event	Sampling locations	Event Date	Date Completed	Status
Event 1	WS2, WS4	August 2020	7/08/2020	Completed
Event 2	WS1-WS4	September 2020	10/09/2020	Completed
Event 3	WS1-WS5	October 2020	7/10/2020	Completed
Event 4	WS1-WS5	November 2020	5/11/2020	Completed
Event 5	WS1-WS5	December 2020	3/12/2020	Completed
Event 6	WS1-WS5	January 2021	13/01/2021	Completed
Event 7	WS1-WS5	February 2021	11/02/2021	Completed
Event 8	WS1-WS5	March 2021	04/03/2021	Completed
Event 9	WS1-WS5	April 2021	20/04/2021	Completed
Event 10	WS1-WS5	May 2021	05/05/2021	Completed
Event 11	WS1-WS5	June 2021	03/06/2021	Completed
Event 12	WS1-WS5	July 2021	15/07/2021	Completed – this round
Event 13	WS1-WS5	August 2021	-	TBC

Notes: To be completed (TBC). Event 9 (April 2021) was the first monitoring event completed as part of the current contract.

Surface water sampling methodology

Surface water sampling was conducted in accordance with the following relevant guidance:

- Department of Water and Environmental Regulation, *Assessment and Management of Contaminated Sites – Contaminated Sites Guidelines* (DER, 2014)

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- National Environment Protection (Assessment of Site Contamination) Measure 1999, *Schedule B – General Guidelines for the Assessment of Site Contamination* (NEPC, 2013)
- *Water Quality—Sampling. Part 1: Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples* (Standards Australia, 1998. AS/NZS 5667.1:1998)
- *Water Quality—Sampling. Part 6: Guidance on sampling of rivers and streams* (Standards Australia, 1998. AS/NZS 5667.6:1998)
- *Water Quality—Sampling. Part 9: Guidance on sampling from marine waters* (Standards Australia, 1998. AS/NZS 5667.9:1998)
- Heads of EPAs Australia and New Zealand (HEPA), *PFAS National Environmental Management Plan, Version 2.0* (HEPA, 2020).

Each Swan River surface water sample was collected using a Niskin Flask or surface water sampling pole depending upon water column depth as detailed below:

- Where the water column was >2 m, the following two depths were targeted:
 - Sample 1 (shallow sample): collected at ~1 m below surface level
 - Sample 2 (deep sample): collected ~1 m above riverbed level.
- Where the water column was <2 m (WS3), the sample was collected in the middle of the water column, using a surface water pole sampler.

Field observations were collected during each sampling event and included commentary on weather conditions, tides and vessel movement within the Fremantle port and surrounding waters.

Analysis program

All samples were analysed for the following analytical suite:

- Dissolved metals and metalloids: aluminium, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silicon, silver, and zinc.
- Total metals: aluminium and iron.
- Major anions: sulfate (SO_4^{2-}), chloride (Cl^-), fluoride (F^-), alkalinity (hydroxide OH^- , carbonate CO_3^{2-} , bicarbonate HCO_3^-).
- Major cations: sodium, potassium, calcium, magnesium.
- Nutrients: total and reactive phosphorus, total nitrogen, total Kjeldahl nitrogen (TKN), total ammonia ($\text{NH}_4\text{-N} + \text{NH}_3\text{-N}$), nitrates and nitrites ($\text{NO}_x\text{-N}$).
- Sulfide (S^{2-})
- Total acidity
- Total dissolved solids (TDS) and Total suspended solids (TSS)
- Turbidity

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- Hydrocarbons: Total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylene (BTEX) and polycyclic aromatic hydrocarbons (PAH)
- Organochlorine Pesticides (OCP)
- Per- and poly-fluoroalkyl substances (PFAS)
- Dissolved organic carbon (DOC)
- Chlorophyll-A and Phaeophytin-A.

Water column profiles for temperature, salinity (electrical conductivity (EC)), pH and dissolved oxygen (DO) were also collected at each sampling location.

Surface water assessment levels

All analytes were compared against relevant Water Quality Australia 2019 guidelines, nominally (95% species protection) as follows:

- Water Quality Australia (WQA, 2019)
 - Marine Water Guidelines (MWG) 95% species protection level
 - Estuary water (for nutrients and pH only).
 - Recreational Water Guidelines (RWG)
- PFAS National Environmental Management Plan (HEPA, 2020).
 - Marine Guidelines 99% species protection level¹
 - Recreational Water
- Treatment and management of soil and water in acid sulfate soil landscapes (DER, June 2015b).
 - Guideline levels for ASS surface water quality (ASS)

Site conditions

Site conditions noted during the monitoring Event #12 are summarised within Table 3.

Table 3: Site conditions

Items	Commentary
Weather conditions (during sampling event)	Overcast and raining, south-westerly winds in the morning (20 km/hr), turning south-south-westerly in the afternoon (19 km/hr), maximum temperature of 17.9°C.
Rainfall (noted during the previous week)	A total of 76.4 mm of rain was recorded at the Perth Station (Number: 9225) in the week prior to sampling.
Tide condition and direction	<ul style="list-style-type: none">• Incoming tide.• Closest peak:

¹ The 99% species protection value is considered to most appropriate as PFAS is known bioaccumulate in aquatic organisms.

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- Low tide (8:04 pm / 0.75 m)
- High tide (11:52 am / 1.10 m)

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- Fremantle Port and Swan River vessel activities**
- WS1: Low boat traffic, large volumes of sea foam observed during sampling.
 - WS2: Low boat traffic.
 - WS3: Low boat traffic.
 - WS4: Low boat traffic.
 - WS5: Low boat traffic.
-

Monitoring results discussion

Results have been tabulated and are presented in Tables A to E, with laboratory reporting presented in Appendix B. Further commentary on specific analytes is provided below.

Field parameters

Field parameters were measured throughout the water column prior to sampling at each location. The water column profiles are presented in surface water sampling logs at the rear of the report (Appendix C), with field parameters of sampling depths summarised in Table 4.

Table 4: Sampling location field parameters

Sample Location	Depth (m)	Temp (°C)	pH	EC (µS/cm)	Redox (mV)	DO (%sat)
WS1-S	1.00	15.4	8.02	45,610	112	97
WS1-D	3.50	15.4	8.01	45,693	116	95
WS2-S	1.00	15.5	8.03	46,372	101	88
WS2-D	4.00	15.5	8.03	46,463	108	89
WS3-S	0.50	15.3	8.03	45,742	132	72
WS4-S	1.00	15.4	8.03	46,411	107	111
WS4-D	4.00	15.4	8.02	46,465	109	101
WS5-S	1.00	15.4	7.96	46,185	67	85
WS5-D	6.50	15.4	7.97	46,269	104	75

Physical parameters were noted to be relatively consistent throughout the profile i.e., alkaline, saline and in an oxidising state. These conditions are consistent with the significant flushing that occurs as a result of daily tidal movement of marine waters. RPS did note the following minor trends and guideline exceedances:

- Trends:
 - Redox marginally increased with depth at all locations except WS5, which increased significantly.
 - Dissolved oxygen decreased with depth at all locations except WS2.
- Guideline exceedances:
 - DO percentage saturation (%sat) complied with the MWG (90-110%sat) in three samples: WS1-S, WS1-D, and WS4-D. Results ranged from 72%sat (WS3-S) to 111%sat (WS4-S). Overall results are consistent with historical ranges.

Acid sulfate soil parameters

Acid sulfate soil (ASS) parameters observed during Event #12 can be summarised as follows:

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- Total acidity was significantly below the relevant guideline in all samples. Total acidity concentrations were consistent with previous sampling events.
- Sulfide concentrations were at or below the limit of reporting (LOR) at all locations and therefore below the relevant guideline. The sulfide concentrations during this event were comparable with previous events.
- Sulfate concentrations exceeded the recreational water guideline (500 mg/L) in all samples with a concentration of 2,300 mg/L observed at all locations. These results are marginally lower than the previous sampling event (Event #11) and are typical of water quality results at the mouth of the Swan River.
- Total alkalinity results were consistent across locations, with a result of 120 mg/L observed at all locations. All results were consistent with previous events.

Solids

- TDS concentrations were relatively consistent over all locations and ranged from 28,000 mg/L (WS3-S and WS4-D) to 32,000 mg/L (WS2-S). Results were consistent with previous events.
- TSS concentrations ranged from 6 mg/L (WS2-S) to 43 mg/L (WS3-S) across the site. Results were higher than the previous event (Event #11) however results were within the historical range for each location.
- Turbidity results ranged from 0.8 (WS2-S) to 1.7 (WS2-D) NTU². Turbidity was marginally higher than previous events.

Nutrients

Nutrient analytical results observed during Event #12 can be summarised as follows:

- Reactive phosphorus (RP) concentrations exceeded the MWG (0.005 mg/L) at all locations ranging from 0.009 mg/L (WS4-D and WS5-S) to 0.011 mg/L (WS2-S and WS5-D). RP concentrations were higher than the previous event (Event #11) and marginally higher than the historical range at all locations except two (WS2-D and WS4-D).
- Total phosphorous (TP) concentrations marginally exceeded the MWG (0.03 mg/L) in three samples; WS1-D, WS3-S and WS5-D (all 0.04 mg/L). Total phosphorous concentrations were consistent with previous sampling events.
- The concentration of NO_x as nitrogen exceeded the MWG (0.045 mg/L) at all locations ranging from 0.055 mg/L (WS1-S) to 0.075 mg/L (WS2-S). Results were significantly higher than previous sampling events and were greater than historical ranges.
- All other nitrogen species were below relevant MWG and RWG assessment criteria. Ammonia concentrations were higher than previous sampling events. Total and kjeldahl nitrogen concentrations were consistent with previous sampling events.

² NTU: Nephelometric Turbidity unit, i.e., the unit used to measure the turbidity of a fluid or the presence of suspended particles in water.

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Chlorophyll

All Chlorophyll "A" concentrations were below the MWG (0.003 mg/L) with a range of 0.0004 mg/L (WS2-D) to 0.0012 mg/L (WS5-D) observed. Results from this event were relatively consistent with previous events.

Low concentrations of Phaeophytin "A" were detected within all samples, with concentrations ranging from 0.0005 mg/L (WS1-S, WS1-D and WS2-S) to 0.0045 mg/L (WS5-D). The Phaeophytin "A" concentration at WS5-D was significantly higher than historical concentrations, all other results were relatively consistent with previous events.

Metals and metalloids

Metal analytical results observed during Event #12 can be summarised as follows:

- Dissolved metals:
 - The concentration of copper exceeded the MWG (0.0013 mg/L) at all locations except one (WS5-D) with concentrations ranging from <0.002 mg/L (WS5-D) to 0.003 mg/L (WS1-S and WS1-D). These results are marginally higher than the previous event (Event #11) but are within the historical range.
 - The concentrations of all other dissolved metals were below the adopted criteria for all samples.
- Total metals:
 - Total aluminium concentrations were marginally above the LOR (0.02 mg/L) at all locations except three; WS2-S, WS4-S and WS5-D during this sampling event. Results are relatively consistent with previous sampling events.
 - Low total iron concentrations were observed at all locations during Event #12, with concentrations ranging from 0.02 mg/L (WS4-S and WS5-D) to 0.07 mg/L (WS3-S). All concentrations were significantly below the MWG (1 mg/L). These results are marginally higher than the previous sampling event but within historical ranges.

Hydrocarbons

All hydrocarbon results (BTEX, TRH and PAH) were below their relevant LOR.

Pesticides

All organochlorine pesticides results were below their relevant LOR.

PFAS

PFAS analytical results observed during Event #12 can be summarised as follows:

- Perfluorooctanesulfonate (PFOS) exceeded the 99% species protection MWG (0.00023 µg/L) in all samples, ranging from 0.0034 µg/L (WS5-D) to 0.0056 µg/L (WS3-S), with a mean of 0.0042 µg/L across all locations. Whilst the results observed during this event were within the overall concentration range observed during the baseline sampling program, the mean concentration during this event was significantly higher than the mean for the previous event and overall historical mean (0.0012 µg/L and 0.0021 µg/L, respectively). Several locations (WS-1, WS1-D, WS4-D and WS5-S) observed their highest concentrations to date during the sampling program.

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- Minor detections of Perfluorohexanesulfonic acid (PFHxS) and/or Perfluorooctanoic acid (PFOA) were observed at all sampling locations. However, all concentrations were significantly below relevant guidelines.
- Total PFAS was relatively consistent between all locations and ranged from 0.0083 µg/L (WS5-D) to 0.014 µg/L (WS3-S) with a mean of 0.0099 µg/L. Whilst all results, except of WS1-S and WS1-D, were within the historical ranges observed during the sampling program, the mean for this event was higher than the mean for the previous event (0.0028 µg/L) and historical mean (0.0057 µg/L). WS1-S and WS1-D recorded their highest concentrations to date (both 0.011 µg/L).

Quality control and quality assurance

To maintain a high level of Quality Control and Quality Assurance (QAQC) sampling and analysis was undertaken with reference to relevant guidelines (DER, 2014, NEPC, 2013 and HEPA, 2020) and *Australian Standard 4482.1:1997* (Standards Australia, 2005). Strict hygiene procedures were applied throughout to assure a high level of sample integrity and quality was maintained, including the decontamination of all sampling equipment between sampling locations to prevent possible cross-contamination.

In accordance with HEPA (2020) guidance, one field duplicate was collected per 10 primary samples for PFAS analysis. In addition, one field blank, trip blank and field rinsate was collected per day of sampling. The results are presented in Tables F to N and summarised as follows:

- A total of 110 of the 120 (92%) analyte tests performed on the field duplicate sample had a Relative Percentage Difference (RPD) within 30% of the original samples indicating the sampling and analysis procedures applied by RPS and the laboratory were generally reproducible.
 - Six of the ten total duplicate RPD failures were considered insignificant as both the primary and duplicate results were less than 5 x LOR. In such instances the elevated RPD merely indicates that analytical precision decreases as concentrations approach the LOR.
 - The remaining RPD exceedances (TSS, turbidity, aluminium and zinc) were considered significant as the concentration of either the primary or secondary sample was greater than 5 x LOR. The failures are likely due to minor differences in water quality when sampling. The duplicate sample concentration was higher for two exceedances: aluminium and zinc, as such were used for the data assessment. These exceedances were not considered to have affected the water quality assessment.
- The concentrations of zinc and turbidity were marginally above their respective LORs within the field rinsate sample (WR1) with the turbidity in the field blank (WB1) was also above the laboratory LOR. Minor exceedances of acceptance criteria (>LOR) are potentially a reflection of the quality of deionised water used for the blank/rinsate collection.
- All trip blank samples were below their respective LORs.
- All internal laboratory QAQC procedures (method blanks, matrix spikes, laboratory control standards, internal duplicates) except for the following were within acceptable limits:
 - A number of PFAS compound internal standards were outside of general acceptance criteria but within analyte specific criteria. Laboratory LORs were increased to accommodate. All other criteria were within acceptable laboratory limits.
- All samples were analysed within the recommended holding time for each analyte with the exception of Chlorophyll "A" and Phaeophytin "A" which were noted to exceed holding time criteria, however, this was due to extract or analysis dates not being provided. As such, the holding times could not be calculated.

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The conclusion of the QAQC assessment indicates that sampling and analysis was generally reproducible and complied with accepted standards. As such, the data collected is considered representative of the site and suitable for the data assessment undertaken.

Conclusions

Surface water monitoring Event #12 was completed on 15 July 2021. Samples were collected from all five of the sampling locations (Figure A). A shallow and deep sample were collected at each sampling point utilising the defined Niskin flask methodology, with the exception of WS3. Due to the shallow nature of WS3 (water column depth approximately ~1.0 m) a shallow sample was collected utilising a surface water sampling pole from a central point in the water column (~0.5 m).

A review of the analytical data collected indicates that the site waters were alkaline, saline and in an oxidising state. Minor exceedances of assessment criteria were noted (DO), however, these conditions are consistent with the marine environment present at the mouth of the Swan River.

Exceedances of the MWG for RP and NO_x as N were observed at all locations. Additionally, minor exceedances of the TP MWG (0.03 mg/L) were observed in three locations; WS1-D, WS3-S and WS5-D (all 0.04 mg/L). All other nitrogen and phosphorous concentrations were below relevant criteria. Results for RP and NO_x as N were higher than historical data ranges.

The concentration of copper marginally exceeded the MWG (0.0013 mg/L) in all locations except for one (WS5-D). All other metal and metalloids concentrations were below relevant guidelines at all locations. Results were relatively consistent with previous events.

All hydrocarbon and organochlorine pesticides results were below their relevant LOR and as such also below adopted criteria in all samples analysed.

Minor detections of PFAS (PFHxS, PFOS and PFOA), were detected within all samples. The 99% species protection PFOS MWG (0.00023 mg/L) was exceeded in all samples, however, was significantly below the 95% species protection MWG (0.13 mg/L). No exceedances of any other relevant MWG or RWG were noted. Total PFAS concentrations were higher than historical means but within historical ranges for most locations.

We trust that this is to your satisfaction, should you have any queries please contact the undersigned.



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Enc. Tables
Figure A - Water quality sampling locations
Appendix A – DBCA approval
Appendix B – Laboratory reports
Appendix C – Surface water sampling logs

TABLES

Table A
Surface Water Results: Field Parameters, ASS, Cations, Nutrients and Miscellaneous

Definitions:

MWG (Marine Water Estuary Guideline) for slightly - moderately disturbed systems, RWG (Recreational Water Guidelines), ASS (Acid Sulfate Soils) Standing Advice from DWER on dewatering trigger values taken from ASS Guideline Series (2015),
 - (No Guideline), --- not tested, LOR (Limit of Reporting), # duplicate value

Notes:

Guideline values have been adopted from the following guidance documentation:

- *Treatment and Management of Soil and Water in Acid Sulfate Soil Landscapes* (DER 2015b)
- *Assessment and Management of Contaminated Sites* (DER 2014)
- *Freshwater and Marine Water Quality Guidelines Chapter 3* (ANZECC/ARMCANZ 2000)

All results expressed as mg/L except for pH (pH units), ratios (unitless), Redox mV (milli Volts), turbidity (NTU) and EC (µS/cm)

a) Values for estuary environments - Table 3.3.6 ANZECC/ARMCANZ 2000 Freshwater and Marine WQ Guidelines Chapter 3

c) Values based on Australian Government, National Health and Medical Research Council, Guideline for Managing Risks in Recreational Water (NHMRC, 2008)

d) Recreational water guideline values based on drinking water guidelines NHMRC & ARMCANZ (2011) Australian Drinking Water Guidelines

e) TKN concentration calculated (TKN = TN-NOx-N)

Denotes less than LOR

Sample ID	Date	Trigger	Field Parameters				Acid Sulfate Soil Parameters and Anions										ASS Ratios		Cations					Nutrients					Miscellaneous				
			Units	pH units	µS/cm	mV	%sat	Total Acidity (CaCO3)	Total Alkalinity (CaCO3)	TDS	TSS	Turbidity	Sulfide	Sulfate	Chloride	Flouride	Acidity: Alkalinity	Sulfate: Chloride	Calcium	Magnesium	Potassium	Sodium	Total P	Reactive P	Total N	TKN ^e	NH ₃ -N	NO _x -N	Dissolved Organic Carbon (DOC)	Chlorophyll "A"	Phaeophytin "A"		
			MWG	7.5-8.5	-	-	90-110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03 ^a	0.005 ^a	0.75 ^a	-	0.62 ^b	0.045 ^a	-	0.003 ^a	-	
			RWG	6.5-8.5 ^c	-	-	>80 ^c	-	-	-	-	-	-	-	-	-	500 ^d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			ASS	<6	-	-	-	>40	-	-	-	-	-	-	-	-	-	>1	>0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOR	-	-	-	-	5	5	5	5	0.1	0.5	1	1	0.1	-	-	-	0.5	0.5	0.5	0.5	0.01	0.005	0.1	0.005	0.005	0.005	0.005	1	0.001	0.0002			
WS1 - S	10/09/2020		8.18	50,919	80	104	9	120	36,000	<5	0.5	<0.5	2,400	18,000	---	0.08	0.13	390	1200	360	11000	0.03	0.006	0.2	0.2	0.009	<0.005	2	0.0012	0.0006			
WS1 - S	7/10/2020		8.25	52,200	134	106	7	120	37,000	<5	0.4	0.6	2,300	17,000	<5	0.06	0.14	400	1300	380	10000	0.03	0.007	0.2	0.2	<0.005	<0.005	2	0.0009	0.0005			
WS1 - S	5/11/2020		8.11	51,108	128	82	<5	120	37,000	<5	0.7	<0.5	2,800	20,000	<5	0.04	0.14	350	1200	310	10000	0.02	0.006	0.2	0.2	<0.007	<0.005	3	0.0015	0.0006			
WS1 - S	3/12/2020		8.08	49,503	178	86	---	120	37,000	<5	0.8	<0.5	2,700	19,000	<5	---	0.14	410	1300	390	12000	0.02	<0.005	0.6	0.6	<0.005	0.005	3	0.0014	0.0005			
WS1 - S	13/01/2021		8.17	54,827	93	102	<5	130	37,000	<5	0.7	0.6	2,800	21,000	1	0.04	0.13	390	1200	390	11000	0.02	0.007	0.3	0.3	<0.005	<0.005	2	0.0017	0.0006			
WS1 - S	11/02/2021		8.27	54,769	101	97	<5	130	37,000	20	0.8	<0.5	2,900	20,000	<5	0.04	0.15	400	1200	360	12000	0.02	<0.005	0.5	0.5	<0.005	<0.005	3	0.0025	0.0005			
WS1 - S	4/03/2021		8.15	56,880	154	84	<5	120	37,000	<5	0.3	<0.5	3,100	21,000	<5	0.04	0.15	430	1400	410	12000	<0.01	<0.005	0.2	0.2	0.011	<0.005	<1	0.0008	0.0002			
WS1 - S	20/04/2021		8.26	52,809	79	86	9	120	37,000	<5	0.6	<0.5	2,700	20,000	<5	0.08	0.14	410	1400	370	12000	0.03	0.006	0.2	0.2	0.01	0.01	<1	0.0009	0.0006			
WS1 - S	5/05/2021		8.22	53,594	113	80	8	130	38,000	10	0.8	<0.5	2,500	19,000	<5	0.06	0.13	430	1400	410	12000	0.03	<0.005	<0.5	<0.5	0.012	<0.005	1	0.0008	0.0005			
WS1 - S	3/06/2021		8.18	53,956	128	78	7	120	36,000	<5	0.8	<0.5	2,800	20,000	<5	0.06	0.14	470	1500	400	12000	0.02	<0.005	<0.5	<0.5	0.013	<0.005	1	0.0009	0.0005			
WS1 - S	15/07/2021		8.02	45,610	112	97	9	120	30,000	10	1.5	<0.5	2,200	16,000	<5	0.08	0.14	310	980	160	8600	0.03	0.01	0.4	0.3	0.047	0.055	3	0.0006	0.0005			
WS1 - D	10/09/2020		8.20	50,935	91	107	9	120	36,000	<5	0.7	<0.5	2,400	18,000	---	0.08	0.13	390	1200	360	11000	0.03	0.005	0.2	0.2	0.008	<0.005	2	0.0008	0.0006			
WS1 - D	7/10/2020		8.29	53,399	131	104	7	120	37,000	<5	0.5	0.6	2,500	18,000	<5	0.06	0.14	420	1300	400	11000	0.04	0.005	0.1	0.1	0.006	0.007	2	0.0008	0.0004			
WS1 - D	5/11/2020		8.12	51,230	125	80	<5	130	37,000	<5	0.7	<0.5	2,800	20,000	<5	0.04	0.14	350	1200	310	11000	0.02	0.006	0.2	0.2	0.009	<0.005	3	0.0012	0.0005			
WS1 - D	3/12/2020		8.08	49,803	178	87	---	130	37,000	<5	0.8	0.6	2,800	20,000	<5	---	0.14	410	1300	390	12000	0.02	0.005	0.6	0.6	0.006	<0.005	2	0.0011	0.0004			
WS1 - D	13/01/2021		8.16	54,836	92	97	<5	130	37,000	<5	0.8	0.7	2,900	21,000	1	0.04	0.14	380	1200	390	11000	0.02	0.006	0.2	0.2	<0.005	<0.005	2	0.0018	0.0006			
WS1 - D	11/02/2021		8.27	54,761	100	98	<5	130	38,000	<5	0.6	<0.5	3,000	21,000	<5	0.04	0.14	380	1200	350	11000	0.02	0.006	0.4	0.4	<0.005	<0.005	3	0.0025	0.0005			
WS1 - D	4/03/2021		8.16	56,866	152	86	<5	130	34,000	23	0.8	<0.5	3,000	21,000	<5	0.04	0.14	430	1400	410	12000	<0.01	0.006	0.2	0.2	0.019	<0.005	<1	0.0011	<0.0002			
WS1 - D	20/04/2021		8.27	52,792	83	85	9	130	36,000	15	0.5	<0.5	2,700	20,000	<5	0.07	0.14	410	1400	370	12000	0.03	0.005	0.2	0.2	0.021	0.014	<1	0.0009	0.0005			
WS1 - D	5/05/2021		8.23	53,594	114	81	7	120	40,000	<5	0.5	<0.5	2,600	19,000	<5	0.06	0.14	450	1400	420	13000	0.03	<0.005	<0.5	<0.5	0.014	<0.005	1	0.0007	0.0005			
WS1 - D	3/06/2021		8.20	53,900	131	77	7	120	39,000	<5	0.9	<0.5	2,700	20,000	<5	0.06	0.14	450	1400	380	12000	0.01	<0.005	<0.5	<0.5	0.016	0.009	1	0.0008	0.0006			
WS1 - D	15/07/2021		8.01	45,693	116	95	8	120	30,000	11	0.9	<0.5	2,300	16,000	<5	0.07	0.14	270	850	140	8200	0.04	0.01	0.4	0.3	0.052	0.057	3	0.0008	0.0005			
WS2-S	7/08/2020		8.70	50,710	181	105	6	120	39,000	9	0.6	0.9	2,800	20,000	---	0.05	0.14	420	1300	370	12000	<0.05	<0.005	0.1	0.1	0.007	<0.005	<1	0.0004	0.0005			
WS2-S	10/09/2020		8.11	50,645	60	110	9	120	36,000	<5	0.6	<0.5	2,400	19,000	---	0.08	0.13	410	1300	360	11000	0.03	<0.005	0.2	0.2	0.007	0.009	2	0.0010	0.0005			
WS2-S	7/10/2020		8.16	49,541	94	102	6	120	34,000	<5	0.6	0.7	2,300	17,000	<5	0.05	0.14	380	1200	360	9700	0.04	<0.005	0.2	0.2	<0.005	0.017	2	0.0019	0.0006			
WS2-S	5/11/2020		8.07	49,927	60	79	7	120	36,000	<5	0.6	<0.5	2,700	19,000	<5	0.06	0.14	330	1100	300	10000	0.02	0.007	0.2	0.2	0.007	0.01	3	0.0017	0.0006			
WS2-S	3/12/2020		8.06	48,338	145	78	---	130	36,000	<5	0.7	0.6	2,700	19,000	<5	---	0.14	400	1300	380	12000	0.02	<0.005	0.8	0.8	<0.005	0.01	3	0.0022	0.0006			
WS2-S	13/01/2021		8.10	54,365	93	87	<5	130	37,000	<5	0.5	0.8	2,800	21,000	1	0.04	0.13	390	1200	390	11000	0.03	0.009	0.3	0.3	0.008	0.01	2	0.0014	0.0007			
WS2-S	11/02/2021		8.19	54,438	87	85	<5	130	37,000	11	0.5	<0.5	2,800	19,000	<5	0.04	0.15	370	1200	340	11000	0.02	0.01	0.5	0.5	0.008	0.014	2	0.0025	0.0005			
WS2-S	4/03/2021		8.14	56,887	163	84	<5	130	31,000	21	0.6	<0.5	3,000	21,000	<5	0.04	0.14	440	1400	420	13000	0.01	0.005	0.2	0.2	0.027	<0.005	<1	0.0009	0.0003			
WS2-S	20/04/2021		8.24	52,636	45	83	7	130	38,000	6	0.6	<0.5	2,700	20,000	<5	0.05	0.14	410	1400	370	12000	0.03	0.006	0.2	0.2	0.021	0.011	<1	0.0008	0.0005			
WS2-S	5/05/2021		8.22	53,493	107	81	8	130	38,000	5	0.6	<0.5	2,500	19,000	<5	0.06	0.13	430	1400	400	12000	0.03	<0.005	<0.5	<0.5	0.012	<0.005	2	0.0008	0.0007			
WS2-S	3/06/2021		8.11	53,251	172	76	6	120	38,000	<5	1	<0.5	2,700	20,000	<5	0.05	0.14	460	1500	390	12000	0.02	0.006	<0.5	<0.5	0.015	0.019	1	0.0010	0.0005			
WS2-S	15/07/2021		8.03	46,372	101	88	8	120	32,000	6	0.8	<0.5	2,300	17,000	<5	0.07	0.14	320	1000	150	8800	0.03	0.011	0.4	0.3	0.052	0.075	3	0.0005	0.0005			
WS2-D	7/08/2020		8.19	50,966	179	105	7	120	39,000	5	0.5	0.8	2,800	20,000	---	0.06	0.14	410	1300	360	11000	<0.05	<0.005	0.1	0.1	0.007	<0.005	<1	0.0005	0.0005			
WS2-D	10/09/2020		8.19	50,453	79	110	9	120	35,000	<5	0.6	<0.5	2,400	18,000	---	0.08	0.13	380	1200	350													

Sample ID	Date	Trigger	Field Parameters				Acid Sulfate Soil Parameters and Anions								ASS Ratios		Cations				Nutrients						Miscellaneous			
			pH	E.C	Redox	DO	Total Acidity (CaCO3)	Total Alkalinity (CaCO3)	TDS	TSS	Turbidity	Sulfide	Sulfate	Chloride	Flouride	Acidity: Alkalinity	Sulfate: Chloride	Calcium	Magnesium	Potassium	Sodium	Total P	Reactive P	Total N	TKN ^o	NH ₃ -N	NO _x -N	Dissolved Organic Carbon (DOC)	Chlorophyll "A"	Phaeophytin "A"
			Units	pH units	µS/cm	mV	%sat	mg/L	mg/L	mg/L	mg/L	NTU	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
		MWG	7.5-8.5	-	-	90-110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03 ^a	0.005 ^a	0.75 ^a	-	0.62 ^b	0.045 ^a	-	0.003 ^a	-	
		RWG	6.5-8.5 ^c	-	-	>80 ^c	-	-	-	-	-	500 ^d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		ASS	<6	-	-	-	>40	-	-	-	-	>0.5	-	-	-	>1	>0.5	-	-	-	-	-	-	-	-	-	-	-	-	
		LOR	-	-	-	-	5	5	5	5	0.1	0.5	1	1	0.1	-	-	0.5	0.5	0.5	0.5	0.01	0.005	0.1	0.005	0.005	0.005	1	0.0001	0.0002
WS3-S	10/09/2020		8.25	50,920	109	128	7	120	35,000	14	1.8	<0.5	2,400	19,000	--	0.06	0.13	390	1200	350	11000	0.04	0.005	0.2	0.2	<0.005	<0.005	2	0.0006	0.0008
WS3-S	7/10/2020		8.29	52,289	132	115	7	120	37,000	33 [#]	1.6	0.8	2,400	18,000	<5	0.06	0.13	420	1300	400	11000	0.05	0.006	0.2	0.2	0.018	0.043	1	0.0019	0.0009
WS3-S	5/11/2020		8.15	51,444	126	55	6	120	37,000	7	1	<0.5	2,700	19,000	<5	0.05	0.14	350	1200	310	11000	0.02	0.006	0.2	0.2	0.01	<0.005	2	0.0017	0.0009
WS3-S	3/12/2020		8.11	49,569	184	98	--	110	38,000	19	2.4	<0.5	2,700	19,000	<5	--	0.14	380	1200	370	12000	0.03	0.006	0.8	0.8	<0.005	<0.005	2	0.0013	0.0011
WS3-S	13/01/2021		8.19	55,172	102	101	<5	130	38,000	<5	0.5	0.5	2,900	21,000	1	0.04	0.14	390	1200	400	11000	0.03 [#]	0.005	0.2	0.2	0.006	0.006	2 [#]	0.0012	0.0006
WS3-S	11/02/2021		8.28	54,792	106	67	<5	130	37,000	70 [#]	1.5	<0.5	3,000	21,000	<5	0.04	0.14	370	1200	340	11000	0.03	0.006	0.5	0.5	<0.005	<0.005	3	0.0026	0.0021 [#]
WS3-S	4/03/2021		8.16	56,731	132	81	<5	130	38,000	10	0.4	<0.5	3,000	21,000	<5	0.04	0.14	460	1500	430	13000	0.01	<0.005	0.2	0.2	0.013	<0.005	<1	0.0007	0.0003
WS3-S	20/04/2021		8.27	52,937	98	63	9	130	37,000	11	0.7	<0.5	2,700	20,000	<5	0.07	0.14	410	1400	380	12000	0.03	0.005	0.2	0.2	0.019	0.008	<1	0.001	0.0005
WS3-S	5/05/2021		8.23	53,551	18	81	8	130	39,000	<5	0.4	<0.5	2,400	18,000	<5	0.06	0.13	440	1400	400	13000	0.03	<0.005	<0.5	<0.5	0.013	<0.005	1	0.0007	0.0006
WS3-S	3/06/2021		8.14	52,644	21	71	7	130	38,000	<5	0.9	<0.5	2,700	20,000	<5	0.05	0.14	480	1500	400	13000	0.02	0.005	<0.5	<0.5	0.014	0.006	1	0.0009	0.0005
WS3-S	15/07/2021		8.03	45,742	132	72	7	120	28,000	43	1.6	<0.5	2,300	17,000	<5	0.06	0.14	310	980	140	8000	0.04	0.01	0.4	0.3	0.045	0.059	3	0.0009	0.0009

Sample ID	Date	Trigger	Field Parameters				Acid Sulfate Soil Parameters and Anions									ASS Ratios		Cations				Nutrients						Miscellaneous					
			Units	pH	E.C	Redox	DO	Total Acidity (CaCO3)	Total Alkalinity (CaCO3)	TDS	TSS	Turbidity	Sulfide	Sulfate	Chloride	Flouride	Acidity: Alkalinity	Sulfate: Chloride	Calcium	Magnesium	Potassium	Sodium	Total P	Reactive P	Total N	TKN ^o	NH ₃ -N	NO _x -N	Dissolved Organic Carbon (DOC)	Chlorophyll "A"	Phaeophytin "A"		
				pH units	µS/cm	mV	%sat	mg/L	mg/L	mg/L	mg/L	NTU	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
				MWG	7.5-8.5	-	-	90-110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03 ^a	0.005 ^a	0.75 ^a	-	0.62 ^b	0.045 ^a	-	0.003 ^a	-
RWG	6.5-8.5 ^c	-	-	>80 ^c	-	-	-	-	-	-	500 ^d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ASS	<6	-	-	-	>40	-	-	-	-	-	>0.5	-	-	-	>1	>0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
LOR	-	-	-	-	5	5	5	5	0.1	0.5	1	1	0.1	-	-	0.5	0.5	0.5	0.5	0.5	0.01	0.005	0.1	0.005	0.005	0.005	1	0.0001	0.0002				
WS4-S	7/08/2020		8.27	50,809	106	106	6	130	40,000	16	0.6	0.7	3,100	21,000	--	0.05	0.15	400	1300	370	11000	<0.05	0.006	0.2	0.2	0.008	<0.005	1	0.0005	0.0005			
WS4-S	10/09/2020		7.93	50,651	42	109	9	120	35,000	11	0.5	0.6	2,400	18,000	--	0.08	0.13	390	1200	350	11000	0.03	<0.005	0.2	0.2	0.008	0.01	2	0.0007	0.0007			
WS4-S	7/10/2020		7.82	49,672	55	95	8	120	36,000	<5	0.3	0.8	2,300	17,000	<5	0.07	0.14	390	1200	370	10000	0.03	<0.005	0.2	0.2	0.006	0.007	2	0.0016	0.0007			
WS4-S	5/11/2020		7.89	50,039	32	81	7	130	36,000	<5	0.6	<0.5	2,700	19,000	<5	0.05	0.14	340	1100	300	10000	0.02	0.006	0.2	0.2	0.009	0.008	2	0.0013	0.0005			
WS4-S	3/12/2020		7.94	48,677	105	85	--	130	37,000	<5	0.8	0.8	2,700	19,000	<5	--	0.14	400	1200	380	12000	0.02	<0.005	0.6	0.6	<0.005	0.01	3	0.0016	0.0006			
WS4-S	13/01/2021		7.88	54,357	145	83	<5	130	38,000	<5	0.6	0.7	2,800	21,000	1	0.04	0.13	390	1200	390	11000	0.03	0.008	0.3	0.3	<0.005	0.01	2	0.0022	0.0007			
WS4-S	11/02/2021		7.99	54,440	100	131	<5	130	37,000	<5	0.8	<0.5	3,000	21,000	<5	0.04	0.14	380	1200	350	11000	0.02	0.009	0.5	0.5	<0.005	0.016	4	0.003	0.0009			
WS4-S	4/03/2021		8.07	56,909	150	82	<5	120	35,000	8	0.4	0.6	3,000	21,000	<5	0.04	0.14	470	1500	440	13000	0.01	0.005	0.2	0.2	0.024	<0.005	<1	0.0006	0.0003			
WS4-S	20/04/2021		8.11	52,228	29	80	8	130	36,000	9	0.4	<0.5	2,700	20,000	<5	0.06	0.14	410	1300	370	11000	0.03	0.008	0.2	0.2	0.024	0.014	<1	0.0015	0.0007			
WS4-S	5/05/2021		8.18	53,220	92	81	10	130	37,000	<5	0.7	<0.5	2,400	18,000	<5	0.08	0.13	460	1500	420	13000	0.04	<0.005	<0.5	<0.5	0.015	<0.005	2	0.0009	0.0006			
WS4-S	3/06/2021		8.18	53,408	151	83	8	120	38,000	<5	0.8	<0.5	2,700	20,000	<5	0.07	0.14	470	1500	390	12000	0.02	<0.005	<0.5	<0.5	0.016	0.009	1	0.0014	0.0004			
WS4-S	15/07/2021		8.03	46,411	107	111	8	120	29,000	12	1.3	<0.5	2,300	17,000	<5	0.07	0.14	320	1000	140	8600	0.03	0.01	0.4	0.3	0.045	0.056	3	0.0006	0.0006			
WS4-D	7/08/2020		8.27	50,996	108	105	<5	130	40,000	21	0.5	0.7	2,800	20,000	--	0.04	0.14	420	1300	380	12000	<0.05	<0.005	0.1	0.1	0.007	<0.005	<1	0.0004	0.0006			
WS4-D	10/09/2020		8.05	50,680	56	112	9	120	35,000	7	0.7	<0.5	2,400	18,000	--	0.08	0.13	370	1200	340	10000	0.03	<0.005	0.2	0.2	0.007	0.008	2	0.0008	0.0006			
WS4-D	7/10/2020		8.04	50,044	63	98	8	120	35,000	<5	0.4	<0.5	2,400	18,000	<5	0.07	0.13	410	1300	390	10000	0.03	<0.005	0.1	0.1	0.006	0.01	2	0.0015	0.0006			
WS4-D	5/11/2020		7.97	50,024	40	81	5	120	36,000	6	0.7	<0.5	2,700	19,000	<5	0.04	0.14	350	1200	300	10000	0.02	0.006	0.2	0.2	0.008	0.008	2	0.0012	0.0007			
WS4-D	3/12/2020		7.98	48,630	115	83	--	130	37,000	7	1.1	3.8	2,600	19,000	<5	--	0.14	400	1200	380	12000	0.02	<0.005	0.7	0.7	<0.005	0.008	3	0.0016	0.0006			
WS4-D	13/01/2021		7.98	54,348	124	86	<5	130	37,000	<5	0.6	<0.5	2,800	21,000	1	0.04	0.13	390	1200	390	11000	0.03	0.008	0.2	0.2	<0.005	0.04	2	0.0021	0.0007			
WS4-D	11/02/2021		8.08	54,460	102	133	<5	130	37,000	12	0.4	<0.5	3,000	21,000	<5	0.04	0.14	380	1200	350	11000	0.02	0.009	0.5	0.5	<0.005	0.011	4	0.003	0.0007			
WS4-D	4/03/2021		8.10	56,910	143	81	<5	130	32,000	<5	0.4	0.6	3,000	21,000	<5	0.04	0.14	460	1500	430	13000	0.01	0.005	0.2	0.2	0.023	<0.005	<1	0.0006	0.0004			
WS4-D	20/04/2021		8.26	52,908	25	87	9	120	39,000	5	0.5	<0.5	2,700	20,000	<5	0.08	0.14	410	1400	370	12000	0.03	0.007	0.2	0.2	0.027	0.014	<1	0.0012	0.0007			
WS4-D	5/05/2021		8.21	53,449	97	79	8	130	36,000	10	0.4	<0.5	2,500	19,000	<5	0.06	0.13	430	1400	400	12000	0.04	<0.005	<0.5	<0.5	0.016	<0.005	1	0.0008	0.0007			
WS4-D	3/06/2021		8.19	53,789	153	81	6	120	39,000	<5	0.6	<0.5	2,700	20,000	<5	0.05	0.14	470	1500	390	12000	0.01	<0.005	<0.5	<0.5	0.014	0.006	1	0.0012	0.0004			
WS4-D	15/07/2021		8.02	46,465	109	101	8	120	28,000	20	1	0.5	2,300	17,000	<5	0.07	0.14	320	1000	140	9100	0.03	0.009	0.4	0.3	0.047	0.056	3	0.0008	0.0007			
WS5-S	7/10/2020		8.24	49,470	118	108	7	120	35,000	<5	0.3	<0.5	2,400	18,000	<5	0.06	0.13	410	1300	390	10000	0.04	<0.005	0.2	0.2	<0.005	0.015	2	0.0016	0.0005			
WS5-S	5/11/2020		8.10	49,829	81	79	8	130	36,000	<5	0.6	<0.5	2,700	19,000	<5	0.06	0.14	380	1200	330	10000	0.02	0.006	0.2	0.2	0.008	<0.005	2	0.0017	0.0007			
WS5-S	3/12/2020		8.10	49,008	166	109	--	130	36,000	7	1.1	0.6	2,700	19,000	<5	--	0.14	410	1300	390	12000	0.02	0.005	0.6	0.6	0.006	0.012	2	0.0017	0.0006			
WS5-S	13/01/2021		8.19	54,706	96	98	<5	130	37,000	<5	0.6	<0.5	2,900	21,000	1	0.04	0.14	390	1200	390	11000	0.03	0.006	0.2	0.2	<0.005	0.008	2	0.0024	0.0006			
WS5-S	11/02/2021		8.25	54,644	104	98	<5	130	37,000	<5	0.8	<0.5	3,000	21,000	<5	0.04	0.14	380	1200	350	11000	0.02	0.006	0.4	0.4	<0.005	0.006	3	0.0026	0.0006			
WS5-S	4/03/2021		8.15	56,880	159	89	<5	130	30,000	7	0.4	0.7	3,000	21,000	<5	0.04	0.14	490	1600	440	13000	0.01	<0.005	0.2	0.2	0.019	<0.005	<1	0.0009	0.0004			
WS5-S	20/04/2021		8.26	52,611	61	83	9	130	38,000	14	0.4	<0.5	2,700	20,000	<5	0.07	0.14	410	1400	370	12000	0.03	0.006	0.2	0.2	0.022	0.013	<1	0.001	0.0005			
WS5-S	5/05/2021		8.22	53,474	110	73	8	130	37,000	<5	0.5	<0.5	2,500	19,000	<5	0.06	0.13	440	1400	400	12000	0.03	<0.005	<0.5	<0.5	0.014	<0.005	<1	0.0007	0.0005			
WS5-S	3/06/2021		8.27	53,522	188	103	6	120	39,000	<5	0.5	<0.5	2,700	20,000	<5	0.05	0.14	510	1600	420	13000	0.02	0.006	<0.5	<0.5	0.017	0.018	1	0.0008	0.0004			
WS5-S	15/07/2021		7.96	46,185	67	85	9	120	31,000	8	1.4	<0.5	2,300	17,000	<5	0.08	0.14	340	1100	140	8400	0.03	0.009	0.4	0.3	0.048	0.061	3	0.0006	0.0007			
WS5-D	7/10/2020		8.30	52,146	117	109	7	120	36,000	<5	0.4	0.9	2,400	17,000	<5	0.06	0.14	420	1300	400	11000	0.03	0.006	0.1	0.1	0.006	<0.005	2	0.0011	0.0006			
WS5-D	5/11/2020		8.12	49,820	91	71	9	120	36,000	7	0.7	<0.5	2,700	19,000	<5	0.08	0.14	340	1200	310	11000	0.03	0.005	0.2	0.2	<0.005	<0.005	2	0.0022	0.0007			
WS5-D	3/12/2020		8.09	49,116	175	103	--	120	37,000	6	1.4	2	2,700	19,000	<5	--	0.14	410	1300	400	12000	0.02	0.006	0.7	0.7	<0.005	0.009	2	0.0013	0.0006			
WS5-D	13/01/2021		8.19	54,732	93	92	<5	130	38,000	<5	0.7	<0.5	2,800	21,000	1	0.04	0.13	390	1200	390	11000	0.03	0.006	0.2	0.2	<0.005	0.01	2	0.0021	0.0006			

Table B Surface Water Results: Metals

Definitions:

MWG (Marine Water Estuary Guideline) for slightly - moderately disturbed systems, RWG (Recreational Water Guidelines), ASS (Acid Sulfate Soils) Standing Advice from DWER on dewatering trigger values taken from ASS Guideline Series (2015), - (No Guideline), --- not tested, LOR (Limit of Reporting),* value for hexavalent chromium, # duplicate value

Notes:

Guideline values have been adopted from the following guidance documentation:

- Treatment and Management of Soil and Water in Acid Sulfate Soil Landscapes (DER 2015b)
- Assessment and Management of Contaminated Sites (DER 2014)
- Freshwater and Marine Water Quality Guidelines Chapter 3 (ANZECC/ARMCANZ 2000)

All results expressed as mg/L except for pH (pH units), ratios (unitless), Redox mV (mili Volts), turbidity (NTU) and EC (µS/cm)

a) Chemicals for which possible bioaccumulation and secondary poisoning should be considered

b) Recreational water guideline values based on drinking water guidelines NHMRC & ARMCANZ (2011) Australian Drinking Water Guidelines

Denotes less than LOR

Sample ID	Date	Trigger	Dissolved Metals & Metalloids																	Total Metals	
			Aluminium	Antimony	Arsenic	Cadmium	Cobalt	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silicon	Silver	Zinc	Total Aluminium	Total Iron
		Units	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
		MWG	-	-	-	-	0.001	-	0.0013	-	0.0044	-	0.0001 ^a	-	-	-	-	0.0014	-	-	1 ^b
		RWG	-	0.003 ^b	0.007 ^b	0.002 ^b	-	0.05 ^b	2 ^b	-	0.01 ^b	0.5 ^b	0.001 ^b	-	0.02 ^b	0.01 ^b	-	-	-	-	-
		ASS	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOR	0.01	0.002	0.001	0.0001	0.002	0.001	0.002	0.05	0.001	0.001	0.00005	0.001	0.001	0.01	0.1	0.00005	0.005	0.01	0.01
WS1 - S	10/09/2020		<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.00005	0.012	<0.001	<0.001	---	0.00006	0.002	0.02	0.02
WS1 - S	7/10/2020		<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.00005	0.012	<0.001	<0.001	<0.5	0.00005	0.003	<0.02	0.02
WS1 - S	5/11/2020		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.014	<0.002	<0.002	<0.5	<0.0001	0.006	0.03	0.03
WS1 - S	3/12/2020		0.03	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	0.011	<0.00005	0.012	<0.002	<0.002	<1	0.0001	0.006	0.03	0.03
WS1 - S	13/01/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	0.7	<0.0001	0.005	0.04	0.08
WS1 - S	11/02/2021		0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.012	<0.002	<0.002	<0.5	<0.0001	0.011	0.03	0.04
WS1 - S	4/03/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<1	<0.0001	0.006	0.02	<0.02
WS1 - S	20/04/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<0.5	<0.0001	0.005	<0.02	<0.02
WS1 - S	5/05/2021		<0.02	<0.002	0.003	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.014	<0.002	<0.002	<1	<0.0001	0.005	<0.02	0.02
WS1 - S	3/06/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<1	<0.0001	0.003	0.03	0.03
WS1 - S	15/07/2021		0.03	<0.002	<0.002	<0.0002	<0.002	<0.002	0.003	0.04	0.003	<0.01	<0.00005	0.01	<0.002	<0.002	0.8	<0.0001	0.009	0.03	0.05
WS1 - D	10/09/2020		<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.00005	0.012	<0.001	<0.001	---	0.00006	0.003	0.03	0.04
WS1 - D	7/10/2020		<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.00005	0.012	<0.001	<0.001	<0.5	<0.00005	0.002	0.02	<0.02
WS1 - D	5/11/2020		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.012	<0.002	<0.002	<0.5	<0.0001	0.004	0.03	0.03
WS1 - D	3/12/2020		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.012	<0.002	<0.002	<1	<0.0001	0.004	0.02	0.02
WS1 - D	13/01/2021		0.07	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	0.7	0.0002	0.043	0.05	0.07
WS1 - D	11/02/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<0.5	<0.0001	0.006	0.03	0.03
WS1 - D	4/03/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<1	<0.0001	0.006	<0.02	0.03
WS1 - D	20/04/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<0.5	<0.0001	0.004	<0.02	<0.02
WS1 - D	5/05/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.014	<0.002	<0.002	<1	<0.0001	<0.002	0.02	<0.02
WS1 - D	3/06/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	0.003	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<1	<0.0001	0.009	<0.02	0.02
WS1 - D	15/07/2021		0.03	<0.002	<0.002	<0.0002	<0.002	<0.002	0.003	0.04	<0.002	<0.01	<0.00005	0.011	<0.002	<0.002	1	<0.0001	0.01	0.02	0.03

Sample ID	Date	Trigger	Dissolved Metals & Metalloids																	Total Metals		
			Aluminium	Antimony	Arsenic	Cadmium	Cobalt	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silicon	Silver	Zinc	Total Aluminium	Total Iron	
			Units	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
			MWG	-	-	-	-	0.001	-	0.0013	-	0.0044	-	0.0001 ^a	-	-	-	-	0.0014	-	-	1 ^b
			RWG	-	0.003 ^b	0.007 ^b	0.002 ^b	-	0.05 ^b	2 ^b	-	0.01 ^b	0.5 ^b	0.001 ^b	-	0.02 ^b	0.01 ^b	-	-	-	-	-
ASS	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
LOR	0.01	0.002	0.001	0.0001	0.002	0.001	0.002	0.05	0.001	0.001	0.00005	0.001	0.001	0.01	0.1	0.00005	0.005	0.01	0.01			
WS2-S	7/08/2020		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.012	<0.002	<0.002	---	<0.0001	0.003	<0.02	<0.02	
WS2-S	10/09/2020		<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.00005	0.012	<0.001	<0.001	---	<0.00005	0.003	0.02	0.02	
WS2-S	7/10/2020		<0.01	<0.001	0.001	<0.0001	<0.001	<0.001	0.002	<0.01	<0.001	<0.005	<0.00005	0.011	<0.001	<0.001	0.7	<0.00005	0.003	<0.02	<0.02	
WS2-S	5/11/2020		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.012	<0.002	<0.002	<0.5	<0.0001	0.004	0.03	0.04	
WS2-S	3/12/2020		0.04	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.012	<0.002	<0.002	<1	0.0002	0.0099	0.07	0.02	
WS2-S	13/01/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.015	<0.002	<0.002	0.9	0.0002	0.007	0.09	0.03	
WS2-S	11/02/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<0.5	<0.0001	0.006	0.03	0.03	
WS2-S	4/03/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<1	<0.0001	0.007	<0.02	<0.02	
WS2-S	20/04/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<0.5	<0.0001	0.005	<0.02	<0.02	
WS2-S	5/05/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.014	<0.002	<0.002	<1	<0.0001	0.005	0.02	0.03	
WS2-S	3/06/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<1	<0.0001	0.003	<0.02	<0.02	
WS2-S	15/07/2021		0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	0.002	0.03	<0.002	<0.01	<0.00005	0.01	<0.002	<0.002	1	<0.0001	0.015	<0.02	0.03	
WS2-D	7/08/2020		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.012	<0.002	<0.002	---	<0.0001	0.007	0.03	0.02	
WS2-D	10/09/2020		<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	0.001	<0.01	<0.001	<0.005	<0.00005	0.012	<0.001	<0.001	---	0.00006	0.003	0.02	0.02	
WS2-D	7/10/2020		<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	0.001	<0.01	<0.001	<0.005	<0.00005	0.012	<0.001	<0.001	0.7	<0.00005	0.003	<0.02	<0.02	
WS2-D	5/11/2020		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<0.5	<0.0001	0.007	0.03	0.04	
WS2-D	3/12/2020		0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<1	<0.0001	0.005	0.03	0.04	
WS2-D	13/01/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	0.9	0.0001	0.004	<0.02	0.03	
WS2-D	11/02/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<0.5	<0.0001	0.006	0.03	0.03	
WS2-D	4/03/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<1	<0.0001	0.006	0.03	0.02	
WS2-D	20/04/2021		<0.02	<0.002	<0.002	0.0003 [#]	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.012	<0.002	<0.002	<0.5	<0.0001	0.005	<0.02	<0.02	
WS2-D	5/05/2021		<0.02	<0.002	0.003	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.015	<0.002	<0.002	<1	<0.0001	0.009	<0.02	0.02	
WS2-D	3/06/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.019 [#]	<0.002	<0.002	<1	<0.00005	0.007	<0.02	<0.02	
WS2-D	15/07/2021		0.03	<0.002	<0.002	<0.0002	<0.002	<0.002	0.002	0.03	<0.002	<0.01	<0.00005	0.01	<0.002	<0.002	0.9	<0.0001	0.021	0.02	0.03	
WS3-S	10/09/2020		<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.00005	0.012	<0.001	<0.001	---	<0.00005	0.003	0.05	0.08	
WS3-S	7/10/2020		<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.00005	0.013	<0.001	<0.001	<0.5	<0.00005	0.003	0.02	0.2	
WS3-S	5/11/2020		0.07	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<0.5	<0.0001	0.034	0.06	0.05	
WS3-S	3/12/2020		0.03	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.014	<0.002	<0.002	<1	<0.0001	0.008	0.05	0.09	
WS3-S	13/01/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.014	<0.002	<0.002	<0.5	0.0001	0.005	0.02	0.03	
WS3-S	11/02/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.014	<0.002	<0.002	<0.5	<0.0001	0.026	0.14	0.24	
WS3-S	4/03/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<1	<0.0001	0.004	<0.02	<0.02	
WS3-S	20/04/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<0.5	<0.0001	0.003	<0.02	<0.02	
WS3-S	5/05/2021		<0.02	<0.002	0.003	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.015	<0.002	<0.002	<1	<0.0001	0.006	<0.02	<0.02	
WS3-S	3/06/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<1	<0.0001	0.006	<0.02	<0.02	
WS3-S	15/07/2021		0.05 [#]	<0.002	<0.002	<0.0002	<0.002	<0.002	0.002	<0.02	<0.002	<0.01	<0.00005	0.01	<0.002	<0.002	1	<0.0001	0.023 [#]	0.04	0.07	

Table E Surface Water Results: Per- and Poly-Fluoroalkyl Substances

Definitions:
LOR (Limits of Reporting), MWG (Marine Water Guideline) -99 (99% species protection level) -95 (95% species protection level), RWG (Recreational Water Guidelines)
- denotes no guideline. --- denotes not tested.

Notes:
All values in µg/L unless specified otherwise
Table uses colour coding for data interpretation, avoid black and white reproduction.
All guideline values are adopted from:
- PFAS National Environmental Management Plan Version 2.0 (HEPA 2020)
Denotes <LOR

Sample ID	Date	Trigger	Perfluoroalkyl Sulfonic Acids					Perfluoroalkyl Carboxylic Acids										(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkyl Sulfonamides					PFAS Sums								
			Perfluorobutanesulfonic acid	Perfluoropentanesulfonic acid	Perfluorohexanesulfonic acid	Perfluoroheptanesulfonic acid	Perfluorooctanesulfonate PFOS	Perfluorodecane sulfonic acid	Perfluorobutanoic acid	Perfluoropentanoic acid	Perfluorohexanoic acid	Perfluoroheptanoic acid	Perfluorooctanoic acid PFOA	Perfluorononanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	4:2 FTSA	6:2 FTSA	8:2 FTSA	10:2 FTSA	Perfluorooctane sulfonamide	N-Methyl perfluorooctane sulfonamide	N-Ethyl perfluorooctanesulfonamide	N-Me perfluorooctanesulfonamid- oethanol	N-Et perfluorooctanesulfonamid- oethanol	MePerfluorooctanesulf- amid oacetic acid	EtPerfluorooctanesulf- amid oacetic acid	Total Positive PFHxS & PFOS	Total Positive PFOS & PFOA	Total Positive PFAS		
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
			MWG-99	-	-	-	-	0.00023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
			MWG-95	-	-	-	-	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
			RWG	-	-	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
			LOR	0.0004	0.001	0.0002	0.001	0.0002	0.002	0.002	0.002	0.0004	0.0004	0.0002	0.001	0.001	0.002	0.002	0.005	0.01	0.05	0.001	0.0004	0.0004	0.002	0.01	0.005	0.01	0.005	0.05	0.002	0.002	0.0002	0.0002	0.0002
WS1-S	10/09/2020			<0.0004	<0.001	0.0020	<0.001	0.0030	<0.002	<0.002	<0.002	0.001	0.0004	0.0006	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.005	0.0036	0.0074	
WS1-S	7/10/2020			<0.0004	<0.001	0.0020	<0.001	0.0021	<0.002	<0.002	<0.002	0.0008	<0.0004	0.0005	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0041	0.0026	0.0054	
WS1-S	5/11/2020			0.0004	<0.001	0.0020	<0.001	0.0025	<0.002	<0.002	<0.002	0.001	0.0005	0.0007	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0045	0.0032	0.0071	
WS1-S	3/12/2020			<0.0004	<0.001	0.0020	<0.001	0.0024	<0.002	<0.002	<0.002	0.0009	0.002	0.0006	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0044	0.003	0.0079	
WS1-S	13/01/2021			<0.0004	<0.001	0.0010	<0.001	0.0020	<0.002	<0.002	<0.002	0.0008	0.0004	0.0006	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.003	0.0026	0.0048	
WS1-S	11/02/2021			0.0007	<0.001	0.0020	<0.001	0.0023	<0.002	<0.002	<0.002	0.0009	0.0006	0.0007	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0043	0.003	0.0072	
WS1-S	4/03/2021			<0.0004	<0.001	0.0002	<0.001	0.0004	<0.002	<0.002	<0.002	<0.0004	<0.0004	<0.0002	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0006	0.0004	0.0006	
WS1-S	20/04/2021			<0.0004	<0.001	0.0006	<0.001	0.0010	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0003	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.002	0.001	0.0023	
WS1-S	5/05/2021			<0.0004	<0.001	0.0005	<0.001	0.0007	<0.002	<0.002	<0.002	<0.0004	<0.0004	<0.0002	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.001	0.0007	0.001	
WS1-S	3/06/2021			<0.0004	<0.001	0.0005	<0.001	0.0009	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0003	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.001	0.001	0.002	
WS1-S	15/07/2021			0.0006	<0.001	0.0026	<0.001	0.0046	<0.002	<0.002	<0.002	0.002	0.0008	0.0007	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0072	0.0053	0.011	
WS1-D	10/09/2020			<0.0004	<0.001	0.0020	<0.001	0.0026	<0.002	<0.002	<0.002	0.001	0.0004	0.0006	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0046	0.0032	0.0066	
WS1-D	7/10/2020			<0.0004	<0.001	0.0010	<0.001	0.0020	<0.002	<0.002	<0.002	0.0007	<0.0004	0.0004	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.003	0.0024	0.0041	
WS1-D	5/11/2020			<0.0004	<0.001	0.0020	<0.001	0.0028	<0.002	<0.002	<0.002	0.001	0.0005	0.0007	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0048	0.0035	0.007	
WS1-D	3/12/2020			0.0004	<0.001	0.0020	<0.001	0.0026	<0.002	<0.002	<0.002	0.0009	0.002	0.0006	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0046	0.0032	0.0085	
WS1-D	13/01/2021			<0.0004	<0.001	0.0010	<0.001	0.0010	<0.002	<0.002	<0.002	0.001	0.0007	0.0008	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.002	0.002	0.0045	
WS1-D	11/02/2021			0.0005	<0.001	0.0020	<0.001	0.0023	<0.002	<0.002	<0.002	0.0009	0.0006	0.0007	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0043	0.003	0.007	
WS1-D	4/03/2021			0.0004	<0.001	0.0003	<0.001	0.0006	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0002	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0009	0.0008	0.002	
WS1-D	20/04/2021			<0.0004	<0.001	0.0006	<0.001	0.0010	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0002	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.002	0.001	0.002	
WS1-D	5/05/2021			<0.0004	<0.001	0.0004	<0.001	0.0006	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0002	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.001	0.0008	0.001	
WS1-D	3/06/2021			<0.0004	<0.001	0.0007	<0.001	0.0010	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0003	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.002	0.001	0.002	
WS1-D	15/07/2021			0.0006	<0.001	0.0024	<0.001	0.0045	<0.002	<0.002	<0.002	0.002	0.0008	0.0009	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0069	0.0054	0.011	
WS2-S	7/08/2020			<0.0004	<0.001	0.0004	<0.001	0.0006	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0002	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.001	0.0008	0.001	
WS2-S	10/09/2020			<0.0004	<0.001	0.0020	<0.001	0.0024	<0.002	<0.002	<0.002	0.001																							

Table E
Surface Water Results: Per- and Poly-Fluoroalkyl Substances

Definitions:
 LOR (Limits of Reporting), MWG (Marine Water Guideline) -99 (99% species protection level) -95 (95% species protection level), RWG (Recreational Water Guidelines)
 - denotes no guideline. --- denotes not tested.

Notes:
 All values in µg/L unless specified otherwise
 Table uses colour coding for data interpretation, avoid black and white reproduction.
 All guideline values are adopted from:
 - PFAS National Environmental Management Plan Version 2.0 (HEPA 2020)
 Denotes <LOR

Sample ID	Date	Trigger	Perfluoroalkyl Sulfonic Acids										Perfluoroalkyl Carboxylic Acids										(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkyl Sulfonamides					PFAS Sums			
			Perfluorobutanesulfonic acid	Perfluoropentanesulfonic acid	Perfluorohexanesulfonic acid	Perfluoroheptanesulfonic acid	Perfluorooctanesulfonate PFOS	Perfluorodecane sulfonic acid	Perfluorododecane sulfonic acid	Perfluorotetradecane sulfonic acid	Perfluorohexadecane sulfonic acid	Perfluorooctadecane sulfonic acid	Perfluorononanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	4:2 FTSA	6:2 FTSA	8:2 FTSA	10:2 FTSA	Perfluorooctane sulfonamide	N-Methyl perfluorooctane sulfonamide	N-Ethyl perfluorooctanesulfonamide	N-Me perfluorooctanesulfonamid- oethanol	N-Et perfluorooctanesulfonamid- oethanol	MePerfluorooctanesulf- amid oacetic acid	EtPerfluorooctanesulf- amid oacetic acid	Total Positive PFHxS & PFOS	Total Positive PFOS & PFOA	Total Positive PFAS			
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
			MWG-99	MWG-95	RWG	LOR	MWG-99	MWG-95	RWG	LOR	MWG-99	MWG-95	RWG	LOR	MWG-99	MWG-95	RWG	LOR	MWG-99	MWG-95	RWG	LOR	MWG-99	MWG-95	RWG	LOR	MWG-99	MWG-95	RWG	LOR	MWG-99	MWG-95	RWG	LOR	
WS4-S	7/08/2020		<0.0004	<0.001	0.0004	<0.001	0.0006	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0002	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	<0.002	0.001	0.0008	0.001
WS4-S	10/09/2020		<0.0004	<0.001	0.0020	<0.001	0.0025	<0.002	<0.002	<0.002	0.001	0.0004	0.0006	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0045	0.0031	0.0065	
WS4-S	7/10/2020		0.0005	<0.001	0.0025	<0.001	0.0037	<0.002	<0.002	<0.002	0.001	0.0006	0.0008	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0062	0.0045	0.0091	
WS4-S	5/11/2020		0.0005	<0.001	0.0022	<0.001	0.0035	<0.002	<0.002	<0.002	0.002	0.0007	0.0009	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0057	0.0044	0.0098	
WS4-S	3/12/2020		0.0005	<0.001	0.0024	<0.001	0.0042	<0.002	<0.002	<0.002	0.001	0.0003	0.0008	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0066	0.005	0.012	
WS4-S	13/01/2021		0.0005	<0.001	0.0020	<0.001	0.0026	<0.002	<0.002	<0.002	0.001	0.0006	0.0007	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0046	0.0033	0.0074	
WS4-S	11/02/2021		0.0006	<0.001	0.0021	<0.001	0.0024	<0.002	<0.002	<0.002	0.001	0.0008	0.0007	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0045	0.0031	0.0076	
WS4-S	4/03/2021		<0.0004	<0.001	0.0005	<0.001	0.0008	<0.002	<0.002	<0.002	<0.0004	<0.0004	<0.0002	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.001	0.0008	0.001	
WS4-S	20/04/2021		<0.0004	<0.001	0.0020	<0.001	0.0028	<0.002	<0.002	<0.002	0.0009	0.0004	0.0005	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0048	0.0033	0.0066	
WS4-S	5/05/2021		<0.0004	<0.001	0.0009	<0.001	0.002*	<0.002	<0.002	<0.002	0.0006	<0.0004	0.0005	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0029*	0.002	0.003	
WS4-S	3/06/2021		<0.0004	<0.001	0.0010	<0.001	0.0022	<0.002	<0.002	<0.002	0.0009	0.0005	0.0004	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0032	0.0026	0.005	
WS4-S	15/07/2021		0.0005	<0.001	0.0020	<0.001	0.0039	<0.002	<0.002	<0.002	0.001	0.0006	0.0007	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0059	0.0046	0.0087	
WS4-D	7/08/2020		<0.0004	<0.001	0.0003	<0.001	0.0003	<0.002	<0.002	<0.002	<0.0004	<0.0004	<0.0002	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0006	0.0003	0.0006	
WS4-D	10/09/2020		<0.0004	<0.001	0.0020	<0.001	0.0025	<0.002	<0.002	<0.002	0.001	0.0004	0.0006	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0045	0.0031	0.0065	
WS4-D	7/10/2020		0.0004	<0.001	0.0026	<0.001	0.0034	<0.002	<0.002	<0.002	0.001	0.0005	0.0008	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.006	0.0042	0.0087	
WS4-D	5/11/2020		0.0005	<0.001	0.0022	<0.001	0.0033	<0.002	<0.002	<0.002	0.002	0.0006	0.0009	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0055	0.0042	0.0095	
WS4-D	3/12/2020		0.0005	<0.001	0.0022	<0.001	0.0038	<0.002	<0.002	<0.002	0.001	0.0002	0.0009	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.006	0.0047	0.01	
WS4-D	13/01/2021		0.0004	<0.001	0.0020	<0.001	0.0026	<0.002	<0.002	<0.002	0.001	0.0006	0.0007	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0046	0.0033	0.0073	
WS4-D	11/02/2021		0.0007	<0.001	0.0021	<0.001	0.0025	<0.002	<0.002	<0.002	0.001	0.0007	0.0009	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0046	0.0034	0.0079	
WS4-D	4/03/2021		<0.0004	<0.001	0.0004	<0.001	0.0008	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0002	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.001	0.001	0.0019	
WS4-D	20/04/2021		<0.0004	<0.001	0.0010	<0.001	0.0021	<0.002	<0.002	<0.002	0.0009	0.0005	0.0006	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0031	0.0027	0.0051	
WS4-D	5/05/2021		<0.0004	<0.001	0.0007	<0.001	0.0010	<0.002	<0.002	<0.002	0.0005	<0.0004	0.0004	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.002	0.001	0.0026	
WS4-D	3/06/2021		<0.0004	<0.001	0.0009	<0.001	0.0010	<0.002	<0.002	<0.002	0.0005	<0.0004	0.0004	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.002	0.001	0.0028	
WS4-D	15/07/2021		0.0005	<0.001	0.0020	<0.001	0.0039	<0.002	<0.002	<0.002	0.001	0.0007	0.0007	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0059	0.0046	0.0088	
WS5-S	7/10/2020		0.0004	<0.001	0.0025	<0.001	0.0035	<0.002	<0.002	<0.002	0.001	0.0005	0.0007	<0.001	<0.002	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<													

Table F
Surface Water QAQC Results (RPD Assessment): ASS, Cations, Nutrients and Miscellaneous

Definitions:

LOR 1° (Limit of Reporting, Primary Laboratory). --- denotes not tested. # denoted not calculated.

Notes:

All values in mg/L unless specified otherwise

Table uses colour coding for data interpretation, avoid black and white reproduction.

	denotes <LOR (primary laboratory)
	denotes <5x LOR (primary laboratory)
	denotes exceedance of acceptance criteria (30%) where samples <5x LOR
	denotes exceedance of acceptance criteria (30%) where sample(s) >5x LOR

Sample ID	Sample Type	Date	Trigger	Acid Sulfate Soil Parameters									Cations				Nutrients						Miscellaneous		
				Total Acidity (CaCO3)	Total Alkalinity (CaCO3)	TDS	TSS	Turbidity	Sulfide	Sulfate	Chloride	Fluoride	Calcium	Magnesium	Potassium	Sodium	Total P	Reactive P	Total N	TKN	NH ₃ -N	NO _x -N	Dissolved Organic Carbon (DOC)	Chlorophyll "a"	Phaeophytin "a"
				Units	mg/L	mg/L	mg/L	mg/L	NTU	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
LOR				1	1	10	5	0.1	0.1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.0001	0.0002
WS2-S	Primary	7/08/2020		6	120	39,000	9	0.6	0.9	2800	20,000	---	420	1300	370	12000	<0.05	<0.005	0.1	0.1	0.007	<0.005	<1	0.0004	0.0005
WZ1	Duplicate			7	120	39,000	6	0.6	0.8	2800	20,000	---	420	1300	370	11000	<0.05	<0.005	0.1	0.1	0.009	<0.005	<1	0.0005	0.0003
RPD %				15	0	0	40	0	12	0	0	#	0	0	0	9	0	0	0	2	25	0	0	22	50
WS1-S	Primary	10/09/2020		9	120	36,000	<5	0.5	<0.5	2400	18,000	---	390	1200	360	11000	0.03	0.006	0.2	0.20	0.009	<0.005	2	0.0012	0.0006
WZ1	Duplicate			9	120	36,000	6	0.7	<0.5	2300	18,000	---	400	1300	360	11000	0.03	<0.005	0.2	0.20	0.008	<0.005	2	0.0012	0.0005
RPD %				0	0	0	18	33	0	4	0	#	3	8	0	0	0	18	0	0	12	0	0	0	18
WS3-S	Primary	7/10/2020		7	120	37,000	8	1.6	0.8	2400	18,000	<5	420	1300	400	11000	0.05	0.006	0.2	0.20	0.018	0.043	1	0.0019	0.0009
WZ1	Duplicate			7	130	37,000	33	0.9	0.7	2400	18,000	<5	410	1300	390	11000	0.05	0.005	0.1	0.10	<0.005	<0.005	1	0.0011	0.0008
RPD %				0	8	0	122	56	13	0	0	0	2	0	3	0	0	18	67	67	113	158	0	53	12
WS2-D	Primary	5/11/2020		6	130	36,000	<5	0.8	<0.5	2700	19,000	<5	330	1100	290	9700	0.02	0.006	0.2	0.2	0.006	0.01	3	0.0016	0.0007
WZ1	Duplicate			7	130	36,000	<5	1	<0.5	2700	19,000	<5	360	1200	320	11000	0.02	0.006	0.2	0.2	0.006	0.01	2	0.0015	0.0006
RPD %				15	0	0	0	22	0	0	0	0	9	9	10	13	0	0	0	0	0	0	40	6	15
WS2-S	Primary	3/12/2020		---	130	36,000	<5	0.7	0.6	2700	19,000	<5	400	1300	380	12000	0.02	<0.005	0.8	0.8	<0.005	0.01	3	0.0022	0.0006
WZ1	Duplicate			---	130	36,000	<5	0.9	0.7	2700	19,000	<5	400	1300	380	12000	0.02	<0.005	0.7	0.7	<0.005	0.011	3	0.0018	0.0006
RPD %				---	0	0	0	25	15	0	0	0	0	0	0	0	0	0	13	13	0	10	0	20	0
WS2-S	Primary	13/01/2021		<5	130	38,000	<5	0.5	0.5	2900	21,000	1.3	390	1200	400	11000	0.02	0.005	0.2	0.2	0.006	0.006	1	0.0012	0.0006
WZ1	Duplicate			<5	130	39,000	<5	0.5	0.5	2800	21,000	1.3	390	1200	390	11000	0.03	0.006	0.2	0.2	0.007	<0.005	2	0.0011	0.0005
RPD %				0	0	3	0	0	0	4	0	0	0	0	3	0	40	0	0	0	0	18	67	9	18
WS3-S	Primary	11/02/2021		<5	130	37,000	38	1.5	<0.5	3000	21,000	<5	370	1200	340	11000	0.03	0.006	0.5	0.5	<0.005	<0.005	3	0.0026	0.001
WZ1	Duplicate			<5	130	37,000	79	2	<0.5	3000	21,000	<5	390	1200	350	12000	0.1	0.006	0.5	0.5	<0.005	<0.005	2	0.003	0.0021
RPD %				0	0	0	0	29	0	0	0	0	5	0	3	9	108	0	0	0	0	0	40	14	71
WS2-D	Primary	4/03/2021		<5	130	34,000	<5	0.7	<0.5	3000	21,000	<5	430	1400	400	12000	0.01	0.006	0.2	0.2	0.021	<0.005	<1	0.0008	0.0003
WZ1	Duplicate			<5	130	38,000	22	0.5	0.9	3000	21,000	<5	470	1500	430	13000	0.01	<0.005	0.2	0.2	0.023	<0.005	<1	0.0007	0.0004
RPD %				0	0	11	126	33	57	0	0	0	9	7	7	8	0	18	0	0	9	0	0	13	29
WS2-D	Primary	20/04/2021		9	120	37,000	5	0.7	<0.5	2700	20,000	<5	420	1400	380	12000	0.03	0.005	0.2	0.2	0.022	0.008	<1	0.0006	0.0005
WZ1	Duplicate			9	120	35,000	7	0.4	0.5	2700	20,000	<5	410	1400	370	12000	0.03	0.006	0.2	0.2	0.024	0.008	<1	0.0008	0.0005
RPD %				0	0	6	33	55	0	0	0	0	2	0	3	0	0	18	0	0	9	0	0	29	0
WS4-S	Primary	5/05/2021		10	130	37,000	<5	0.7	<0.5	2400	18,000	<5	460	1500	420	13000	0.04	<0.005	<0.5	<0.5	0.015	<0.005	2	0.0009	0.0006
WZ1	Duplicate			8	120	37,000	<5	0.6	<0.5	2500	19,000	<5	460	1500	420	13000	0.03	<0.005	<0.5	<0.5	0.015	<0.005	1	0.0012	0.0007
RPD %				0	8	0	0	15	0	4	5	0	0	0	0	0	29	0	0	0	0	0	67	29	15

Sample ID	Sample Type	Date	Trigger	Acid Sulfate Soil Parameters									Cations				Nutrients						Miscellaneous		
				Total Acidity (CaCO3)	Total Alkalinity (CaCO3)	TDS	TSS	Turbidity	Sulfide	Sulfate	Chloride	Fluoride	Calcium	Magnesium	Potassium	Sodium	Total P	Reactive P	Total N	TKN	NH ₃ -N	NO _x -N	Dissolved Organic Carbon (DOC)	Chlorophyll "a"	Phaeophytin "a"
				Units	mg/L	mg/L	mg/L	mg/L	NTU	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
			LOR	1	1	10	5	0.1	0.1	1	1	0.1	1	1	1	1	0.01	0.005	0.1	0.1	0.005	0.005	1	0.0001	0.0002
WS2-D	Primary	3/06/2021		7	120	38,000	<5	0.8	<0.5	2700	20,000	<5	460	1400	390	12000	0.02	0.006	<0.5	<0.5	0.018	0.019	1	0.001	0.0006
WZ1	Duplicate			7	120	39,000	<5	0.5	<0.5	2700	20,000	<5	510	1600	420	13000	0.02	0.006	<0.5	<0.5	0.022	0.03	1	0.001	0.0004
RPD %				0	0	3	0	46	0	0	0	0	10	13	7	8	0	0	0	0	20	45	0	0	40
WS3-S	Primary	15/07/2021		7	120	28,000	43	1.6	<0.5	2300	17,000	<5	310	980	140	8000	0.04	0.01	0.4	0.341	0.045	0.059	3	0.9	0.9
WZ1	Duplicate			9	120	27,000	14	1.1	<0.5	2200	16,000	<5	300	920	130	8200	0.04	0.01	0.4	0.342	0.049	0.058	3	1.1	0.9
RPD %				25	0	4	102	37	0	4	6	0	3	6	7	2	0	0	0	0	9	2	0	20	0

Table G Surface Water QAQC Results (RPD Assessment): Metals

Definitions:

LOR 1° (Limit of Reporting, Primary Laboratory). --- denotes not tested. # denoted not calculated.

Notes:

All values in mg/L unless specified otherwise

Table uses colour coding for data interpretation, avoid black and white reproduction.

	denotes <LOR (primary laboratory)
	denotes <5x LOR (primary laboratory)
	denotes exceedance of acceptance criteria (30%) where samples <5x LOR
	denotes exceedance of acceptance criteria (30%) where sample(s) >5x LOR

Sample ID	Sample Type	Date	Trigger	Dissolved Metals & Metalloids																		Total Metals	
				Aluminium	Antimony	Arsenic	Cadmium	Cobalt	Chromium	Copper	Iron	Lead	Mercury	Manganese	Molybdenum	Nickel	Selenium	Silicon	Silver	Zinc	Total Aluminium	Total Iron	
				Units	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
				LOR	0.01	0.001	0.001	0.0001	0.001	0.001	0.01	0.001	0.005	0.00005	0.001	0.001	0.001	0.1	0.00005	0.001	0.01	0.01	0.01
WS2-S	Primary	7/08/2020		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.00005	<0.01	0.012	<0.002	<0.002	---	<0.0001	0.003	<0.02	<0.02	
WZ1	Duplicate			<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.00005	<0.01	0.013	<0.002	<0.002	---	<0.0001	0.004	0.03	0.02	
RPD %					0	0	0	0	0	0	0	0	0	0	8	0	0	#	0	29	40	0	
WS1-S	Primary	10/09/2020		<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.00005	<0.005	0.012	<0.001	<0.001	---	0.00006	0.002	0.02	0.02	
WZ1	Duplicate				<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.00005	<0.005	0.013	<0.001	<0.001	---	<0.00005	0.003	0.02	0.03
RPD %					0	0	0	0	0	0	0	0	0	0	8	0	0	#	18	40	0	40	
WS3-S	Primary	7/10/2020		<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.00005	<0.005	0.013	<0.001	<0.001	<5	<0.00005	0.003	0.02	0.04	
WZ1	Duplicate				<0.01	<0.001	0.002	<0.0001	<0.001	<0.001	0.001	<0.01	<0.001	<0.00005	<0.005	0.012	<0.001	<0.001	<5	<0.00005	0.004	<0.02	0.2
RPD %					0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	29	0	133	
WS2-D	Primary	5/11/2020		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.00005	<0.01	0.013	<0.002	<0.002	<0.5	<0.0001	0.007	0.03	0.04	
WZ1	Duplicate				<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.00005	<0.01	0.013	<0.002	<0.002	<0.5	<0.0001	0.005	0.03	0.04
RPD %					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	0	0	
WS2-S	Primary	3/12/2020		0.04	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.00005	<0.01	0.012	<0.002	<0.002	<1	0.0002	0.0099	0.07	0.02	
WZ1	Duplicate				<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.00005	<0.01	0.013	<0.002	<0.002	<1	<0.0001	0.005	<0.02	0.02
RPD %					67	0	0	0	0	0	0	0	0	0	8	0	0	0	0	66	111	0	
WS3-S	Primary	13/01/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.00005	<0.01	0.014	<0.002	<0.002	<0.5	0.0001	0.005	0.02	0.03	
WZ1	Duplicate				<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.00005	<0.01	0.016	<0.002	<0.002	0.5	<0.0001	0.005	<0.02	0.02
RPD %					0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	40	
WS3-S	Primary	11/02/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.014	<0.002	<0.002	<0.5	<0.0001	0.026	0.14	0.24	
WZ1	Duplicate				<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<0.5	<0.0001	0.008	0.19	0.29
RPD %					0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	106	30	19	
WS2-D	Primary	4/03/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.00005	<0.01	0.013	<0.002	<0.002	<1	<0.0001	0.006	0.03	0.02	
WZ1	Duplicate				<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.00005	<0.01	0.013	<0.002	<0.002	<1	<0.0001	0.005	0.05	0.02
RPD %					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	50	0	

Sample ID	Sample Type	Date	Trigger	Dissolved Metals & Metalloids																	Total Metals	
				Aluminium	Antimony	Arsenic	Cadmium	Cobalt	Chromium	Copper	Iron	Lead	Mercury	Manganese	Molybdenum	Nickel	Selenium	Silicon	Silver	Zinc	Total Aluminium	Total Iron
				Units	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
LOR	0.01	0.001	0.001	0.0001	0.001	0.001	0.001	0.01	0.001	0.005	0.00005	0.001	0.001	0.001	0.1	0.00005	0.001	0.01	0.01	0.01		
WS2-D	Primary	20/04/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.012	<0.002	<0.002	<0.5	<0.0001	0.005	<0.02	<0.02
WZ1	Duplicate			<0.02	<0.002	<0.002	0.0003	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.012	<0.002	<0.002	<0.5	<0.0001	0.005	0.02	0.02
RPD %					0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WS4-S	Primary	5/05/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.015	<0.002	<0.002	<1	<0.0001	0.003	<0.02	<0.02
WZ1	Duplicate			<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.013	<0.002	<0.002	<1	<0.0001	0.006	<0.02	<0.02
RPD %					0	0	0	0	0	0	0	0	0	14	0	0	0	0	67	0	0	
WS2-D	Primary	3/06/2021		<0.02	<0.002	0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.012	<0.002	<0.002	<1	<0.00005	0.007	<0.02	<0.02
WZ1	Duplicate			<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.01	<0.00005	0.019	<0.002	<0.002	1.1	<0.0001	0.005	<0.02	<0.02
RPD %					0	0	0	0	0	0	0	0	0	45	0	0	10	0	33	0	0	
WS3-S	Primary	15/07/2021		0.03	<0.002	<0.002	<0.0002	<0.002	<0.002	0.002	<0.02	<0.002	<0.01	<0.00005	0.01	<0.002	<0.002	1	<0.0001	0.009	0.04	0.07
WZ1	Duplicate				0.05	<0.002	<0.002	<0.0002	<0.002	<0.002	0.003	0.06	<0.002	<0.01	<0.00005	0.01	0.003	<0.002	0.9	<0.0001	0.023	<0.02
RPD %					50	0	0	0	0	40	100	0	0	0	0	40	0	11	0	88	67	111

Table J
Surface Water QAQC Results (RPD Assessment): Per- and Poly-Fluoroalkyl Substances

Definitions:
 LOR 1* (Limit of Reporting, Primary Laboratory). --- denotes not tested. # denoted not calculated.
Notes:
 All values in mg/L unless specified otherwise
 Table uses colour coding for data interpretation, avoid black and white reproduction.

denotes <LOR (primary laboratory)
 denotes <5x LOR (primary laboratory)
 denotes exceedance of acceptance criteria (30%) where samples <5x LOR
 denotes exceedance of acceptance criteria (30%) where sample(s) >5x LOR

Sample ID	Sample type	Date	Trigger	Perfluoroalkyl Sulfonic Acids										Perfluoroalkyl Carboxylic Acids										(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkyl Sulfonamides						PFAS Sums		
				Perfluorobutanesulfonic acid	Perfluoropentanesulfonic acid	Perfluorohexanesulfonic acid	Perfluoroheptanesulfonic acid	Perfluorooctanesulfonate PFOs	Perfluorodecane sulfonic acid	Perfluorobutanoic acid	Perfluoropentanoic acid	Perfluorohexanoic acid	Perfluoroheptanoic acid	Perfluorooctanoic acid PFOA	Perfluorononanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	4:2 FTSA	6:2 FTSA	8:2 FTSA	10:2 FTSA	Perfluorooctane sulfonamide	N-Methyl perfluorooctane sulfonamide	N-Ethyl perfluorooctane sulfonamide	N-Me perfluorooctanesulfonamide- ethanol	N-Et perfluorooctanesulfonamide- ethanol	MePerfluorooctanesulf- amid oacetic acid	EtPerfluorooctanesulf- amid oacetic acid	Total Positive PFHxS & PFOs	Total Positive PFOs & PFOA	Total Positive PFAS		
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
			LOR	0.0004	0.001	0.0002	0.001	0.0002	0.002	0.002	0.002	0.002	0.0004	0.0004	0.0002	0.001	0.002	0.002	0.005	0.01	0.05	0.001	0.0004	0.0004	0.002	0.01	0.005	0.01	0.005	0.05	0.002	0.002	0.0002	0.0002	0.0002	
WS2-S	Primary	7/08/2020		<0.0004	<0.001	0.0005	<0.001	0.0005	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0002	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.001	0.0007	0.001		
WZ1	Duplicate			<0.0004	<0.001	0.0004	<0.001	0.0006	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0002	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.001	0.0008	0.001		
	RPD %			0	0	22	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0			
WS1-S	Primary	10/09/2020		0.0004	<0.001	0.002	<0.001	0.003	<0.002	<0.002	<0.002	0.001	0.0004	0.0006	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.005	0.0036	0.0074		
WZ1	Duplicate			<0.0004	<0.001	0.002	<0.001	0.0026	<0.002	<0.002	<0.002	0.001	<0.0004	0.0005	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0046	0.0031	0.0061		
	RPD %			0	0	0	0	14	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	15	19	0			
WS1-S	Primary	7/10/2020		<0.0004	<0.001	0.001	<0.001	0.0021	<0.002	<0.002	<0.002	0.0007	<0.0004	0.0005	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0031	0.0026	0.0043		
WZ1	Duplicate			<0.0004	<0.001	0.002	<0.001	0.0028	<0.002	<0.002	<0.002	0.0009	<0.0004	0.0004	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0048	0.0032	0.0061		
	RPD %			0	0	67	0	29	0	0	25	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	21	35	0			
WS2-D	Primary	5/11/2020		0.0006	<0.001	0.002	<0.001	0.0035	<0.002	<0.002	<0.002	0.002	0.0007	0.0009	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0059	0.0044	0.01		
WZ1	Duplicate			0.0006	<0.001	0.002	<0.001	0.0031	<0.002	<0.002	<0.002	0.002	0.0007	0.0008	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0053	0.0039	0.0094		
	RPD %			0	0	9	0	12	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	12	6	0			
WS2-S	Primary	3/12/2020		0.0005	<0.001	0.002	<0.001	0.0045	<0.002	<0.002	<0.002	0.001	0.002	0.0008	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0066	0.0053	0.011		
WZ1	Duplicate			0.0005	<0.001	0.002	<0.001	0.0038	<0.002	<0.002	<0.002	0.001	0.003	0.0009	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.006	0.0047	0.011		
	RPD %			0	0	5	0	17	0	0	0	40	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	12	0	0			
WS3-S	Primary	13/01/2021		<0.0004	<0.001	0.001	<0.001	0.001	<0.002	<0.002	<0.002	0.0005	<0.0004	0.0005	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.002	0.002	0.0028		
WZ1	Duplicate			<0.0004	<0.001	0.001	<0.001	0.001	<0.002	<0.002	<0.002	0.0006	<0.0004	0.0005	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.002	0.002	0.0029		
	RPD %			0	0	0	0	0	0	0	18	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4		
WS3-S	Primary	11/02/2021		0.0009	<0.001	0.002	<0.001	0.0024	<0.002	<0.002	<0.002	0.0009	0.0006	0.0005	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0044	0.0029	0.0073		
WZ1	Duplicate			0.0008	<0.001	0.002	<0.001	0.002	<0.002	<0.002	<0.002	0.0009	0.0005	0.0006	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.004	0.0026	0.0068		
	RPD %			0	0	0	0	18	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	11	7	0			
WS2-D	Primary	4/03/2021		<0.0004	<0.001	0.0004	<0.001	0.0007	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0002	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.001	0.0009	0.001		
WZ1	Duplicate			<0.0004	<0.001	0.0005	<0.001	0.0009	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0003	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.001	0.0009	0.001		
	RPD %			0	0	22	0	25	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			
WS2-D	Primary	20/04/2021		<0.0004	<0.001	0.0005	<0.001	0.0008	<0.002	<0.002	<0.002	<0.0004	<0.0004	0.0002	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.001	0.001	0.002		
WZ1	Duplicate			<0.0004	<0.001	0.0008	<0.001	0.0010	<0.002	<0.002	<0.002	<0.0005	<0.0004	0.0003	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.0029	0.0025	0.004		
	RPD %			0	0	46	0	22	0	0	22	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67	0	26	0			
WS4-S	Primary	5/05/2021		<0.0004	<0.001	0.0009	<0.001	0.0010	<0.002	<0.002	<0.002	0.0006	<0.0004	0.0005	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.002	<0.002	0.002	0.002	0.003		
WZ1	Duplicate			<0.0004	<0.001	0.0009	<0.001	0.0010	<0.002	<0.002	<0.002	0.0006	<0.0004	0.0005	<0.001	<0.002	<0.002	<0.005	<0.01	<0.05	<0.001	<0.0004	<0.0004	<0.002	<0.01	<0.005	<0.01	<0.005	<0.05	<0.00						

Table K
Surface Water QAQC Results (Rinsate, Field Blank and Trip-Blank): Metals and Turbidity

Definitions:

LOR 1° (Limit of Reporting, Primary Laboratory), --- denotes not tested.

Notes:

All values in mg/L unless specified otherwise

Table uses colour coding for data interpretation, avoid black and white reproduction.

denotes <LOR (primary laboratory)

denotes exceedance of acceptance criteria > LOR

Sample ID	Sample Type	Date	Trigger	Dissolved Metals & Metalloids																		Total Metals		Turbidity
				Aluminium	Antimony	Arsenic	Cadmium	Cobalt	Chromium	Copper	Iron	Manganese	Mercury	Molybdenum	Nickel	Lead	Selenium	Silicon	Silver	Zinc	Total Aluminium	Total Iron	Turbidity	
				Units	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
LOR	0.01	0.001	0.001	0.0001	0.001	0.001	0.001	0.001	0.01	0.005	0.00005	0.001	0.001	0.001	0.001	0.1	0.00005	0.001	0.01	0.01	0.1			
Rinsates																								
WR1	Water	7/08/2020		<0.01	<0.001	<0.001	0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	---	<0.00005	<0.001	<0.01	<0.01	0.2	
WR1	Water	10/09/2020		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	---	<0.00005	<0.001	<0.01	<0.01	0.1	
WR1	Water	7/10/2020		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	---	<0.00005	<0.001	<0.01	<0.02	<0.1	
WR1	Water	5/11/2020		<0.01	<0.001	<0.001	0.0002	<0.001	<0.001	0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	0.3	<0.00005	0.005	<0.01	<0.01	0.3	
WR1	Water	3/12/2020		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	0.008	0.01	<0.005	<0.00005	<0.001	<0.001	0.021	<0.001	---	<0.00005	0.015	<0.01	0.02	0.5	
WR1	Water	13/01/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	0.2	<0.00005	<0.001	<0.01	<0.02	<0.1	
WR1	Water	11/02/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.01	<0.00005	<0.002	<0.002	<0.002	<0.002	0.2	<0.0001	0.006	<0.02	0.02	0.2	
WR1	Water	4/03/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	<0.1	<0.00005	0.001	<0.01	<0.01	0.4	
WR1	Water	20/04/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	<0.1	<0.00005	0.004	<0.01	<0.01	0.4	
WR1	Water	5/05/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	<0.1	<0.00005	<0.001	<0.01	<0.01	0.4	
WR1	Water	3/06/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.1	<0.00005	<0.001	<0.01	<0.01	0.2	
WR1	Water	15/07/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.1	<0.00005	0.005	<0.01	<0.01	1.4	
Field Blank																								
WB1	Water	7/08/2020		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	---	<0.00005	<0.001	<0.01	<0.01	0.2	
WB1	Water	10/09/2020		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	---	<0.00005	<0.001	<0.01	<0.01	0.1	
WB1	Water	7/10/2020		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	---	<0.00005	<0.001	<0.01	<0.02	<0.1	
WB1	Water	5/11/2020		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	0.3	<0.00005	<0.001	<0.01	<0.01	0.2	
WB1	Water	3/12/2020		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	<0.1	<0.00005	<0.001	<0.01	<0.01	0.1	
WB1	Water	13/01/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	0.2	<0.00005	<0.001	<0.01	<0.02	<0.1	
WB1	Water	11/02/2021		<0.02	<0.002	<0.002	<0.0002	<0.002	<0.002	<0.002	<0.02	<0.01	<0.00005	<0.002	<0.002	<0.002	<0.002	0.2	<0.0001	0.006	<0.02	<0.02	0.2	
WB1	Water	4/03/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	0.2	<0.00005	<0.001	<0.01	<0.01	0.3	
WB1	Water	20/04/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	<0.1	<0.00005	<0.001	<0.01	<0.01	0.4	
WB1	Water	5/05/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.001	<0.1	<0.00005	<0.001	<0.01	<0.01	0.2	
WB1	Water	3/06/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.1	<0.00005	<0.001	<0.01	<0.01	0.4	
WB1	Water	15/07/2021		<0.01	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.00005	<0.001	<0.001	<0.001	<0.1	<0.00005	<0.001	<0.01	<0.01	0.5	

FIGURE

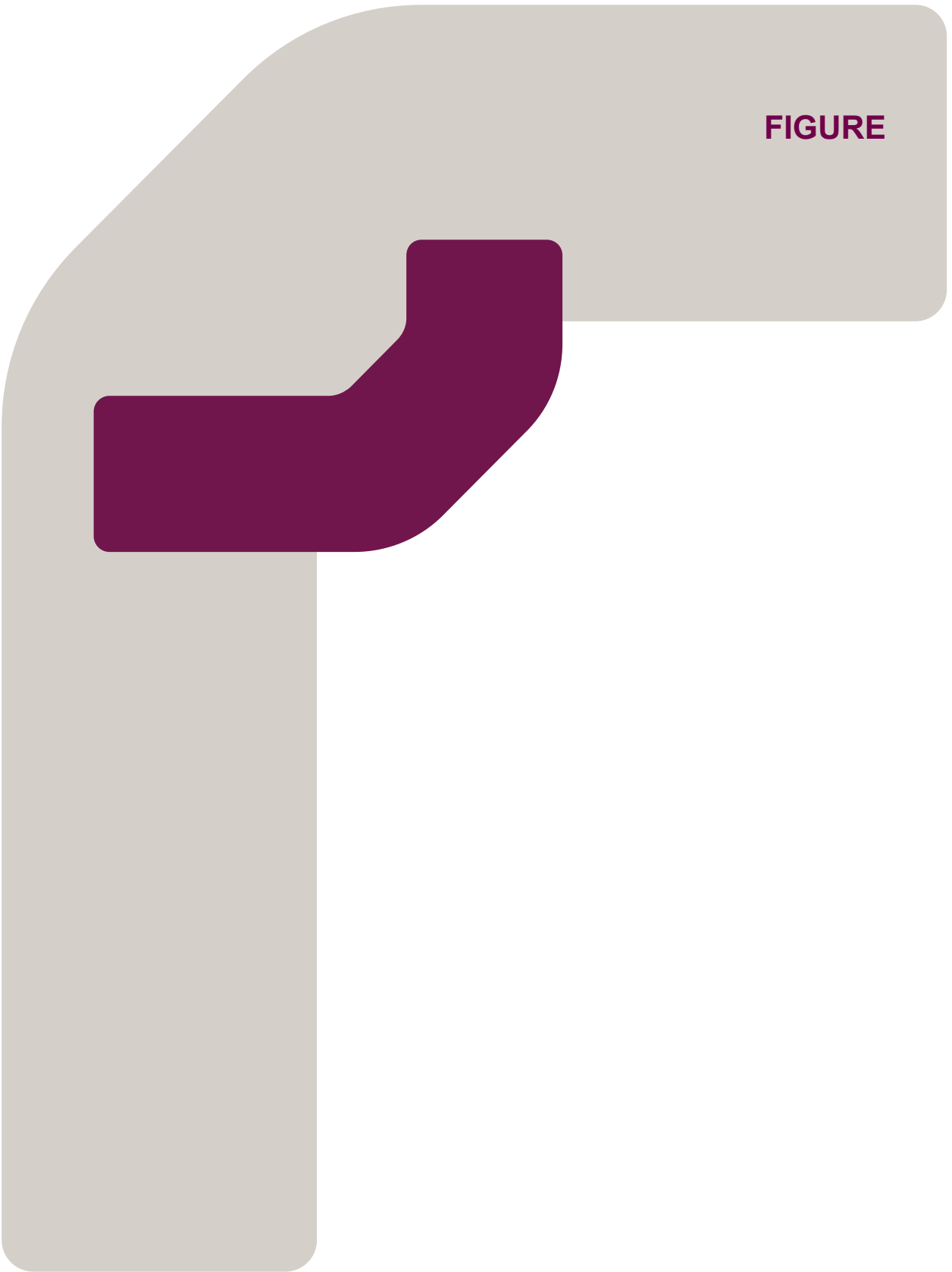
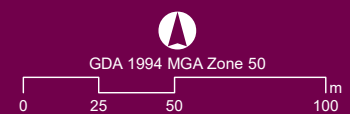





Figure A
Swan River crossing
Water quality sampling locations

Document Path: G:\Jobs\C_Jobs\C20078 - MRWA SR Bridge\Figures C20078-004\C20078-004_G_001_Fig A Proposed WQ Sampling_200629.mxd



Job Number: C20078-004
 Doc Number: 001
 Date: 29.06.20
 Scale: 1:2,500 @ A3
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Appendix A

DBCA Approval

2020/1928
PERMIT P12652

Pursuant to Part 4 (Regulation 29) of the Swan and Canning Rivers Management Regulations 2007, this is to certify that a permit is issued to the person(s) or organisation described hereunder as permit holder and that person(s) or organisation is permitted to carry out the authorised works, acts or activities for the duration specified, subject to the conditions listed below.

Permit holder: Authorised works, acts or activities: Location of works, acts or activities: Approval date: Expiry date: **CONDITIONS**

1. The applicant shall notify the Department of Biodiversity, Conservation and Attractions in writing not less than three (3) days prior to the commencement of works (see **Advice Note 1**).
2. The applicant shall ensure that all contractors and personnel involved in the investigations approved by the Department of Biodiversity, Conservation and Attractions are familiar with the conditions and requirements of this approval at all times.
3. The works shall take place in accordance with the methodologies provided in the *Swan River Crossings Project-Environmental (in-river) Surveys September 2020 V6.0*, unless modified by a condition of this approval.
4. The results of the benthic habitat surveys, once collated, shall be provided to the Department of Biodiversity, Conservation and Attractions (see **Advice Note 1**).
5. Further to **Condition 4**, the applicant shall undertake any necessary additional sampling and/or modify the scientific investigation methodologies as required by the Department of Biodiversity, Conservation and Attractions on review of the results of the benthic habitat surveys and deduced potential impacts to known benthic habitat and communities.
6. The applicant shall ensure that all equipment is visually inspected for any traces of aquatic organisms and shall remove the organisms prior to the equipment entering the Swan Canning Development Control Area.
7. The applicant shall monitor all works and ensure that appropriate measures are implemented to contain turbidity and prevent sediment plumes spreading and shall have a silt curtain readily available to deploy in order to contain any turbidity and sediment plumes that are uncontrolled or move beyond the immediate area of works (see **Advice Note 2**).
8. Water-based activities shall cease if a dolphin comes within 50 metres of any water vessel involved in the approved activities and shall not recommence until any dolphin has moved away more than 200 metres or has not been observed for 20 minutes.
9. Any refuelling shall take place outside of the Swan Canning Development Control Area or at a licensed refuelling facility.



2020/1928 PERMIT P12652

10. A spill kit shall be maintained on all vessels and shall be utilised to contain and clean up any spills that occur.
11. The applicant shall take all precautions to ensure no damage to the foreshore, riverbank or waterway (including infrastructure and vegetation) occurs as a result of the works. Should any inadvertent damage occur, the applicant is required to notify the Department of Biodiversity, Conservation and Attractions within 48 hours of that damage occurring (see **Advice Note 2**).
12. The applicant shall rectify at its expense any damage to the foreshore, riverbank or waterway (including infrastructure and vegetation) that occurs as a result of the works.
13. Within 24 hours of the completion of the activities, the applicant shall remove all waste materials, equipment and machinery.
14. An electronic copy of the report, addressing the findings of the scientific investigations approved under this permit shall be forwarded to the Department of Biodiversity, Conservation and Attractions prior to the expiration of this permit (see **Advice Note 1**).

ADVICE TO APPLICANT


1. Notifications and information can be emailed to rivers.planning@dbca.wa.gov.au.
2. In the event of spills, waste materials impacting the river or turbidity or sediment plumes, the Department of Biodiversity, Conservation and Attractions' Duty Officer (Riverpark) can be contacted on 9278 0981 (24 hrs) or Pollution Response Officer (Marine) on 9480 9924 (24 hrs).
3. The Department of Transport (DoT) Navigational Safety advises the applicant that:
 - Main Roads Western Australia (MRWA) and/or its contractors are to develop a communication plan with Commercial Ferry Operators and are to consult with commercial operators to gain comment and support for the Vessel Management Plan [Regarding 4.2 Legislative and Other Provisions (page 13 of the Vessel Management Plan): Should also include the '*Western Australian Marine Act 1982*' and the '*Marine Safety (Domestic Commercial Vessel) National Law Act 2012*'];
 - MRWA and/or its contractors are to monitor VHF Channel 16 during operating hours;
 - The works area and any hazards should be marked with yellow special marker buoys, approximately 1 metre in height equipped with flashing yellow lights;
 - All vessels taking part in the works must display shapes and lights in accordance with the Prevention of Collisions at Sea Regulations 1983 at all times;
 - Should diving operations be conducted between the Fremantle Rail Bridge and Fremantle Traffic Bridge, a closure of the respective navigation span will be required;
 - Navigational channels are to remain open wherever possible and only one navigation span is to be impeded at any one time;
 - Any anchor points which encroach the channel should be marked;
 - A Temporary Notice to Mariners (TNTM) must be issued by DoT outlining the scope of the works, the works area, navigational marking (lighting) and dates of the works, prior to commencement. MRWA and/or its contractors are to provide notification of the works to DoT a minimum of 21 days prior to the works commencing to enable a TNTM to be published, by email to: navigational.safety@transport.wa.gov.au;
 - MRWA and/or its contractors are to provide sufficient notification of any ad hoc day closures of navigational channels so that a TNTM can be published to alert mariners; and



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- MRWA and/or its contractors are to seek approval from Fremantle Ports Authority for any works to the west of the Fremantle Traffic and Rail Bridges.
4. The applicant is advised that the proposed works are located in a high to moderate and moderate to low acid sulphate soils risk area. The Acid Sulfate Soils Guideline Series for guidance on the identification, assessment and management of acid sulphate soils in Western Australia is available from the Department of Water and Environmental Regulation website at www.dwer.wa.gov.au. If any acid sulfate soils are exposed during the works the Department of Water and Environmental Regulation should be contacted for further advice.
 5. The applicant is advised that this approval does not negate the need to obtain any other approval from relevant agencies, or from the Department of Biodiversity, Conservation and Attractions.

PERMIT APPROVED

Signed:  Date: 02/10/20

Jacey Mills
Manager, Statutory Assessments
As delegate of CEO
Under Section 38 of the SCRM Act 2006

Appendix B

Laboratory reports



CERTIFICATE OF ANALYSIS 265428

Client Details

Client	RPS Australia West Pty Ltd
Attention	Zac Langtry
Address	Level 2, 27-31 Troode St, WEST PERTH, WA, 6005

Sample Details

Your Reference	<u>EEC20092.002</u>
Number of Samples	13 Water
Date samples received	15/07/2021
Date completed instructions received	15/07/2021
Location	Fremantle Port

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	29/07/2021
Date of Issue	28/07/2021

NATA Accreditation Number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By

Heram Halim, Operations Manager
Lien Tang, Assistant Operations Manager
Travis Carey, Organics - Team Leader

Authorised By

Michael Kubiak, Laboratory Manager

Miscellaneous Inorganics							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date prepared	-		16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Date analysed	-		16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Total Dissolved Solids (grav)	mg/L	5	30,000	30,000	32,000	31,000	28,000
Total Suspended Solids	mg/L	5	10	11	6	13	43
Turbidity	NTU	0.1	1.5	0.9	0.8	1.7	1.6
Dissolved Organic Carbon	mg/L	1	3	3	3	3	3
Acidity as CaCO ₃	mg/L	5	9	8	8	8	7
Sulphide in water*	mg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoride	mg/L	0.1	<5	<5	<5	<5	<5

Miscellaneous Inorganics							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date prepared	-		16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Date analysed	-		16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Total Dissolved Solids (grav)	mg/L	5	29,000	28,000	31,000	29,000	27,000
Total Suspended Solids	mg/L	5	12	20	8	18	14
Turbidity	NTU	0.1	1.3	1.0	1.4	1.4	1.1
Dissolved Organic Carbon	mg/L	1	3	3	3	3	3
Acidity as CaCO ₃	mg/L	5	8	8	9	9	9
Sulphide in water*	mg/L	0.5	<0.5	0.5	<0.5	<0.5	<0.5
Fluoride	mg/L	0.1	<5	<5	<5	<5	<5

Miscellaneous Inorganics				
Our Reference			265428-11	265428-12
Your Reference	UNITS	PQL	WB1	WR1
Date Sampled			15/07/2021	15/07/2021
Type of sample			Water	Water
Date prepared	-		16/07/2021	16/07/2021
Date analysed	-		16/07/2021	16/07/2021
Turbidity	NTU	0.1	0.5	1.4

Ionic Balance							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date prepared	-		15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Date analysed	-		15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Calcium - Dissolved	mg/L	0.5	310	270	320	320	310
Potassium - Dissolved	mg/L	0.5	160	140	150	150	140
Magnesium - Dissolved	mg/L	0.5	980	850	1,000	1,000	980
Sodium - Dissolved	mg/L	0.5	8,600	8,200	8,800	8,700	8,000
Bicarbonate HCO ₃ as CaCO ₃	mg/L	5	120	120	120	120	120
Carbonate CO ₃ ²⁻ as CaCO ₃	mg/L	5	<5	<5	<5	<5	<5
Hydroxide OH ⁻ as CaCO ₃	mg/L	5	<5	<5	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	5	120	120	120	120	120
Chloride	mg/L	1	16,000	16,000	17,000	17,000	17,000
Sulphate	mg/L	1	2,200	2,300	2,300	2,300	2,300
Ionic Balance	%		-3.1	-7.1	-3.9	-4.6	-7.2
Hardness as CaCO ₃	mg/L	3	4,800	4,200	4,900	5,000	4,800

Ionic Balance							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date prepared	-		15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Date analysed	-		15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Calcium - Dissolved	mg/L	0.5	320	320	340	280	300
Potassium - Dissolved	mg/L	0.5	140	140	140	130	130
Magnesium - Dissolved	mg/L	0.5	1,000	1,000	1,100	900	920
Sodium - Dissolved	mg/L	0.5	8,600	9,100	8,400	8,300	8,200
Bicarbonate HCO ₃ as CaCO ₃	mg/L	5	120	120	120	120	120
Carbonate CO ₃ ²⁻ as CaCO ₃	mg/L	5	<5	<5	<5	<5	<5
Hydroxide OH ⁻ as CaCO ₃	mg/L	5	<5	<5	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	5	120	120	120	120	120
Chloride	mg/L	1	17,000	17,000	17,000	17,000	16,000
Sulphate	mg/L	1	2,300	2,300	2,300	2,300	2,200
Ionic Balance	%		-4.3	-2.2	-4.6	-7.5	-6.1
Hardness as CaCO ₃	mg/L	3	5,000	4,900	5,200	4,400	4,500

Nutrients in Water							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date prepared	-		16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Date analysed	-		16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Total Nitrogen	mg/L	0.1	0.4	0.4	0.4	0.4	0.4
NOx as N	mg/L	0.005	0.055	0.057	0.075	0.064	0.059
Ammonia as N	mg/L	0.005	0.047	0.052	0.052	0.048	0.045
Total Phosphorus	mg/L	0.01	0.03	0.04	0.03	0.03	0.04
Phosphate as P	mg/L	0.005	0.010	0.010	0.011	0.010	0.010

Nutrients in Water							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date prepared	-		16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Date analysed	-		16/07/2021	16/07/2021	16/07/2021	16/07/2021	16/07/2021
Total Nitrogen	mg/L	0.1	0.4	0.4	0.4	0.4	0.4
NOx as N	mg/L	0.005	0.056	0.056	0.061	0.057	0.058
Ammonia as N	mg/L	0.005	0.045	0.047	0.048	0.055	0.049
Total Phosphorus	mg/L	0.01	0.03	0.03	0.03	0.04	0.04
Phosphate as P	mg/L	0.005	0.01	0.009	0.009	0.011	0.010

Dissolved Metals in Water							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date prepared	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Date analysed	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Silver-Dissolved Ultra Low	mg/L	0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Aluminium-Dissolved	mg/L	0.01	0.03	0.03	0.02	0.03	0.03
Arsenic-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium-Dissolved	mg/L	0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Cobalt-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Copper-Dissolved	mg/L	0.001	0.003	0.003	0.002	0.002	0.002
Iron-Dissolved	mg/L	0.01	0.04	0.04	0.03	0.03	<0.02
Mercury-Dissolved	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Manganese-Dissolved	mg/L	0.005	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum-Dissolved	mg/L	0.001	0.01	0.011	0.010	0.010	0.01
Nickel-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Lead-Dissolved	mg/L	0.001	0.003	<0.002	<0.002	<0.002	<0.002
Antimony-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Selenium-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc-Dissolved	mg/L	0.001	0.009	0.01	0.015	0.021	0.009
Silicon - Dissolved	mg/L	0.1	0.8	1	1	0.9	1

Dissolved Metals in Water							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date prepared	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Date analysed	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Silver-Dissolved Ultra Low	mg/L	0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Aluminium-Dissolved	mg/L	0.01	<0.02	<0.02	<0.02	0.05	0.05
Arsenic-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium-Dissolved	mg/L	0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Cobalt-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Copper-Dissolved	mg/L	0.001	0.002	0.002	0.002	<0.002	0.003
Iron-Dissolved	mg/L	0.01	<0.02	<0.02	<0.02	<0.02	0.06
Mercury-Dissolved	mg/L	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Manganese-Dissolved	mg/L	0.005	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum-Dissolved	mg/L	0.001	0.0099	0.010	0.010	0.0099	0.01
Nickel-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	0.003
Lead-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	0.003	<0.002
Antimony-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Selenium-Dissolved	mg/L	0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc-Dissolved	mg/L	0.001	0.008	0.008	0.011	0.016	0.023
Silicon - Dissolved	mg/L	0.1	0.9	0.9	0.8	0.9	0.9

Dissolved Metals in Water				
Our Reference			265428-11	265428-12
Your Reference	UNITS	PQL	WB1	WR1
Date Sampled			15/07/2021	15/07/2021
Type of sample			Water	Water
Date prepared	-		23/07/2021	23/07/2021
Date analysed	-		23/07/2021	23/07/2021
Silver-Dissolved Ultra Low	mg/L	0.00005	<0.00005	<0.00005
Aluminium-Dissolved	mg/L	0.01	<0.01	<0.01
Arsenic-Dissolved	mg/L	0.001	<0.001	<0.001
Cadmium-Dissolved	mg/L	0.0001	<0.0001	<0.0001
Cobalt-Dissolved	mg/L	0.001	<0.001	<0.001
Chromium-Dissolved	mg/L	0.001	<0.001	<0.001
Copper-Dissolved	mg/L	0.001	<0.001	<0.001
Iron-Dissolved	mg/L	0.01	<0.01	<0.01
Mercury-Dissolved	mg/L	0.00005	<0.00005	<0.00005
Manganese-Dissolved	mg/L	0.005	<0.005	<0.005
Molybdenum-Dissolved	mg/L	0.001	<0.001	<0.001
Nickel-Dissolved	mg/L	0.001	<0.001	<0.001
Lead-Dissolved	mg/L	0.001	<0.001	<0.001
Antimony-Dissolved	mg/L	0.001	<0.001	<0.001
Selenium-Dissolved	mg/L	0.001	<0.001	<0.001
Zinc-Dissolved	mg/L	0.001	<0.001	0.005
Silicon - Dissolved	mg/L	0.1	<0.1	<0.1

Total Metals in water							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date digested	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Date analysed	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Aluminium-Total	mg/L	0.01	0.03	0.02	<0.02	0.02	0.04
Iron-Total	mg/L	0.01	0.05	0.03	0.03	0.03	0.07

Total Metals in water							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date digested	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Date analysed	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Aluminium-Total	mg/L	0.01	<0.02	0.03	0.02	<0.02	<0.02
Iron-Total	mg/L	0.01	0.02	0.04	0.03	0.02	0.02

Total Metals in water				
Our Reference			265428-11	265428-12
Your Reference	UNITS	PQL	WB1	WR1
Date Sampled			15/07/2021	15/07/2021
Type of sample			Water	Water
Date digested	-		23/07/2021	23/07/2021
Date analysed	-		23/07/2021	23/07/2021
Aluminium-Total	mg/L	0.01	<0.01	<0.01
Iron-Total	mg/L	0.01	<0.01	<0.01

Chlorophyll a & Phaeophytin a							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Chlorophyll a	µg/L	0.1	0.6	0.8	0.5	0.4	0.9
Phaeophytin a	µg/L	0.2	0.5	0.5	0.5	0.7	0.9

Chlorophyll a & Phaeophytin a							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Chlorophyll a	µg/L	0.1	0.6	0.8	0.6	1.2	1.1
Phaeophytin a	µg/L	0.2	0.6	0.7	0.7	4.5	0.9

vTRH(C6-C10)/MBTEXN in water							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date analysed	-		20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
TRH C ₆ - C ₉	µg/L	10	<10	<10	<10	<10	<10
TRH C ₆ - C ₁₀	µg/L	10	<10	<10	<10	<10	<10
TRH C ₆ -C ₁₀ less BTEX (F1)	µg/L	10	<10	<10	<10	<10	<10
MTBE	µg/L	1	<1	<1	<1	<1	<1
Benzene	µg/L	1	<1	<1	<1	<1	<1
Toluene	µg/L	1	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	1	<1	<1	<1	<1	<1
m+p-xylene	µg/L	2	<2	<2	<2	<2	<2
o-xylene	µg/L	1	<1	<1	<1	<1	<1
Naphthalene	µg/L	1	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%		116	114	113	113	113
Surrogate toluene-d8	%		92	91	92	93	93
Surrogate 4-BFB	%		101	100	101	100	101

vTRH(C6-C10)/MBTEXN in water							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date analysed	-		20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
TRH C ₆ - C ₉	µg/L	10	<10	<10	<10	<10	<10
TRH C ₆ - C ₁₀	µg/L	10	<10	<10	<10	<10	<10
TRH C ₆ -C ₁₀ less BTEX (F1)	µg/L	10	<10	<10	<10	<10	<10
MTBE	µg/L	1	<1	<1	<1	<1	<1
Benzene	µg/L	1	<1	<1	<1	<1	<1
Toluene	µg/L	1	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	1	<1	<1	<1	<1	<1
m+p-xylene	µg/L	2	<2	<2	<2	<2	<2
o-xylene	µg/L	1	<1	<1	<1	<1	<1
Naphthalene	µg/L	1	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%		113	113	109	110	110
Surrogate toluene-d8	%		92	95	94	94	93
Surrogate 4-BFB	%		101	101	100	98	101

vTRH(C6-C10)/MBTEXN in water					
Our Reference			265428-11	265428-12	265428-13
Your Reference	UNITS	PQL	WB1	WR1	WTB1
Date Sampled			15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water
Date analysed	-		20/07/2021	20/07/2021	20/07/2021
TRH C ₆ - C ₉	µg/L	10	<10	<10	<10
TRH C ₆ - C ₁₀	µg/L	10	<10	<10	<10
TRH C ₆ -C ₁₀ less BTEX (F1)	µg/L	10	<10	<10	<10
MTBE	µg/L	1	<1	<1	<1
Benzene	µg/L	1	<1	<1	<1
Toluene	µg/L	1	<1	<1	<1
Ethylbenzene	µg/L	1	<1	<1	<1
m+p-xylene	µg/L	2	<2	<2	<2
o-xylene	µg/L	1	<1	<1	<1
Naphthalene	µg/L	1	<1	<1	<1
Surrogate Dibromofluoromethane	%		110	109	110
Surrogate toluene-d8	%		95	95	95
Surrogate 4-BFB	%		99	99	97

svTRH(C10-C40) in water							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date extracted	-		19/07/2021	19/07/2021	19/07/2021	19/07/2021	19/07/2021
Date analysed	-		20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
TRH C ₁₀ - C ₁₄	µg/L	50	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	µg/L	100	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	µg/L	100	<100	<100	<100	<100	<100
TRH >C ₁₀ - C ₁₆	µg/L	50	<50	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆ less N (F2)	µg/L	50	<50	<50	<50	<50	<50
TRH >C ₁₆ - C ₃₄	µg/L	100	<100	<100	<100	<100	<100
TRH >C ₃₄ - C ₄₀	µg/L	100	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%		82	87	86	86	83

svTRH(C10-C40) in water							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date extracted	-		19/07/2021	19/07/2021	19/07/2021	19/07/2021	19/07/2021
Date analysed	-		20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
TRH C ₁₀ - C ₁₄	µg/L	50	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	µg/L	100	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	µg/L	100	<100	<100	<100	<100	<100
TRH >C ₁₀ - C ₁₆	µg/L	50	<50	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆ less N (F2)	µg/L	50	<50	<50	<50	<50	<50
TRH >C ₁₆ - C ₃₄	µg/L	100	<100	<100	<100	<100	<100
TRH >C ₃₄ - C ₄₀	µg/L	100	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%		86	90	101	87	85

svTRH(C10-C40) in water				
Our Reference			265428-11	265428-12
Your Reference	UNITS	PQL	WB1	WR1
Date Sampled			15/07/2021	15/07/2021
Type of sample			Water	Water
Date extracted	-		19/07/2021	19/07/2021
Date analysed	-		20/07/2021	20/07/2021
TRH C ₁₀ - C ₁₄	µg/L	50	<50	<50
TRH C ₁₅ - C ₂₈	µg/L	100	<100	<100
TRH C ₂₉ - C ₃₆	µg/L	100	<100	<100
TRH >C ₁₀ - C ₁₆	µg/L	50	<50	<50
TRH >C ₁₀ -C ₁₆ less N (F2)	µg/L	50	<50	<50
TRH >C ₁₆ - C ₃₄	µg/L	100	<100	<100
TRH >C ₃₄ - C ₄₀	µg/L	100	<100	<100
Surrogate o-Terphenyl	%		85	87

PAHs in Water							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date extracted	-		20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
Date analysed	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Naphthalene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-D ₁₄	%		132	113	118	119	123

PAHs in Water							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date extracted	-		20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
Date analysed	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Naphthalene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-D ₁₄	%		111	113	129	114	116

PAHs in Water				
Our Reference			265428-11	265428-12
Your Reference	UNITS	PQL	WB1	WR1
Date Sampled			15/07/2021	15/07/2021
Type of sample			Water	Water
Date extracted	-		20/07/2021	20/07/2021
Date analysed	-		23/07/2021	23/07/2021
Naphthalene	µg/L	0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	0.5	<0.5	<0.5
Total +ve PAH's	µg/L	0.1	<0.1	<0.1
Surrogate p-Terphenyl-D ₁₄	%		135	129

Low Level OCP in water							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date extracted	-		20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
Date analysed	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Hexachlorobenzene (HCB)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lindane (g-BHC)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
b-BHC	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
g-Chlordane	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
a-Chlordane	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulfan	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
pp-DDE	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pp-DDD	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulfan	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
pp-DDT	µg/L	0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Endosulfan Sulphate	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Methoxychlor	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate 2-chlorophenol-d4	%		124	105	114	118	118

Low Level OCP in water							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date extracted	-		20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
Date analysed	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Hexachlorobenzene (HCB)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
a-BHC	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lindane (g-BHC)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
b-BHC	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
d-BHC	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
g-Chlordane	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
a-Chlordane	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
a-Endosulfan	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
pp-DDE	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pp-DDD	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
b-Endosulfan	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
pp-DDT	µg/L	0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Endosulfan Sulphate	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Methoxychlor	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate 2-chlorophenol-d4	%		107	110	123	110	116

Low Level OCP in water				
Our Reference			265428-11	265428-12
Your Reference	UNITS	PQL	WB1	WR1
Date Sampled			15/07/2021	15/07/2021
Type of sample			Water	Water
Date extracted	-		20/07/2021	20/07/2021
Date analysed	-		23/07/2021	23/07/2021
Hexachlorobenzene (HCB)	µg/L	0.01	<0.01	<0.01
a-BHC	µg/L	0.05	<0.05	<0.05
Lindane (g-BHC)	µg/L	0.05	<0.05	<0.05
b-BHC	µg/L	0.05	<0.05	<0.05
Heptachlor	µg/L	0.01	<0.01	<0.01
d-BHC	µg/L	0.05	<0.05	<0.05
Aldrin	µg/L	0.01	<0.01	<0.01
Heptachlor Epoxide	µg/L	0.01	<0.01	<0.01
g-Chlordane	µg/L	0.01	<0.01	<0.01
a-Chlordane	µg/L	0.01	<0.01	<0.01
a-Endosulfan	µg/L	0.02	<0.02	<0.02
pp-DDE	µg/L	0.01	<0.01	<0.01
Dieldrin	µg/L	0.01	<0.01	<0.01
Endrin	µg/L	0.01	<0.01	<0.01
pp-DDD	µg/L	0.01	<0.01	<0.01
b-Endosulfan	µg/L	0.02	<0.02	<0.02
pp-DDT	µg/L	0.006	<0.006	<0.006
Endosulfan Sulphate	µg/L	0.02	<0.02	<0.02
Methoxychlor	µg/L	0.02	<0.02	<0.02
Surrogate 2-chlorophenol-d4	%		126	119

PFAS in water TRACE Extended							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date prepared	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Date analysed	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Perfluorobutanesulfonic acid	µg/L	0.0004	0.0006	0.0006	0.0005	0.0005	0.0009
Perfluoropentanesulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorohexanesulfonic acid	µg/L	0.0002	0.0026	0.0024	0.0021	0.0021	0.0035
Perfluoroheptanesulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorooctanesulfonate PFOS	µg/L	0.0002	0.0046	0.0045	0.0038	0.0038	0.0056
Perfluorodecanesulfonic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid	µg/L	0.0004	0.002	0.002	0.001	0.001	0.002
Perfluoroheptanoic acid	µg/L	0.0004	0.0008	0.0008	0.0008	0.0007	0.0008
Perfluorooctanoic acid PFOA	µg/L	0.0002	0.0007	0.0009	0.0008	0.0007	0.0008
Perfluorononanoic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorodecanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid	µg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4:2 FTS	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 FTS	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
8:2 FTS	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
10:2 FTS	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctanesulfon -amide	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
N-Me perfluorooctanesulfonamid -oethanol	µg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
N-Et perfluorooctanesulfonamid -oethanol	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Surrogate ¹³ C ₈ PFOS	%		102	99	96	103	101
Surrogate ¹³ C ₂ PFOA	%		102	101	111	107	106
Extracted ISTD ¹³ C ₃ PFBS	%		82	85	95	93	88
Extracted ISTD ¹⁸ O ₂ PFHxS	%		78	80	89	89	82
Extracted ISTD ¹³ C ₄ PFOS	%		62	63	76	70	64
Extracted ISTD ¹³ C ₄ PFBA	%		#	#	#	#	#

PFAS in water TRACE Extended							
Our Reference			265428-1	265428-2	265428-3	265428-4	265428-5
Your Reference	UNITS	PQL	WS1-S	WS1-D	WS2-S	WS2-D	WS3-S
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Extracted ISTD ¹³ C ₃ PFPeA	%		46	49	56	56	55
Extracted ISTD ¹³ C ₂ PFHxA	%		64	62	68	67	68
Extracted ISTD ¹³ C ₄ PFHpA	%		86	86	98	99	96
Extracted ISTD ¹³ C ₄ PFOA	%		83	82	89	88	85
Extracted ISTD ¹³ C ₅ PFNA	%		84	87	99	95	91
Extracted ISTD ¹³ C ₂ PFDA	%		79	81	93	87	82
Extracted ISTD ¹³ C ₂ PFUnDA	%		86	84	99	87	88
Extracted ISTD ¹³ C ₂ PFDoDA	%		83	75	95	80	88
Extracted ISTD ¹³ C ₂ PFTeDA	%		74	77	128	105	109
Extracted ISTD ¹³ C ₂ 4:2FTS	%		124	127	132	149	136
Extracted ISTD ¹³ C ₂ 6:2FTS	%		121	113	127	132	126
Extracted ISTD ¹³ C ₂ 8:2FTS	%		98	103	121	126	112
Extracted ISTD ¹³ C ₈ FOSA	%		69	68	82	80	78
Extracted ISTD d ₃ N MeFOSA	%		45	57	51	59	56
Extracted ISTD d ₅ N EtFOSA	%		47	56	50	61	54
Extracted ISTD d ₇ N MeFOSE	%		53	58	65	66	60
Extracted ISTD d ₉ N EtFOSE	%		58	62	66	68	61
Extracted ISTD d ₃ N MeFOSAA	%		96	89	105	97	97
Extracted ISTD d ₅ N EtFOSAA	%		125	116	147	135	136
Total Positive PFHxS & PFOS	µg/L	0.0002	0.0072	0.0069	0.0059	0.0059	0.0091
Total Positive PFOS & PFOA	µg/L	0.0002	0.0053	0.0054	0.0046	0.0045	0.0064
Total Positive PFAS	µg/L	0.0002	0.011	0.011	0.0090	0.0088	0.014

PFAS in water TRACE Extended							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Date prepared	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Date analysed	-		23/07/2021	23/07/2021	23/07/2021	23/07/2021	23/07/2021
Perfluorobutanesulfonic acid	µg/L	0.0004	0.0005	0.0005	0.0006	0.0005	0.001
Perfluoropentanesulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorohexanesulfonic acid	µg/L	0.0002	0.0020	0.0020	0.0020	0.0020	0.0026
Perfluoroheptanesulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorooctanesulfonate PFOS	µg/L	0.0002	0.0039	0.0039	0.0040	0.0034	0.0051
Perfluorodecanesulfonic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid	µg/L	0.0004	0.001	0.001	0.001	0.001	0.001
Perfluoroheptanoic acid	µg/L	0.0004	0.0006	0.0007	0.0008	0.0007	0.0009
Perfluorooctanoic acid PFOA	µg/L	0.0002	0.0007	0.0007	0.0008	0.0007	0.0009
Perfluorononanoic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorodecanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid	µg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4:2 FTS	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 FTS	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
8:2 FTS	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
10:2 FTS	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctanesulfon -amide	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
N-Me perfluorooctanesulfonamid -oethanol	µg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
N-Et perfluorooctanesulfonamid -oethanol	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Surrogate ¹³ C ₈ PFOS	%		105	103	102	102	100
Surrogate ¹³ C ₂ PFOA	%		106	108	113	113	111
Extracted ISTD ¹³ C ₃ PFBS	%		94	89	94	93	89
Extracted ISTD ¹⁸ O ₂ PFHxS	%		85	85	89	86	83
Extracted ISTD ¹³ C ₄ PFOS	%		71	65	67	67	68
Extracted ISTD ¹³ C ₄ PFBA	%		#	#	#	#	#

PFAS in water TRACE Extended							
Our Reference			265428-6	265428-7	265428-8	265428-9	265428-10
Your Reference	UNITS	PQL	WS4-S	WS4-D	WS5-S	WS5-D	WZ1
Date Sampled			15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water	Water	Water
Extracted ISTD ¹³ C ₃ PFPeA	%		53	54	55	55	50
Extracted ISTD ¹³ C ₂ PFHxA	%		68	66	66	69	60
Extracted ISTD ¹³ C ₄ PFHpA	%		101	94	98	98	91
Extracted ISTD ¹³ C ₄ PFOA	%		89	83	81	83	81
Extracted ISTD ¹³ C ₅ PFNA	%		100	90	97	97	92
Extracted ISTD ¹³ C ₂ PFDA	%		97	82	94	87	85
Extracted ISTD ¹³ C ₂ PFUnDA	%		98	85	100	96	90
Extracted ISTD ¹³ C ₂ PFDoDA	%		94	83	98	90	83
Extracted ISTD ¹³ C ₂ PFTeDA	%		121	112	122	119	139
Extracted ISTD ¹³ C ₂ 4:2FTS	%		128	131	140	138	125
Extracted ISTD ¹³ C ₂ 6:2FTS	%		126	117	124	128	116
Extracted ISTD ¹³ C ₂ 8:2FTS	%		129	108	129	119	115
Extracted ISTD ¹³ C ₈ FOSA	%		85	75	85	78	76
Extracted ISTD d ₃ N MeFOSA	%		52	48	62	49	46
Extracted ISTD d ₅ N EtFOSA	%		51	49	60	47	45
Extracted ISTD d ₇ N MeFOSE	%		60	57	68	55	56
Extracted ISTD d ₉ N EtFOSE	%		63	59	70	59	58
Extracted ISTD d ₃ N MeFOSAA	%		110	89	107	105	83
Extracted ISTD d ₅ N EtFOSAA	%		163	128	151	146	140
Total Positive PFHxS & PFOS	µg/L	0.0002	0.0059	0.0059	0.0060	0.0054	0.0077
Total Positive PFOS & PFOA	µg/L	0.0002	0.0046	0.0046	0.0048	0.0041	0.0060
Total Positive PFAS	µg/L	0.0002	0.0087	0.0088	0.0092	0.0083	0.012

PFAS in water TRACE Extended					
Our Reference			265428-11	265428-12	265428-13
Your Reference	UNITS	PQL	WB1	WR1	WTB1
Date Sampled			15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water
Date prepared	-		23/07/2021	23/07/2021	23/07/2021
Date analysed	-		23/07/2021	23/07/2021	23/07/2021
Perfluorobutanesulfonic acid	µg/L	0.0004	<0.0004	<0.0004	<0.0004
Perfluoropentanesulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001
Perfluorohexanesulfonic acid	µg/L	0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanesulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001
Perfluorooctanesulfonate PFOS	µg/L	0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanesulfonic acid	µg/L	0.002	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid	µg/L	0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid	µg/L	0.0004	<0.0004	<0.0004	<0.0004
Perfluoroheptanoic acid	µg/L	0.0004	<0.0004	<0.0004	<0.0004
Perfluorooctanoic acid PFOA	µg/L	0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid	µg/L	0.001	<0.001	<0.001	<0.001
Perfluorodecanoic acid	µg/L	0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid	µg/L	0.005	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	0.05	<0.05	<0.05	<0.05
4:2 FTS	µg/L	0.001	<0.001	<0.001	<0.001
6:2 FTS	µg/L	0.0004	<0.0004	<0.0004	<0.0004
8:2 FTS	µg/L	0.0004	<0.0004	<0.0004	<0.0004
10:2 FTS	µg/L	0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	0.01	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctanesulfonamide	µg/L	0.01	<0.01	<0.01	<0.01
N-Me perfluorooctanesulfonamide -oethanol	µg/L	0.005	<0.005	<0.005	<0.005
N-Et perfluorooctanesulfonamide -oethanol	µg/L	0.05	<0.05	<0.05	<0.05
MePerfluorooctanesulfonamide acetic acid	µg/L	0.002	<0.002	<0.002	<0.002
EtPerfluorooctanesulfonamide acetic acid	µg/L	0.002	<0.002	<0.002	<0.002
Surrogate ¹³ C ₈ PFOS	%		102	97	104
Surrogate ¹³ C ₂ PFOA	%		101	101	99
Extracted ISTD ¹³ C ₃ PFBS	%		98	99	91
Extracted ISTD ¹⁸ O ₂ PFHxS	%		90	96	85
Extracted ISTD ¹³ C ₄ PFOS	%		79	84	64
Extracted ISTD ¹³ C ₄ PFBA	%		109	107	102

PFAS in water TRACE Extended					
Our Reference			265428-11	265428-12	265428-13
Your Reference	UNITS	PQL	WB1	WR1	WTB1
Date Sampled			15/07/2021	15/07/2021	15/07/2021
Type of sample			Water	Water	Water
Extracted ISTD ¹³ C ₃ PFPeA	%		112	114	106
Extracted ISTD ¹³ C ₂ PFHxA	%		102	108	101
Extracted ISTD ¹³ C ₄ PFHpA	%		114	118	108
Extracted ISTD ¹³ C ₄ PFOA	%		102	108	98
Extracted ISTD ¹³ C ₅ PFNA	%		114	116	104
Extracted ISTD ¹³ C ₂ PFDA	%		97	104	84
Extracted ISTD ¹³ C ₂ PFUnDA	%		99	102	78
Extracted ISTD ¹³ C ₂ PFDoDA	%		85	95	56
Extracted ISTD ¹³ C ₂ PFTeDA	%		120	147	55
Extracted ISTD ¹³ C ₂ 4:2FTS	%		171	174	152
Extracted ISTD ¹³ C ₂ 6:2FTS	%		144	156	133
Extracted ISTD ¹³ C ₂ 8:2FTS	%		129	136	107
Extracted ISTD ¹³ C ₈ FOSA	%		78	88	75
Extracted ISTD d ₃ N MeFOSA	%		53	60	15
Extracted ISTD d ₅ N EtFOSA	%		50	60	12
Extracted ISTD d ₇ N MeFOSE	%		55	69	50
Extracted ISTD d ₉ N EtFOSE	%		54	68	42
Extracted ISTD d ₃ N MeFOSAA	%		96	110	94
Extracted ISTD d ₅ N EtFOSAA	%		126	141	105
Total Positive PFHxS & PFOS	µg/L	0.0002	<0.0002	<0.0002	<0.0002
Total Positive PFOS & PFOA	µg/L	0.0002	<0.0002	<0.0002	<0.0002
Total Positive PFAS	µg/L	0.0002	<0.0002	<0.0002	<0.0002

Method ID	Methodology Summary
Ext-058	Analysed by The Marine and Freshwater Research Laboratory, accreditation number 10603
INORG-005	Acidity - determined by titration based on APHA latest edition, Method 2310 B. Soils reported from a 1:5 water extract unless otherwise specified.
INORG-006	Alkalinity - determined titrimetrically based on APHA latest edition, Method 2320-B. Soils reported from a 1:5 water extract unless otherwise specified.
INORG-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180±10°C
INORG-019	Suspended Solids - determined gravimetrically by filtration of the sample. The solids are dried at 104±5°C
INORG-022	Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130 B.
INORG-040	Ion Balance Calculation: Cations in water by ICP-OES; Anions in water by IC; Alkalinity in water by Titration using APHA methods.
INORG-051	Determination of sulphide by titration and/or colourimetric determination. Note, the Sulphide is termed as Total Sulphide given any Sulphide contained in any sediment present may also included in the determination.
INORG-055	NOx - determined colourimetrically. Soils are analysed from a water extract.
INORG-057	Ammonia by colourimetric analysis based on APHA latest edition 4500-NH3 F.
INORG-060	Phosphate- determined colourimetrically. Soils are analysed from a water extract.
INORG-060	Total Phosphorus by colourimetric analysis based on APHA latest edition 4500-P J.
INORG-081	Anions - a range of anions are determined by Ion Chromatography based on APHA latest edition Method 4110-B. Soils and other sample types reported from a water extract unless otherwise specified (standard soil extract ratio 1:5).
INORG-110	Total Nitrogen by high temperature catalytic combustion with chemiluminescence detection. Dissolved/Total Carbon and Dissolved/Total Organic and Inorganic Carbon by high temperature catalytic combustion with NDIR
METALS-008	Hardness calculated from Calcium and Magnesium as per APHA latest edition 2340B.
METALS-020	Determination of various metals by ICP-AES.
METALS-021	Determination of Mercury by Cold Vapour AAS. For urine samples total Mercury is determined, however, mercury in urine is almost entirely in the inorganic form (CDC).
METALS-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM draft B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	<p>Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLP/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.</p> <p>Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

QUALITY CONTROL: Miscellaneous Inorganics				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	265428-2
Date prepared	-			16/07/2021	1	16/07/2021	16/07/2021		16/07/2021	16/07/2021
Date analysed	-			16/07/2021	1	16/07/2021	16/07/2021		16/07/2021	16/07/2021
Total Dissolved Solids (grav)	mg/L	5	INORG-018	<5	1	30000	30000	0	102	[NT]
Total Suspended Solids	mg/L	5	INORG-019	<5	1	10	11	10	90	[NT]
Turbidity	NTU	0.1	INORG-022	<0.1	1	1.5	[NT]		86	[NT]
Dissolved Organic Carbon	mg/L	1	INORG-110	<1	1	3	3	0	98	104
Acidity as CaCO ₃	mg/L	5	INORG-005	<5	1	9	9	0	103	[NT]
Sulphide in water*	mg/L	0.5	INORG-051	<0.5	1	<0.5	[NT]		86.92	[NT]
Fluoride	mg/L	0.1	INORG-081	<0.1	1	<5	<5	0	103	107

QUALITY CONTROL: Miscellaneous Inorganics				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	3	16/07/2021	16/07/2021		[NT]	[NT]
Date analysed	-			[NT]	3	16/07/2021	16/07/2021		[NT]	[NT]
Total Dissolved Solids (grav)	mg/L	5	INORG-018	[NT]	3	32000	[NT]		[NT]	[NT]
Total Suspended Solids	mg/L	5	INORG-019	[NT]	3	6	[NT]		[NT]	[NT]
Turbidity	NTU	0.1	INORG-022	[NT]	3	0.8	0.7	13	[NT]	[NT]
Dissolved Organic Carbon	mg/L	1	INORG-110	[NT]	3	3	[NT]		[NT]	[NT]
Acidity as CaCO ₃	mg/L	5	INORG-005	[NT]	3	8	[NT]		[NT]	[NT]
Sulphide in water*	mg/L	0.5	INORG-051	[NT]	3	<0.5	[NT]		[NT]	[NT]
Fluoride	mg/L	0.1	INORG-081	[NT]	3	<5	[NT]		[NT]	[NT]

Client Reference: EEC20092.002

QUALITY CONTROL: Ionic Balance					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	265428-2
Date prepared	-			15/07/2021	1	15/07/2021	15/07/2021		15/07/2021	15/07/2021
Date analysed	-			15/07/2021	1	15/07/2021	15/07/2021		15/07/2021	15/07/2021
Calcium - Dissolved	mg/L	0.5	METALS-020	<0.5	1	310	[NT]		103	[NT]
Potassium - Dissolved	mg/L	0.5	METALS-020	<0.5	1	160	[NT]		101	[NT]
Magnesium - Dissolved	mg/L	0.5	METALS-020	<0.5	1	980	[NT]		102	[NT]
Sodium - Dissolved	mg/L	0.5	METALS-020	<0.5	1	8600	[NT]		103	[NT]
Bicarbonate HCO ₃ as CaCO ₃	mg/L	5	INORG-006	<5	1	120	120	0	105	[NT]
Carbonate CO ₃ ²⁻ as CaCO ₃	mg/L	5	INORG-006	<5	1	<5	<5	0	105	[NT]
Total Alkalinity as CaCO ₃	mg/L	5	INORG-006	<5	1	120	120	0	105	[NT]
Chloride	mg/L	1	INORG-081	<1	1	16000	16000	0	101	95
Sulphate	mg/L	1	INORG-081	<1	1	2200	2300	4	96	110
Hardness as CaCO ₃	mg/L	3	METALS-008	<3	1	4800	[NT]		[NT]	[NT]

QUALITY CONTROL: Ionic Balance					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	3	15/07/2021	15/07/2021		[NT]	[NT]
Date analysed	-			[NT]	3	15/07/2021	15/07/2021		[NT]	[NT]
Calcium - Dissolved	mg/L	0.5	METALS-020	[NT]	3	320	330	3	[NT]	[NT]
Potassium - Dissolved	mg/L	0.5	METALS-020	[NT]	3	150	150	0	[NT]	[NT]
Magnesium - Dissolved	mg/L	0.5	METALS-020	[NT]	3	1000	1000	0	[NT]	[NT]
Sodium - Dissolved	mg/L	0.5	METALS-020	[NT]	3	8800	8300	6	[NT]	[NT]
Bicarbonate HCO ₃ as CaCO ₃	mg/L	5	INORG-006	[NT]	3	120	[NT]		[NT]	[NT]
Carbonate CO ₃ ²⁻ as CaCO ₃	mg/L	5	INORG-006	[NT]	3	<5	[NT]		[NT]	[NT]
Total Alkalinity as CaCO ₃	mg/L	5	INORG-006	[NT]	3	120	[NT]		[NT]	[NT]
Chloride	mg/L	1	INORG-081	[NT]	3	17000	[NT]		[NT]	[NT]
Sulphate	mg/L	1	INORG-081	[NT]	3	2300	[NT]		[NT]	[NT]
Hardness as CaCO ₃	mg/L	3	METALS-008	[NT]	3	4900	5100	4	[NT]	[NT]

QUALITY CONTROL: Nutrients in Water				Duplicate			Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	265428-2
Date prepared	-			16/07/2021	1	16/07/2021	16/07/2021		16/07/2021	16/07/2021
Date analysed	-			16/07/2021	1	16/07/2021	16/07/2021		16/07/2021	16/07/2021
Total Nitrogen	mg/L	0.1	INORG-110	<0.1	1	0.4	0.4	0	100	95
NOx as N	mg/L	0.005	INORG-055	<0.005	1	0.055	0.056	2	101	103
Ammonia as N	mg/L	0.005	INORG-057	<0.005	1	0.047	0.048	2	88	107
Total Phosphorus	mg/L	0.01	INORG-060	<0.01	1	0.03	0.04	29	110	123
Phosphate as P	mg/L	0.005	INORG-060	<0.005	1	0.010	0.01	0	111	119

Client Reference: EEC20092.002

QUALITY CONTROL: Dissolved Metals in Water				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	265428-2
Date prepared	-			23/07/2021	1	23/07/2021	23/07/2021		23/07/2021	23/07/2021
Date analysed	-			23/07/2021	1	23/07/2021	23/07/2021		23/07/2021	23/07/2021
Silver-Dissolved Ultra Low	mg/L	0.00005	METALS-022	<0.00005	1	<0.0001	<0.0001	0	98	86
Aluminium-Dissolved	mg/L	0.01	METALS-022	<0.01	1	0.03	0.02	40	102	102
Arsenic-Dissolved	mg/L	0.001	METALS-022	<0.001	1	<0.002	<0.002	0	103	101
Cadmium-Dissolved	mg/L	0.0001	METALS-022	<0.0001	1	<0.0002	<0.0002	0	95	100
Cobalt-Dissolved	mg/L	0.001	METALS-022	<0.001	1	<0.002	<0.002	0	102	93
Chromium-Dissolved	mg/L	0.001	METALS-022	<0.001	1	<0.002	<0.002	0	102	96
Copper-Dissolved	mg/L	0.001	METALS-022	<0.001	1	0.003	0.003	0	102	86
Iron-Dissolved	mg/L	0.01	METALS-022	<0.01	1	0.04	0.04	0	118	121
Mercury-Dissolved	mg/L	0.00005	METALS-021	<0.00005	1	<0.00005	[NT]		114	[NT]
Manganese-Dissolved	mg/L	0.005	METALS-022	<0.005	1	<0.01	<0.01	0	99	100
Molybdenum-Dissolved	mg/L	0.001	METALS-022	<0.001	1	0.01	0.01	0	98	107
Nickel-Dissolved	mg/L	0.001	METALS-022	<0.001	1	<0.002	<0.002	0	102	93
Lead-Dissolved	mg/L	0.001	METALS-022	<0.001	1	0.003	0.003	0	95	81
Antimony-Dissolved	mg/L	0.001	METALS-022	<0.001	1	<0.002	<0.002	0	97	76
Selenium-Dissolved	mg/L	0.001	METALS-022	<0.001	1	<0.002	<0.002	0	110	102
Zinc-Dissolved	mg/L	0.001	METALS-022	<0.001	1	0.009	0.007	25	101	100
Silicon - Dissolved	mg/L	0.1	METALS-020	<0.1	1	0.8	[NT]		112	[NT]

QUALITY CONTROL: Dissolved Metals in Water				Duplicate			Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	265428-3
Date prepared	-			[NT]	3	23/07/2021	21/07/2021		[NT]	21/07/2021
Date analysed	-			[NT]	3	23/07/2021	21/07/2021		[NT]	21/07/2021
Silver-Dissolved Ultra Low	mg/L	0.00005	METALS-022	[NT]	3	<0.0001	[NT]		[NT]	[NT]
Aluminium-Dissolved	mg/L	0.01	METALS-022	[NT]	3	0.02	[NT]		[NT]	[NT]
Arsenic-Dissolved	mg/L	0.001	METALS-022	[NT]	3	<0.002	[NT]		[NT]	[NT]
Cadmium-Dissolved	mg/L	0.0001	METALS-022	[NT]	3	<0.0002	[NT]		[NT]	[NT]
Cobalt-Dissolved	mg/L	0.001	METALS-022	[NT]	3	<0.002	[NT]		[NT]	[NT]
Chromium-Dissolved	mg/L	0.001	METALS-022	[NT]	3	<0.002	[NT]		[NT]	[NT]
Copper-Dissolved	mg/L	0.001	METALS-022	[NT]	3	0.002	[NT]		[NT]	[NT]
Iron-Dissolved	mg/L	0.01	METALS-022	[NT]	3	0.03	[NT]		[NT]	[NT]
Mercury-Dissolved	mg/L	0.00005	METALS-021	[NT]	3	<0.00005	[NT]		[NT]	106
Manganese-Dissolved	mg/L	0.005	METALS-022	[NT]	3	<0.01	[NT]		[NT]	[NT]
Molybdenum-Dissolved	mg/L	0.001	METALS-022	[NT]	3	0.010	[NT]		[NT]	[NT]
Nickel-Dissolved	mg/L	0.001	METALS-022	[NT]	3	<0.002	[NT]		[NT]	[NT]
Lead-Dissolved	mg/L	0.001	METALS-022	[NT]	3	<0.002	[NT]		[NT]	[NT]
Antimony-Dissolved	mg/L	0.001	METALS-022	[NT]	3	<0.002	[NT]		[NT]	[NT]
Selenium-Dissolved	mg/L	0.001	METALS-022	[NT]	3	<0.002	[NT]		[NT]	[NT]
Zinc-Dissolved	mg/L	0.001	METALS-022	[NT]	3	0.015	[NT]		[NT]	[NT]
Silicon - Dissolved	mg/L	0.1	METALS-020	[NT]	3	1	0.9	11	[NT]	[NT]

QUALITY CONTROL: Dissolved Metals in Water				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	4	23/07/2021	21/07/2021		[NT]	[NT]
Date analysed	-			[NT]	4	23/07/2021	21/07/2021		[NT]	[NT]
Silver-Dissolved Ultra Low	mg/L	0.00005	METALS-022	[NT]	4	<0.0001	[NT]		[NT]	[NT]
Aluminium-Dissolved	mg/L	0.01	METALS-022	[NT]	4	0.03	[NT]		[NT]	[NT]
Arsenic-Dissolved	mg/L	0.001	METALS-022	[NT]	4	<0.002	[NT]		[NT]	[NT]
Cadmium-Dissolved	mg/L	0.0001	METALS-022	[NT]	4	<0.0002	[NT]		[NT]	[NT]
Cobalt-Dissolved	mg/L	0.001	METALS-022	[NT]	4	<0.002	[NT]		[NT]	[NT]
Chromium-Dissolved	mg/L	0.001	METALS-022	[NT]	4	<0.002	[NT]		[NT]	[NT]
Copper-Dissolved	mg/L	0.001	METALS-022	[NT]	4	0.002	[NT]		[NT]	[NT]
Iron-Dissolved	mg/L	0.01	METALS-022	[NT]	4	0.03	[NT]		[NT]	[NT]
Mercury-Dissolved	mg/L	0.00005	METALS-021	[NT]	4	<0.00005	<0.00005	0	[NT]	[NT]
Manganese-Dissolved	mg/L	0.005	METALS-022	[NT]	4	<0.01	[NT]		[NT]	[NT]
Molybdenum-Dissolved	mg/L	0.001	METALS-022	[NT]	4	0.010	[NT]		[NT]	[NT]
Nickel-Dissolved	mg/L	0.001	METALS-022	[NT]	4	<0.002	[NT]		[NT]	[NT]
Lead-Dissolved	mg/L	0.001	METALS-022	[NT]	4	<0.002	[NT]		[NT]	[NT]
Antimony-Dissolved	mg/L	0.001	METALS-022	[NT]	4	<0.002	[NT]		[NT]	[NT]
Selenium-Dissolved	mg/L	0.001	METALS-022	[NT]	4	<0.002	[NT]		[NT]	[NT]
Zinc-Dissolved	mg/L	0.001	METALS-022	[NT]	4	0.021	[NT]		[NT]	[NT]
Silicon - Dissolved	mg/L	0.1	METALS-020	[NT]	4	0.9	[NT]		[NT]	[NT]

QUALITY CONTROL: Total Metals in water						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	265428-2
Date digested	-			23/07/2021	1	23/07/2021	23/07/2021		23/07/2021	23/07/2021
Date analysed	-			23/07/2021	1	23/07/2021	23/07/2021		23/07/2021	23/07/2021
Aluminium-Total	mg/L	0.01	METALS-022	<0.01	1	0.03	0.02	40	108	113
Iron-Total	mg/L	0.01	METALS-022	<0.01	1	0.05	0.04	22	107	118

QUALITY CONTROL: Total Metals in water						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date digested	-			[NT]	11	23/07/2021	23/07/2021		[NT]	[NT]
Date analysed	-			[NT]	11	23/07/2021	23/07/2021		[NT]	[NT]
Aluminium-Total	mg/L	0.01	METALS-022	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Iron-Total	mg/L	0.01	METALS-022	[NT]	11	<0.01	<0.01	0	[NT]	[NT]

QUALITY CONTROL: Chlorophyll a & Phaeophytin a							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Chlorophyll a	µg/L	0.1	Ext-058	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phaeophytin a	µg/L	0.2	Ext-058	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/MBTEXN in water				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date analysed	-			20/07/2021	[NT]	[NT]	[NT]	[NT]	20/07/2021	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	90	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	90	[NT]
MTBE	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	88	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	110	[NT]	[NT]	[NT]	[NT]	118	[NT]
Surrogate toluene-d8	%		Org-023	95	[NT]	[NT]	[NT]	[NT]	93	[NT]
Surrogate 4-BFB	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: svTRH(C10-C40) in water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			19/07/2021	[NT]	[NT]	[NT]	[NT]	19/07/2021	[NT]
Date analysed	-			20/07/2021	[NT]	[NT]	[NT]	[NT]	20/07/2021	[NT]
TRH C ₁₀ - C ₁₄	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH C ₁₅ - C ₂₈	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C ₂₉ - C ₃₆	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	97	[NT]
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	89	[NT]
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
Surrogate o-Terphenyl	%		Org-020	99	[NT]	[NT]	[NT]	[NT]	92	[NT]

Client Reference: EEC20092.002

QUALITY CONTROL: PAHs in Water				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	265428-2
Date extracted	-			20/07/2021	1	20/07/2021	20/07/2021		20/07/2021	20/07/2021
Date analysed	-			23/07/2021	1	23/07/2021	23/07/2021		23/07/2021	23/07/2021
Naphthalene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	122	122
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	122	131
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	107	123
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	134	139
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	125	131
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	116	123
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	122	118
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-D ₁₄	%		Org-022/025	121	1	132	125	5	120	127

QUALITY CONTROL: PAHs in Water				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	3	20/07/2021	20/07/2021		[NT]	[NT]
Date analysed	-			[NT]	3	23/07/2021	23/07/2021		[NT]	[NT]
Naphthalene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Fluorene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Anthracene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Pyrene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	[NT]	3	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-D ₁₄	%		Org-022/025	[NT]	3	118	122	3	[NT]	[NT]

QUALITY CONTROL: Low Level OCP in water				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	265428-2
Date extracted	-			20/07/2021	1	20/07/2021	20/07/2021		20/07/2021	20/07/2021
Date analysed	-			23/07/2021	1	23/07/2021	23/07/2021		23/07/2021	23/07/2021
Hexachlorobenzene (HCB)	µg/L	0.01	Org-022/025	<0.01	1	<0.01	<0.01	0	[NT]	[NT]
a-BHC	µg/L	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	133	133
Lindane (g-BHC)	µg/L	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	[NT]	[NT]
b-BHC	µg/L	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	124	131
Heptachlor	µg/L	0.01	Org-022/025	<0.01	1	<0.01	<0.01	0	114	123
d-BHC	µg/L	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	[NT]	[NT]
Aldrin	µg/L	0.01	Org-022/025	<0.01	1	<0.01	<0.01	0	121	128
Heptachlor Epoxide	µg/L	0.01	Org-022/025	<0.01	1	<0.01	<0.01	0	131	129
g-Chlordane	µg/L	0.01	Org-022/025	<0.01	1	<0.01	<0.01	0	[NT]	[NT]
a-Chlordane	µg/L	0.01	Org-022/025	<0.01	1	<0.01	<0.01	0	[NT]	[NT]
a-Endosulfan	µg/L	0.02	Org-022/025	<0.02	1	<0.02	<0.02	0	[NT]	[NT]
pp-DDE	µg/L	0.01	Org-022/025	<0.01	1	<0.01	<0.01	0	130	137
Dieldrin	µg/L	0.01	Org-022/025	<0.01	1	<0.01	<0.01	0	120	139
Endrin	µg/L	0.01	Org-022/025	<0.01	1	<0.01	<0.01	0	[NT]	[NT]
pp-DDD	µg/L	0.01	Org-022/025	<0.01	1	<0.01	<0.01	0	133	139
b-Endosulfan	µg/L	0.02	Org-022/025	<0.02	1	<0.02	<0.02	0	[NT]	[NT]
pp-DDT	µg/L	0.006	Org-022/025	<0.006	1	<0.006	<0.006	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.02	Org-022/025	<0.02	1	<0.02	<0.02	0	127	132
Methoxychlor	µg/L	0.02	Org-022/025	<0.02	1	<0.02	<0.02	0	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022/025	110	1	124	118	5	108	123

QUALITY CONTROL: Low Level OCP in water				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	3	20/07/2021	20/07/2021		[NT]	[NT]
Date analysed	-			[NT]	3	23/07/2021	23/07/2021		[NT]	[NT]
Hexachlorobenzene (HCB)	µg/L	0.01	Org-022/025	[NT]	3	<0.01	<0.01	0	[NT]	[NT]
a-BHC	µg/L	0.05	Org-022/025	[NT]	3	<0.05	<0.05	0	[NT]	[NT]
Lindane (g-BHC)	µg/L	0.05	Org-022/025	[NT]	3	<0.05	<0.05	0	[NT]	[NT]
b-BHC	µg/L	0.05	Org-022/025	[NT]	3	<0.05	<0.05	0	[NT]	[NT]
Heptachlor	µg/L	0.01	Org-022/025	[NT]	3	<0.01	<0.01	0	[NT]	[NT]
d-BHC	µg/L	0.05	Org-022/025	[NT]	3	<0.05	<0.05	0	[NT]	[NT]
Aldrin	µg/L	0.01	Org-022/025	[NT]	3	<0.01	<0.01	0	[NT]	[NT]
Heptachlor Epoxide	µg/L	0.01	Org-022/025	[NT]	3	<0.01	<0.01	0	[NT]	[NT]
g-Chlordane	µg/L	0.01	Org-022/025	[NT]	3	<0.01	<0.01	0	[NT]	[NT]
a-Chlordane	µg/L	0.01	Org-022/025	[NT]	3	<0.01	<0.01	0	[NT]	[NT]
a-Endosulfan	µg/L	0.02	Org-022/025	[NT]	3	<0.02	<0.02	0	[NT]	[NT]
pp-DDE	µg/L	0.01	Org-022/025	[NT]	3	<0.01	<0.01	0	[NT]	[NT]
Dieldrin	µg/L	0.01	Org-022/025	[NT]	3	<0.01	<0.01	0	[NT]	[NT]
Endrin	µg/L	0.01	Org-022/025	[NT]	3	<0.01	<0.01	0	[NT]	[NT]
pp-DDD	µg/L	0.01	Org-022/025	[NT]	3	<0.01	<0.01	0	[NT]	[NT]
b-Endosulfan	µg/L	0.02	Org-022/025	[NT]	3	<0.02	<0.02	0	[NT]	[NT]
pp-DDT	µg/L	0.006	Org-022/025	[NT]	3	<0.006	<0.006	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.02	Org-022/025	[NT]	3	<0.02	<0.02	0	[NT]	[NT]
Methoxychlor	µg/L	0.02	Org-022/025	[NT]	3	<0.02	<0.02	0	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022/025	[NT]	3	114	119	4	[NT]	[NT]

QUALITY CONTROL: PFAS in water TRACE Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			23/07/2021	[NT]	[NT]	[NT]	[NT]	23/07/2021	[NT]
Date analysed	-			23/07/2021	[NT]	[NT]	[NT]	[NT]	23/07/2021	[NT]
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorohexanesulfonic acid	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	91	[NT]
Perfluorooctanesulfonate PFOS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	69	[NT]
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	104	[NT]
4:2 FTS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	107	[NT]
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	100	[NT]
10:2 FTS	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	91	[NT]
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.005	Org-029	<0.005	[NT]	[NT]	[NT]	[NT]	106	[NT]
N-Ethyl perfluorooctanesulfon -amide	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	[NT]
N-Me perfluorooctanesulfonamid -oethanol	µg/L	0.005	Org-029	<0.005	[NT]	[NT]	[NT]	[NT]	115	[NT]
N-Et perfluorooctanesulfonamid -oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	113	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	106	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate ¹³ C ₈ PFOS	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	104	[NT]
Surrogate ¹³ C ₂ PFOA	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD ¹³ C ₃ PFBS	%		Org-029	84	[NT]	[NT]	[NT]	[NT]	80	[NT]

QUALITY CONTROL: PFAS in water TRACE Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD ¹⁸ O ₂ PFHxS	%		Org-029	86	[NT]	[NT]	[NT]	[NT]	79	[NT]
Extracted ISTD ¹³ C ₄ PFOS	%		Org-029	82	[NT]	[NT]	[NT]	[NT]	63	[NT]
Extracted ISTD ¹³ C ₄ PFBA	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	90	[NT]
Extracted ISTD ¹³ C ₃ PFPeA	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	89	[NT]
Extracted ISTD ¹³ C ₂ PFHxA	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	93	[NT]
Extracted ISTD ¹³ C ₄ PFHpA	%		Org-029	92	[NT]	[NT]	[NT]	[NT]	88	[NT]
Extracted ISTD ¹³ C ₄ PFOA	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	85	[NT]
Extracted ISTD ¹³ C ₅ PFNA	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	90	[NT]
Extracted ISTD ¹³ C ₂ PFDA	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	82	[NT]
Extracted ISTD ¹³ C ₂ PFUnDA	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	77	[NT]
Extracted ISTD ¹³ C ₂ PFDoDA	%		Org-029	88	[NT]	[NT]	[NT]	[NT]	69	[NT]
Extracted ISTD ¹³ C ₂ PFTeDA	%		Org-029	92	[NT]	[NT]	[NT]	[NT]	63	[NT]
Extracted ISTD ¹³ C ₂ 4:2FTS	%		Org-029	140	[NT]	[NT]	[NT]	[NT]	125	[NT]
Extracted ISTD ¹³ C ₂ 6:2FTS	%		Org-029	139	[NT]	[NT]	[NT]	[NT]	114	[NT]
Extracted ISTD ¹³ C ₂ 8:2FTS	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD ¹³ C ₈ FOSA	%		Org-029	76	[NT]	[NT]	[NT]	[NT]	62	[NT]
Extracted ISTD d ₃ N MeFOSA	%		Org-029	46	[NT]	[NT]	[NT]	[NT]	32	[NT]
Extracted ISTD d ₅ N EtFOSA	%		Org-029	45	[NT]	[NT]	[NT]	[NT]	28	[NT]
Extracted ISTD d ₇ N MeFOSE	%		Org-029	57	[NT]	[NT]	[NT]	[NT]	50	[NT]
Extracted ISTD d ₉ N EtFOSE	%		Org-029	56	[NT]	[NT]	[NT]	[NT]	50	[NT]

QUALITY CONTROL: PFAS in water TRACE Extended							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
<i>Extracted ISTD d₃ N MeFOSAA</i>	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	84	[NT]
<i>Extracted ISTD d₅ N EtFOSAA</i>	%		Org-029	124	[NT]	[NT]	[NT]	[NT]	104	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Chlorophyll 'a' and Phaeophytins analysis conducted by Marine and Freshwater Research - Murdoch University, report reference MPL21-24.

PFAS analysis performed by Envirolab Services Pty Ltd, NSW, report reference 274468.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

MeFOSA and EtFOSA Extracted Internal Standard is outside of global acceptance criteria (50-150%) for (LCS and/or MB) but within analyte specific acceptance criteria.

Note: Some results have raised pqls. In these cases the sample's high TDS required the sample to be diluted prior to analysis.



DATA QUALITY ASSESSMENT SUMMARY

Report Details

Envirolab Report Reference	265428
Client ID	RPS Australia West Pty Ltd
Project Reference	EEC20092.002
Date Issued	28/07/2021

QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant except:

Holding Time Exceedances

Analysis	Sample No	Date Sampled	Date Extracted	Date Analysed	Accepted
Chlorophyll a & Phaeophytin a					
Chlorophyll a	265428-1	15/07/2021			##
Phaeophytin a	265428-1	15/07/2021			##
Chlorophyll a	265428-2	15/07/2021			##
Phaeophytin a	265428-2	15/07/2021			##
Chlorophyll a	265428-3	15/07/2021			##
Phaeophytin a	265428-3	15/07/2021			##
Chlorophyll a	265428-4	15/07/2021			##
Phaeophytin a	265428-4	15/07/2021			##
Chlorophyll a	265428-5	15/07/2021			##
Phaeophytin a	265428-5	15/07/2021			##
Chlorophyll a	265428-6	15/07/2021			##
Phaeophytin a	265428-6	15/07/2021			##
Chlorophyll a	265428-7	15/07/2021			##
Phaeophytin a	265428-7	15/07/2021			##
Chlorophyll a	265428-8	15/07/2021			##
Phaeophytin a	265428-8	15/07/2021			##
Chlorophyll a	265428-9	15/07/2021			##
Phaeophytin a	265428-9	15/07/2021			##
Chlorophyll a	265428-10	15/07/2021			##
Phaeophytin a	265428-10	15/07/2021			##

Holding Table Comments

No Extract or Analysed Dates were provided. Holding Times cannot be calculated.



Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

QC Evaluation	
Duplicate(s) was performed as per NEPM frequency	✓
Laboratory Control Sample(s) were analysed with the samples received	✓
A Method Blank was performed with the samples received	✓
Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)	✓

Refer to Certificate of Analysis for all Quality Control data.



SAMPLE RECEIPT ADVICE

Client Details

Client	RPS Australia West Pty Ltd
Attention	Zac Langtry

Sample Login Details

Your reference	EEC20092.002
MPL Reference	265428
Date Sample Received	15/07/2021
Date Instructions Received	15/07/2021
Date Results Expected to be Reported	29/07/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	13 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	13/17
Cooling Method	Ice
Sampling Date Provided	Yes

Comments

Nil

Please direct any queries to:

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Email: hhalim@mpl.com.au

Meredith Conroy

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Fax: 08 9317 4163

Email: mconroy@mpl.com.au

Analysis Underway, details on the following page:



Sample ID	Total Dissolved Solids (grav)	Total Suspended Solids	Turbidity	Dissolved Organic Carbon	Acidity as CaCO3	Sulphide in water*	Fluoride	Ionic Balance	Nutrients in Water	Dissolved Metals in Water	Total Metals in water	Chlorophyll a & Phaeophytin a	vTRH(C6-C10)/MBTEXN in water	svTRH(C10-C40) in water	PAHs in Water	Low Level OCP in water	PFAS in water TRACE Extended
WS1-S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS1-D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS2-S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS2-D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS3-S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS4-S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS4-D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS5-S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS5-D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WZ1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WB1			✓							✓	✓		✓	✓	✓	✓	✓
WR1			✓							✓	✓		✓	✓	✓	✓	✓
WTB1												✓					✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Appendix C

Surface water sampling logs

