



**PRECISE
ENVIRONMENTAL**
Consulting Environmental Scientists

CONSTRUCTION PHASE SURFACE WATER QUALITY MONITORING REPORT: OCTOBER 2024

Serenity Cove Development, Hope Island, Queensland

Oyster Cove Projects Pty Ltd ATF The Oyster Cove Projects Unit Trust

October 2024

18 October 2024

Our Ref: PE1250.13_Serenity Cove SWQM Report_Oct 2024

Oyster Cove Projects Pty Ltd ATF The Oyster Cove Projects Unit Trust

4/66A Slobodian Avenue

Eight Mile Plains, QLD

Email: tommyhung@kinstone.com.au

Attention: Tommy Hung

CONSTRUCTION PHASE WATER QUALITY MONITORING – OCTOBER 2024, SERENITY COVE, HELENSVALE ROAD, HELENSVALE, QUEENSLAND.

Precise Environmental (PE) was commissioned by Oyster Cove Projects Pty Ltd ATF The Oyster Cove Projects Unit Trust (the client) to undertake construction phase surface water quality monitoring within the Serenity Cove lake system, and at two external locations in Saltwater Creek. The monitoring was conducted with reference to the stormwater management and erosion and sediment control requirements of Condition 10, 12(i) and 12(j) of the City of Gold Coast Decision Notice (ROL201100207 dated 2 March 2020).

Accordingly, this report presents the results of one round of construction phase monitoring for 10 October 2024. Assessment of compliance was completed with reference to the water quality objectives (WQOs) adopted for the lake system specified in the Acid Sulfate Soil Management Plan (Gilbert & Sutherland, June 2007).

Scope and method of monitoring

Monitoring of the below parameters was conducted at locations SW1, SW2, SW3, SW4, SW5/6 & SW7:

- pH, electrical conductivity (EC), dissolved oxygen (DO), turbidity, and temperature
- Total suspended solids (SS).

Sampling locations are shown in Attachment A – Figure 1.

All monitoring was conducted by a qualified environmental scientist with reference to the Monitoring and Sampling Manual (DES 2018).

Results summary

A summary of the monitoring results is presented below and should be read in conjunction with the attached data tables, (Appendix B) and laboratory certificates of analysis (Attachment C).

Eleven rainfall events were recorded between 10 September 2024 and 10 October 2024, rainfall events ranged from 0.2 – 40.8 mm, totalling 118.2 mm ([Gold Coast Seaway weather station 040764](#)). It is noted 40.8 mm of rainfall was recorded on the day of sampling

Assessment of compliance during the construction phase is based on comparison of the median value of sample results with the relevant WQO. Highlighting of individual results exceeding WQOs are provided for indicative purposes only and should not be considered non-compliances.

Table A. Summary of water quality monitoring results.

Parameter	Lake monitoring locations compliant with WQO		Comments
	Individual result(s)	Running median*	
pH	Yes	Yes	-
EC	Yes	Yes	-
DO	Yes	Yes	-
Turbidity	No	Yes	Turbidity at SW2 was 56.5 NTU and was above the 27 NTU WQO. The result was associated with potential run-off from the construction area as a result of heavy rainfall.
SS	No	Yes	SS at SW2 was detected at 93 mg/L and was above the 14 mg/L WQO. The result was likely associated with potential run-off from the construction area as a result of heavy rainfall. SS at all other locations within the lake system were below detection limits (i.e. <5 mg/L).

* Median for period from commencement of construction to current.

Conclusions and recommendations

The non-compliant SS result at SW2 was likely associated with run-off associated with heavy rainfall on the day of sampling. It was noted that SS at all other locations within the lake system were below detection limits.

Overall, the balance of results were compliant with the WQOs.

Please do not hesitate to contact the undersigned if you have queries or require any additional information.



Sean Gardiner BSc (Env)
Environmental Scientist

Limitations

The findings of this report are based on the objectives and scope of work outlined above. PE performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties or guarantees, express or implied, are made. Subject to the scope of work, PE's assessment is limited strictly to identifying typical environmental conditions associated with the subject property, and does not include evaluation of any other issues.

This report does not comment on any regulatory obligations based on the findings, for which a legal opinion should be sought. This report relates only to the objectives and scope of work stated, and does not relate to any other works undertaken for the Client.

The report and conclusions are based on the information obtained at the time of the assessment. Changes to the subsurface, site or adjacent site conditions may occur subsequent to the investigation described herein, through natural processes or through the intentional or accidental addition of contaminants, and these conditions may change with space and time. While PE has used reasonable care to avoid reliance on data and information that is inaccurate or unsuitable, PE is not able to verify the accuracy or completeness of all information and data made available.

Parameters and/or contaminants of potential concern may exist at or adjacent to the site. The absence of these in deliverables associated with services provided by PE should not be interpreted as a warranty or guarantee that such parameters and/or contaminants do not exist on the site. If additional certainty is required, additional site history or desktop studies, or environmental sampling and analysis, should be commissioned.


The results of this assessment are based upon site inspection and fieldwork conducted by PE personnel and information provided by the Client. Any samples collected at specific locations, and should be considered to be an approximation of the condition of the sample.

All conclusions regarding the property area are the professional opinions of the PE personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made by PE, PE assume no responsibility or liability for errors in any data obtained from regulatory agencies, or information from sources outside of PE's control, or developments resulting from situations outside the scope of this project.



ATTACHMENT A – Monitoring locations



LEGEND

 Water monitoring locations

All locations indicative only
Image sourced and modified from Google Earth (2014), version 7.1.2.2041

Client: OYSTER COVE PROJECTS PTY LTD ATF THE OYSTER COVE PROJECTS UNIT TRUST	Site location: SERENITY COVE, HELENSVALE ROAD, HELENSVALE, QUEENSLAND		Real property description: -		Drawing number: FIGURE 1		 <div>PRECISE ENVIRONMENTAL Consulting Environmental Scientists</div>
					Drawing version: F		
Project: MAINTENANCE PHASE WATER QUALITY MONITORING	Project number: PE1250.13	Scale: NOT TO SCALE	Drawn by: SG	Reviewed by: AG	Drawing title: SURFACE WATER MONITORING LOCATIONS		Unit 7 / 14 Fremantle Street, Burleigh Heads, Qld, 4220 PO Box 4424, Robina Town Centre, Qld 4230 Ph: (07) 5593 7848 Fax: (07) 5593 7020 mail@preciseenvironmental.com.au
			Date drawn: 23.04.2021	Approved: AG			

ATTACHMENT B – Data tables and control charts

TABLE 1: SURFACE WATER QUALITY DATA



SW1	units	mS/cm	mg/L	NTU	mg/L
	pH	EC	DO	Turb	SS
26.04.24	7.6	29.0	8.4	1.3	2.5
08.05.24	8.2	27.6	7.6	1.7	2.5
22.05.24	7.5	31.5	9.1	2.2	2.5
06.06.24	7.6	33.8	9.8	3.6	2.5
20.06.24	6.9	38.3	8.7	5.5	2.5
05.07.24	8.0	46.9	8.3	4.0	31
17.07.24	8.0	47.9	8.4	3.1	2.5
08.08.24	8.3	49.3	8.9	9.7	2.5
05.09.24	8.3	47.3	8.6	1.4	2.5
10.10.24	7.9	51.2	9.0	1.4	2.5
WQO	7.5 - 8.0	35 - 55	≥5.6	≤27	≤14
Mean	7.8	40.3	8.7	3.4	5.4
Median	7.9	42.6	8.7	2.6	2.5
Min	6.9	27.6	7.6	1.3	2.5
Max	8.3	51.2	9.8	9.7	31

 Denotes below laboratory LOR - half LOR applied used for graphing purposes

Bold denotes exceedance of WQO

(-) denotes no criteria

WQO derived from Amended Acid Sulfate Soil Management Plan (ASSMP), Extension to Lake Serenity, Oyster Cove, Qld (Gilbert & Sutherland, June 2007)

TABLE 2: SURFACE WATER QUALITY DATA



SW2	units	mS/cm	mg/L	NTU	mg/L
	pH	EC	DO	Turb	SS
26.04.24	7.4	28.5	8.6	2.6	2.5
08.05.24	8.2	30.8	7.4	4.7	7
22.05.24	7.7	32.3	8.3	2.5	5
06.06.24	7.8	35.4	8.6	4.3	2.5
20.06.24	6.8	39.5	8.7	4.6	2.5
05.07.24	8.2	46.3	8.3	22.2	102
17.07.24	8.1	47.3	8.2	4.2	2.5
08.08.24	8.3	49.0	9.3	3.8	2.5
05.09.24	8.5	47.2	7.6	0.7	2.5
10.10.24	7.9	42.8	9.4	56.5	93
WQO	7.5 - 8.0	35 - 55	≥5.6	≤27	≤14
Mean	7.9	39.9	8.4	10.6	22.2
Median	8.0	41.2	8.5	4.2	2.5
Min	6.8	28.5	7.4	0.7	2.5
Max	8.5	49.0	9.4	56.5	102.0



Denotes below laboratory LOR - half LOR applied used for graphing purposes

Bold denotes exceedance of WQO

(-) denotes no criteria

WQO derived from Amended Acid Sulfate Soil Management Plan (ASSMP), Extension to Lake Serenity, Oyster Cove, Qld (Gilbert & Sutherland, June 2007)

TABLE 3: SURFACE WATER QUALITY DATA



SW3	units	mS/cm	mg/L	NTU	mg/L
	pH	EC	DO	Turb	SS
26.04.24	7.6	30.2	7.9	30.8	22
08.05.24	8.1	26.1	6.2	7.8	10
22.05.24	7.5	35.6	8.6	4.3	2.5
06.06.24	7.9	40.9	8.5	3.2	9
20.06.24	6.6	40.3	8.5	6.5	9
05.07.24	8.0	46.0	8.5	4.3	8
17.07.24	7.9	44.4	8.2	8.6	53
08.08.24	8.0	52.9	8.6	26.3	15
05.09.24	8.0	50.1	9.0	4.3	9
10.10.24	7.7	48.2	7.5	9.0	22
WQO	7.5 - 8.0	35 - 55	≥5.6	≤27	≤14
Mean	7.7	41.5	8.2	10.5	16.0
Median	7.9	42.6	8.5	7.2	9.5
Min	6.6	26.1	6.2	3.2	2.5
Max	8.1	52.9	9.0	30.8	53.0



Denotes below laboratory LOR - half LOR applied used for graphing purposes

Bold denotes exceedance of WQO

WQOs not applicable to external lake locations and are shown for reference only

(-) denotes no criteria

WQO derived from Amended Acid Sulfate Soil Management Plan (ASSMP), Extension to Lake Serenity, Oyster Cove, Qld (Gilbert & Sutherland, June 2007)

TABLE 4: SURFACE WATER QUALITY DATA



SW4	units	mS/cm	mg/L	NTU	mg/L
	pH	EC	DO	Turb	SS
26.04.24	7.5	24.6	8.2	11.0	7
08.05.24	8.1	35.6	6.0	6.1	9
22.05.24	7.8	33.6	8.7	6.0	7
06.06.24	7.7	39.4	8.5	3.7	2.5
20.06.24	6.9	39.7	9.2	3.5	7
05.07.24	7.8	44.7	8.5	10.4	27
17.07.24	7.9	43.0	8.7	5.5	32
08.08.24	7.9	49.9	9.2	45.3	34
05.09.24	7.9	48.1	10.9	5.8	15
10.10.24	6.8	25.3	7.3	10.9	11
WQO	7.5 - 8.0	35 - 55	≥5.6	≤27	≤14
Mean	7.6	38.4	8.5	10.8	15.2
Median	7.8	39.6	8.6	6.1	10.0
Min	6.8	24.6	6.0	3.5	2.5
Max	8.1	49.9	10.9	45.3	34.0



Denotes below laboratory LOR - half LOR applied used for graphing purposes

Bold denotes exceedance of WQO

WQOs not applicable to external lake locations and are shown for reference only

(-) denotes no criteria

WQO derived from Amended Acid Sulfate Soil Management Plan (ASSMP), Extension to Lake Serenity, Oyster Cove, Qld (Gilbert & Sutherland, June 2007)

TABLE 5: SURFACE WATER QUALITY DATA



SW5 6	units	mS/cm	mg/L	NTU	mg/L
	pH	EC	DO	Turb	SS
26.04.24	7.4	28.3	8.3	1.4	2.5
08.05.24	8.3	32.1	6.6	1.1	2.5
22.05.24	7.6	33.1	8.8	0.7	2.5
06.06.24	7.8	36.4	8.9	1.8	2.5
20.06.24	6.9	40.1	8.7	0.7	2.5
05.07.24	8.0	46.3	8.5	1.3	2.5
17.07.24	8.1	46.0	8.2	1.0	7
08.08.24	8.2	48.6	9.2	1.7	2.5
05.09.24	8.0	47.4	11.0	0.3	6
10.10.24	7.6	42.5	8.7	2.3	2.5
WQO	7.5 - 8.0	35 - 55	≥5.6	≤27	≤14
Mean	7.8	40.1	8.7	1.2	3.3
Median	7.9	41.3	8.7	1.2	2.5
Min	6.9	28.3	6.6	0.3	2.5
Max	8.3	48.6	11.0	2.3	7.0



Denotes below laboratory LOR - half LOR applied used for graphing purposes

Bold denotes exceedance of WQO

(-) denotes no criteria

WQO derived from Amended Acid Sulfate Soil Management Plan (ASSMP), Extension to Lake Serenity, Oyster Cove, Qld (Gilbert & Sutherland, June 2007)

TABLE 6: SURFACE WATER QUALITY DATA



SW7	units	mS/cm	mg/L	NTU	mg/L
	pH	EC	DO	Turb	SS
26.04.24	7.5	27.2	8.5	1.0	2.5
08.05.24	8.3	32.1	6.7	0.3	2.5
22.05.24	7.7	32.3	9.0	0.4	2.5
06.06.24	8.0	36.3	9.0	2.1	2.5
20.06.24	7.1	40.8	9.2	0.7	2.5
05.07.24	8.1	46.7	8.7	0.6	2.5
17.07.24	8.2	46.9	8.2	1.0	15
08.08.24	8.2	49.2	8.7	4.6	2.5
05.09.24	8.2	47.2	10.5	0.3	6
10.10.24	7.7	43.0	8.2	1.4	2.5
WQO	7.5 - 8.0	35 - 55	≥5.6	≤27	≤14
Mean	7.9	40.2	8.7	1.2	4.1
Median	8.0	41.9	8.7	0.8	2.5
Min	7.1	27.2	6.7	0.3	2.5
Max	8.3	49.2	10.5	4.6	15.0

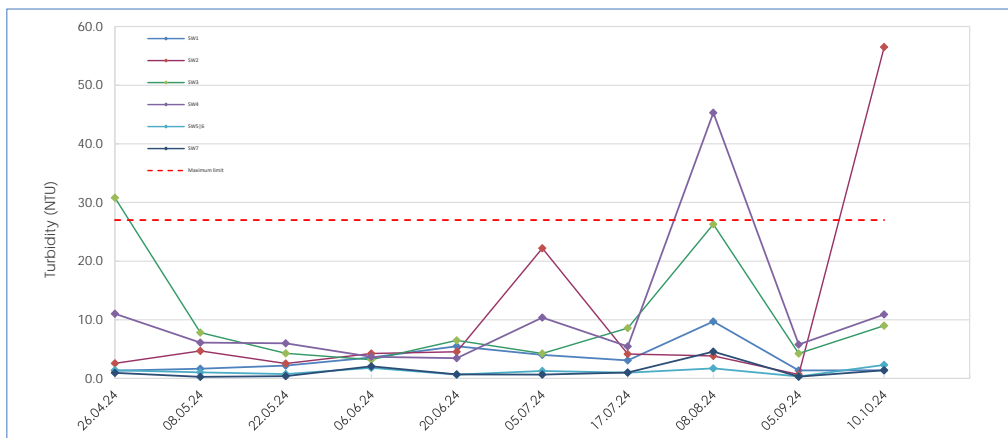
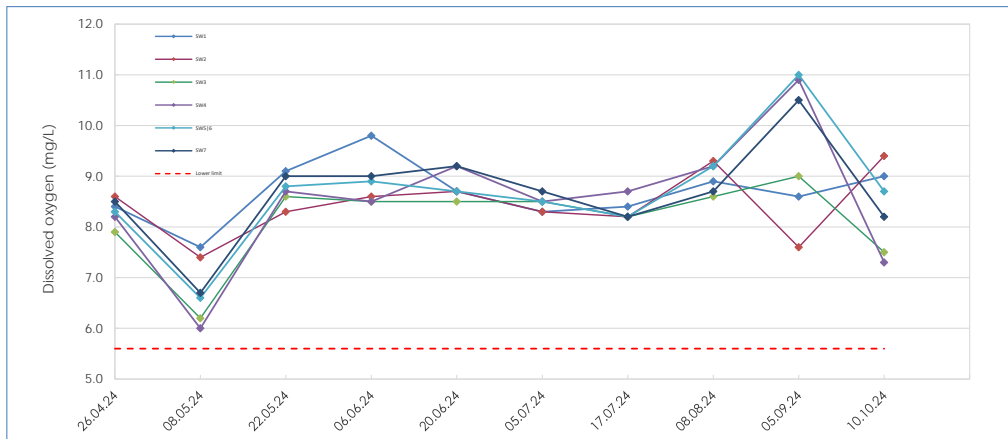
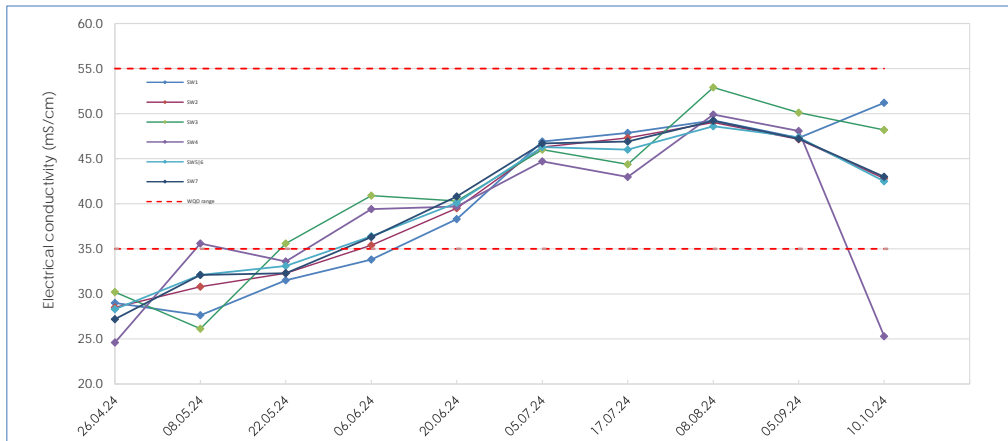
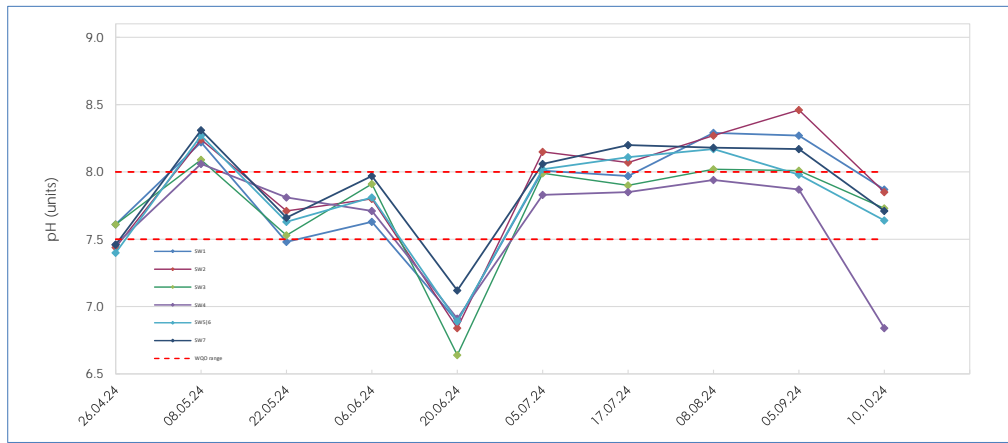


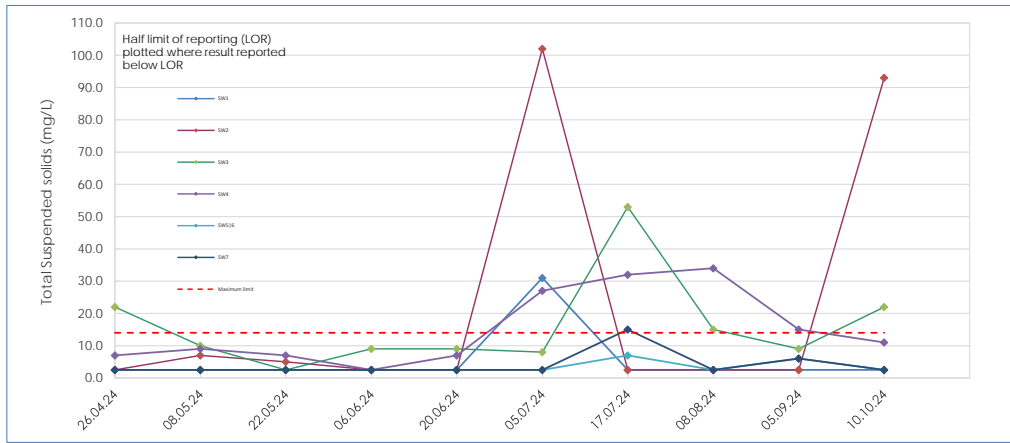
Denotes below laboratory LOR - half LOR applied used for graphing purposes

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(-) denotes no criteria

WQO derived from Amended Acid Sulfate Soil Management Plan (ASSMP), Extension to Lake Serenity, Oyster Cove, Qld (Gilbert & Sutherland, June 2007)





ATTACHMENT C – Laboratory certificates



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2434834**

Client : **PRECISE ENVIRONMENTAL PTY LTD**
Contact : **MR SEAN GARDINER**
Address : **PO BOX 4424**
ROBINA TOWN CENTRE QLD,
AUSTRALIA 4230

Laboratory : **Environmental Division Brisbane**
Contact : **David Wall**
Address : **2 Byth Street Stafford QLD Australia**
4053

E-mail : **sean@preciseenvironmental.com.au**
Telephone : **+61 07 5593 7848**
Facsimile : **----**

E-mail : **david.wall@alsglobal.com**
Telephone : **+61-7-3552-8685**
Facsimile : **+61-7-3243 7218**

Project : **PE1250.13**
Order number : **PE1250.13**
C-O-C number : **----**
Site : **----**
Sampler : **THOMAS BUTLER**

Page : **1 of 2**
Quote number : **EB2017PREENV0003 (EN/222)**
QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **10-Oct-2024 13:10**
Client Requested Due : **16-Oct-2024**
Date

Issue Date : **10-Oct-2024**
Scheduled Reporting Date : **16-Oct-2024**

Delivery Details

Mode of Delivery : **Client Drop Off**
No. of coolers/boxes : **1**

Security Seal : **Intact.**
Temperature : **3.2°C, 1.1°C, 3.2°C - Ice**
present

Receipt Detail : **Medium Hard Esky**

No. of samples received / analysed : **6 / 6**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA005P pH (Auto Titrator)	WATER - EA010P Electrical Conductivity (Auto Titrator)	WATER - EA025H Suspended Solids - Standard Level	WATER - EA045 Turbidity	WATER - EP025 Dissolved Oxygen (DO)
EB2434834-001	10-Oct-2024 00:00	SW1	✓	✓	✓	✓	✓
EB2434834-002	10-Oct-2024 00:00	SW2	✓	✓	✓	✓	✓
EB2434834-003	10-Oct-2024 00:00	SW3	✓	✓	✓	✓	✓
EB2434834-004	10-Oct-2024 00:00	SW4	✓	✓	✓	✓	✓
EB2434834-005	10-Oct-2024 00:00	SW5/6	✓	✓	✓	✓	✓
EB2434834-006	10-Oct-2024 00:00	SW7	✓	✓	✓	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

RESULTS & INVOICE

- *AU Certificate of Analysis - NATA (COA)	Email	mail@preciseenvironmental.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	mail@preciseenvironmental.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	mail@preciseenvironmental.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	mail@preciseenvironmental.com.au
- A4 - AU Tax Invoice (INV)	Email	mail@preciseenvironmental.com.au
- Chain of Custody (CoC) (COC)	Email	mail@preciseenvironmental.com.au
- EDI Format - XTab (XTAB)	Email	mail@preciseenvironmental.com.au

SEAN GARDINER

- *AU Certificate of Analysis - NATA (COA)	Email	sean@preciseenvironmental.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sean@preciseenvironmental.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sean@preciseenvironmental.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sean@preciseenvironmental.com.au
- Chain of Custody (CoC) (COC)	Email	sean@preciseenvironmental.com.au
- EDI Format - XTab (XTAB)	Email	sean@preciseenvironmental.com.au



CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2175
Ph: 02 8784 8565 E: samples.syd@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2301
Ph: 02 4566 9433 E: samples.newcastle@alsenviro.com

☐ Brisbane: 32 Shand St, Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Darma Ct, Bohle QLD 4818
Ph: 07 4789 0620 E: townsville@precisenvironmental@alsenviro.com

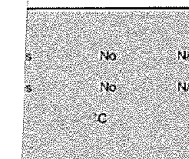
☐ Melbourne: 2-4 Westall Rd, Spangvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsenviro.com

☐ Perth: 10 Hed Way, Malaga WA 6090

Environmental Division
Brisbane
Work Order Reference
EB2434834



Telephone : + 61-7-3552-8685



ED BY:

TIME:

CLIENT:	Precise Environmental	TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date): (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	
OFFICE:	PO Box 4424, Robina Town Centre, 4230	<input type="checkbox"/> Non Standard or urgent TAT (List due date):	
PROJECT:	PE1250.13	ALS QUOTE NO.:	EN222/22
ORDER NUMBER:	PE1250.13	COC SEQUENCE NUMBER	
PROJECT MANAGER:	Sean Gardiner	CONTACT PH:	0409 827 396
SAMPLER:	Thomas Butler	SAMPLER MOBILE:	
COC emailed to ALS? (YES / NO)		RELINQUISHED BY:	THOMAS BUTLER
Email Reports to: mail@preciseenvironmental.com.au		DATE/TIME:	
Mail Invoice to: PO Box 4424, Robina Town Centre, QLD, 4230		DATE/TIME:	10.10.24

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EA025H (TSS)	pH, electrical conductivity, dissolved oxygen and turbidity						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	SW1	10.10.24	Saline	P/<4C	1	X	X						
	SW2	10.10.24	Saline	P/<4C	1	X	X						
	SW3	10.10.24	Saline	P/<4C	1	X	X						
	SW4	10.10.24	Saline	P/<4C	1	X	X						
	SW5/6	10.10.24	Saline	P/<4C	1	X	X						
	SW7	10.10.24	Saline	P/<4C	1	X	X						
					6								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solis; B = Unpreserved Bag.



CERTIFICATE OF ANALYSIS

Work Order : **EB2434834**
Client : **PRECISE ENVIRONMENTAL PTY LTD**
Contact : **MR SEAN GARDINER**
Address : **PO BOX 4424**
ROBINA TOWN CENTRE QLD, AUSTRALIA 4230
Telephone : **+61 07 5593 7848**
Project : **PE1250.13**
Order number : **PE1250.13**
C-O-C number : **----**
Sampler : **THOMAS BUTLER**
Site : **----**
Quote number : **EN/222**
No. of samples received : **6**
No. of samples analysed : **6**

Page : **1 of 4**
Laboratory : **Environmental Division Brisbane**
Contact : **David Wall**
Address : **2 Byth Street Stafford QLD Australia 4053**
Telephone : **+61-7-3552-8685**
Date Samples Received : **10-Oct-2024 13:10**
Date Analysis Commenced : **10-Oct-2024**
Issue Date : **15-Oct-2024 17:03**



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Vincent Muller	Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.



Analytical Results

Sub-Matrix: SALINE WATER (Matrix: WATER)				Sample ID	SW1	SW2	SW3	SW4	SW5/6
Sampling date / time					10-Oct-2024 00:00	10-Oct-2024 00:00	10-Oct-2024 00:00	10-Oct-2024 00:00	10-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	EB2434834-001	EB2434834-002	EB2434834-003	EB2434834-004	EB2434834-005	
Result				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.87	7.85	7.73	6.84	7.64	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	51200	42800	48200	25300	42500	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	<5	93	22	11	<5	
EA045: Turbidity									
Turbidity	----	0.1	NTU	1.4	56.5	9.0	10.9	2.3	
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L	9.0	9.4	7.5	7.3	8.7	



Analytical Results

Sub-Matrix: SALINE WATER (Matrix: WATER)				Sample ID	SW7	----	----	----	----
Sampling date / time					10-Oct-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2434834-006	-----	-----	-----	-----
Result						----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.71	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		43000	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	----	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		1.4	----	----	----	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		8.2	----	----	----	----



QUALITY CONTROL REPORT

Work Order	: EB2434834	Page	: 1 of 3
Client	: PRECISE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MR SEAN GARDINER	Contact	: David Wall
Address	: PO BOX 4424 ROBINA TOWN CENTRE QLD, AUSTRALIA 4230	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 5593 7848	Telephone	: +61-7-3552-8685
Project	: PE1250.13	Date Samples Received	: 10-Oct-2024
Order number	: PE1250.13	Date Analysis Commenced	: 10-Oct-2024
C-O-C number	: ----	Issue Date	: 15-Oct-2024
Sampler	: THOMAS BUTLER		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 6		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Vincent Muller	Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titratr (QC Lot: 6113396)									
EB2434814-033	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	9.46	9.47	0.1	0% - 20%
EB2434783-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.92	7.98	0.8	0% - 20%
EA005P: pH by PC Titratr (QC Lot: 6114836)									
EB2434613-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.03	8.13	1.2	0% - 20%
EB2434834-001	SW1	EA005-P: pH Value	----	0.01	pH Unit	7.87	7.89	0.3	0% - 20%
EA010P: Conductivity by PC Titratr (QC Lot: 6113398)									
EB2434814-033	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	129000	130000	0.9	0% - 20%
EB2434783-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1320	1310	0.6	0% - 20%
EA010P: Conductivity by PC Titratr (QC Lot: 6114838)									
EB2434613-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	347	352	1.4	0% - 20%
EB2434834-001	SW1	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	51200	50600	1.1	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6116246)									
EB2434834-001	SW1	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EB2435069-005	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EA045: Turbidity (QC Lot: 6112507)									
EB2434802-001	Anonymous	EA045: Turbidity	----	0.1	NTU	23.1	23.1	0.0	0% - 20%
EB2434834-005	SW5/6	EA045: Turbidity	----	0.1	NTU	2.3	2.3	0.0	0% - 20%
EP025: Oxygen - Dissolved (DO) (QC Lot: 6112497)									
EB2434834-001	SW1	EP025: Dissolved Oxygen	----	0.1	mg/L	9.0	9.0	0.0	0% - 20%
EB2434870-001	Anonymous	EP025: Dissolved Oxygen	----	0.1	mg/L	8.6	8.6	0.0	0% - 20%



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 6113396)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.0	102
				----	7 pH Unit	99.7	98.0	102
EA005P: pH by PC Titrator (QCLot: 6114836)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.0	102
				----	7 pH Unit	99.7	98.0	102
EA010P: Conductivity by PC Titrator (QCLot: 6113398)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	4000 µS/cm	101	90.0	106
				<1	12890 µS/cm	99.4	90.0	106
EA010P: Conductivity by PC Titrator (QCLot: 6114838)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	4000 µS/cm	99.7	90.0	106
				<1	12890 µS/cm	103	90.0	106
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 6116246)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	107	88.0	112
				<5	1000 mg/L	95.9	88.0	112
				<5	875 mg/L	97.7	85.0	115
EA045: Turbidity (QCLot: 6112507)								
EA045: Turbidity	----	0.1	NTU	<0.1	4 NTU	102	90.0	110
				<0.1	40 NTU	98.8	90.0	110
				<0.1	400 NTU	97.5	90.0	110

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EB2434834	Page	: 1 of 5
Client	: PRECISE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MR SEAN GARDINER	Telephone	: +61-7-3552-8685
Project	: PE1250.13	Date Samples Received	: 10-Oct-2024
Site	: ----	Issue Date	: 15-Oct-2024
Sampler	: THOMAS BUTLER	No. of samples received	: 6
Order number	: PE1250.13	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
SW1,	SW2,	----	----	----	14-Oct-2024	10-Oct-2024	4
SW3,	SW4,						
SW5/6,	SW7						

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) SW1, SW3, SW5/6,	SW2, SW4, SW7	10-Oct-2024	----	----	----	14-Oct-2024	10-Oct-2024	✖
EA010P: Conductivity by PC Titrator								
Clear Plastic Bottle - Natural (EA010-P) SW1, SW3, SW5/6,	SW2, SW4, SW7	10-Oct-2024	----	----	----	14-Oct-2024	07-Nov-2024	✔
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H) SW1, SW3, SW5/6,	SW2, SW4, SW7	10-Oct-2024	----	----	----	14-Oct-2024	17-Oct-2024	✔
EA045: Turbidity								
Clear Plastic Bottle - Natural (EA045) SW1, SW3, SW5/6,	SW2, SW4, SW7	10-Oct-2024	----	----	----	10-Oct-2024	12-Oct-2024	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Conductivity by Auto Titrator	EA010-P	4	34	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Oxygen - Dissolved	EP025	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Conductivity by Auto Titrator	EA010-P	4	34	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Conductivity by Auto Titrator	EA010-P	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM Schedule B(3)
Oxygen - Dissolved	EP025	WATER	In house: Referenced to APHA 4500-O G. Dissolved Oxygen Probe. This method is compliant with NEPM Schedule B(3)