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APPENDIX 9-2

LABORATORY REPORTS



A copy of this certificate is available on www.fitzsci.ie.

Unit 35, Boyne Business Park, Drogheda, Co. Louth, Ireland Tel: +353 41 9845440 Fax: +353 41 9846171 Web: www.fitzsci.ie Email: info@fitzsci.ie

Customer supplied information appear in italics.

Customer	Adam Keegan	Lab Report Ref. No.	7820/045/01
	Hydro-Environmental Services	Date of Receipt	17/08/2023
	22 Lower Main Street	Sampled On	16/08/2023
	Dungarvan	Date Testing Commenced	17/08/2023
		Received or Collected	Courier: DPD
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	P1574	Date of Report	01/09/2023
Customer Ref	Cluide Cahermorris GWS	Sample Type	Ground Water
Ref 2			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Bicarbonate (CaCO3)	102	Colorimetry	311.2	mg/L CaCO3	
Calcium (Ground Water)	184	ICPMS	116.4	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	20	mg/L	INAB
Iron (Ground Water)	177	ICPMS	<80	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	6.7	mg/L	INAB
Manganese (Ground Water)	177	ICPMS	<]	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	4	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	<0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.47	pH Units	INAB
Phosphate (Ortho) Ground Water	117	Colorimetry	0.01	mg/L as P	INAB
Potassium (Ground Water)	184	ICPMS	3	mg/L	INAB
Sodium (Ground water)	184	ICPMS	10.6	mg/L	INAB
Solids (Total Dissolved)	105	Filtration/ Evaporation @ 180C	396	mg/L	
Solids (Total Suspended)	106	Gravimetry	<2	mg/L	
Sulphate (Ground Water)	119	Colorimetry	7	mg/L as SO4	INAB

Ref 3

Signed:

Aoife Harmon - Laboratory Supervisor

Acc. : Accredited Parameters by ISO/IEC 17025:2017

ISO 17025 ISO 17025

Date: 01/09/2023

For bacterial analysis a result of 0 means none detected in volume examined All organic results are analysed as received and all results are corrected for dry weight at 104 C Results shall not be reproduced, except in full, without the approval of Fitz Scientific Results contained in this report relate only to the samples tested (P) : Presumptive Results

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	Hydro-Environmental Services	Date of Receipt	17/08/2023
	22 Lower Main Street	Sampled On	16/08/2023
	Dungarvan	Date Testing Commenced	17/08/2023
		Received or Collected	Courier: DPD
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	P1574	Date of Report	01/09/2023
Customer Ref	R.Clare SW1	Sample Type	Groundwater
Ref 2			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Bicarbonate (CaCO3)	102	Colorimetry	278.8	mg/L CaCO3	
Calcium (Ground Water)	184	ICPMS	109.6	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	16	mg/L	INAB
Iron (Ground Water)	177	ICPMS	372	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	4.9	mg/L	INAB
Manganese (Ground Water)	177	ICPMS	38	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	1	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	<0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.79	pH Units	INAB
Phosphate (Ortho) Ground Water	117	Colorimetry	0.01	mg/L as P	INAB
Potassium (Ground Water)	184	ICPMS	2.1	mg/L	INAB
Sodium (Ground water)	184	ICPMS	9	mg/L	INAB
Solids (Total Dissolved)	105	Filtration/ Evaporation @ 180C	441	mg/L	
Solids (Total Suspended)	106	Gravimetry	<2	mg/L	
Sulphate (Ground Water)	119	Colorimetry	12	mg/L as SO4	INAB

Ref 3

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Aoife Harmon - Laboratory Supervisor

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	Hydro-Environmental Services	Date of Receipt	17/08/2023
	22 Lower Main Street	Sampled On	16/08/2023
	Dungarvan	Date Testing Commenced	17/08/2023
		Received or Collected	Courier: DPD
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	P1574	Date of Report	01/09/2023
Customer Ref	Balrobuckbeg GWS	Sample Type	Ground Water
Ref 2			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Bicarbonate (CaCO3)	102	Colorimetry	325.6	mg/L CaCO3	
Calcium (Ground Water)	184	ICPMS	122.7	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	19	mg/L	INAB
Iron (Ground Water)	177	ICPMS	378	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	6.4	mg/L	INAB
Manganese (Ground Water)	177	ICPMS	<]	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	2	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.17	pH Units	INAB
Phosphate (Ortho) Ground Water	117	Colorimetry	0.02	mg/L as P	INAB
Potassium (Ground Water)	184	ICPMS	3	mg/L	INAB
Sodium (Ground water)	184	ICPMS	11.4	mg/L	INAB
Solids (Total Dissolved)	105	Filtration/ Evaporation @ 180C	394	mg/L	
Solids (Total Suspended)	106	Gravimetry	<2	mg/L	
Sulphate (Ground Water)	119	Colorimetry	10	mg/L as SO4	INAB

Ref 3

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ISO 17025 ISO 17025

Date: 01/09/2023

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Customer	Adam Keegan	Lab Report Ref. No.	7820/045/04
	Hydro-Environmental Services	Date of Receipt	17/08/2023
	22 Lower Main Street	Sampled On	16/08/2023
	Dungarvan	Date Testing Commenced	17/08/2023
		Received or Collected	Courier: DPD
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	P1574	Date of Report	01/09/2023
Customer Ref	Biggeramore GWS	Sample Type	Ground Water
Ref 2			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Bicarbonate (CaCO3)	102	Colorimetry	302.6	mg/L CaCO3	
Calcium (Ground Water)	184	ICPMS	161.9	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	18	mg/L	INAB
Iron (Ground Water)	177	ICPMS	1140	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	16.6	mg/L	INAB
Manganese (Ground Water)	177	ICPMS	75	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	3	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	<0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.84	pH Units	INAB
Phosphate (Ortho) Ground Water	117	Colorimetry	<0.01	mg/L as P	INAB
Potassium (Ground Water)	184	ICPMS	4	mg/L	INAB
Sodium (Ground water)	184	ICPMS	10.8	mg/L	INAB
Solids (Total Dissolved)	105	Filtration/ Evaporation @ 180C	363	mg/L	
Solids (Total Suspended)	106	Gravimetry	38	mg/L	
Sulphate (Ground Water)	119	Colorimetry	7	mg/L as SO4	INAB

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ISO 17025

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	Hydro-Environmental Services	Date of Receipt	17/08/2023
	22 Lower Main Street	Sampled On	16/08/2023
	Dungarvan	Date Testing Commenced	17/08/2023
		Received or Collected	Courier: DPD
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	P1574	Date of Report	01/09/2023
Customer Ref	Annbally GWS	Sample Type	Ground Water
Ref 2			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Bicarbonate (CaCO3)	102	Colorimetry	226.9	mg/L CaCO3	
Calcium (Ground Water)	184	ICPMS	125.5	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	17	mg/L	INAB
Iron (Ground Water)	177	ICPMS	26	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	7.3	mg/L	INAB
Manganese (Ground Water)	177	ICPMS	<]	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	2	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	<0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.28	pH Units	INAB
Phosphate (Ortho) Ground Water	117	Colorimetry	0.02	mg/L as P	INAB
Potassium (Ground Water)	184	ICPMS	2.2	mg/L	INAB
Sodium (Ground water)	184	ICPMS	9.5	mg/L	INAB
Solids (Total Dissolved)	105	Filtration/ Evaporation @ 180C	399	mg/L	
Solids (Total Suspended)	106	Gravimetry	<2	mg/L	
Sulphate (Ground Water)	119	Colorimetry	8	mg/L as SO4	INAB

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	Hydro-Environmental Services	Date of Receipt	06/12/2023
	22 Lower Main Street	Sampled On	05/12/2023
	Dungarvan	Date Testing Commenced	06/12/2023
		Received or Collected	By Fitz: Pick up Cathal
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	P1574	Date of Report	21/12/2023
Customer Ref	Cluide Caher	Sample Type	Ground Water
Ref 2			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Bicarbonate (CaCO3)	102	Colorimetry	342.4	mg/L CaCO3	
Calcium (Ground Water)	184	ICPMS	139	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	21	mg/L	INAB
Iron (Ground Water)	177	ICPMS	<8	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	6.3	mg/L	INAB
Manganese (Ground Water)	177	ICPMS	<]	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	3	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	<0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.07	pH Units	INAB
Phosphate (Ortho) Ground Water	117	Colorimetry	0.02	mg/L as P	INAB
Potassium (Ground Water)	184	ICPMS	2.9	mg/L	INAB
Sodium (Ground water)	184	ICPMS	12.1	mg/L	INAB
Solids (Total Dissolved)	105	Filtration/ Evaporation @ 180C	409	mg/L	
Solids (Total Suspended)	106	Gravimetry	<2	mg/L	
Sulphate (Ground Water)	119	Colorimetry	11	mg/L as SO4	INAB

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	Hydro-Environmental Services	Date of Receipt	06/12/2023
	22 Lower Main Street	Sampled On	05/12/2023
	Dungarvan	Date Testing Commenced	06/12/2023
		Received or Collected	By Fitz: Pick up Cathal
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	P1574	Date of Report	21/12/2023
Customer Ref	Biggeramore Gws	Sample Type	Ground Water
Ref 2			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Bicarbonate (CaCO3)	102	Colorimetry	321.8	mg/L CaCO3	
Calcium (Ground Water)	184	ICPMS	125.7	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	22	mg/L	INAB
Iron (Ground Water)	177	ICPMS	140	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	11	mg/L	INAB
Manganese (Ground Water)	177	ICPMS	8	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	4	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	<0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.66	pH Units	INAB
Phosphate (Ortho) Ground Water	117	Colorimetry	<0.01	mg/L as P	INAB
Potassium (Ground Water)	184	ICPMS	3.9	mg/L	INAB
Sodium (Ground water)	184	ICPMS	11.4	mg/L	INAB
Solids (Total Dissolved)	105	Filtration/ Evaporation @ 180C	376	mg/L	
Solids (Total Suspended)	106	Gravimetry	<2	mg/L	
Sulphate (Ground Water)	119	Colorimetry	7	mg/L as SO4	INAB

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Date: 21/12/2023

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	Hydro-Environmental Services	Date of Receipt	06/12/2023
	22 Lower Main Street	Sampled On	05/12/2023
	Dungarvan	Date Testing Commenced	06/12/2023
		Received or Collected	By Fitz: Pick up Cathal
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	P1574	Date of Report	21/12/2023
Customer Ref	Balrobuckbeg gws	Sample Type	Ground Water
Ref 2			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Bicarbonate (CaCO3)	102	Colorimetry	354.9	mg/L CaCO3	
Calcium (Ground Water)	184	ICPMS	136.2	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	18	mg/L	INAB
Iron (Ground Water)	177	ICPMS	<8	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	6.1	mg/L	INAB
Manganese (Ground Water)	177	ICPMS	<]	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	2	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	<0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	6.97	pH Units	INAB
Phosphate (Ortho) Ground Water	117	Colorimetry	0.02	mg/L as P	INAB
Potassium (Ground Water)	184	ICPMS	3.4	mg/L	INAB
Sodium (Ground water)	184	ICPMS	11.2	mg/L	INAB
Solids (Total Dissolved)	105	Filtration/ Evaporation @ 180C	385	mg/L	
Solids (Total Suspended)	106	Gravimetry	<2	mg/L	
Sulphate (Ground Water)	119	Colorimetry	10	mg/L as SO4	INAB

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	Hydro-Environmental Services	Date of Receipt	06/12/2023
	22 Lower Main Street	Sampled On	05/12/2023
	Dungarvan	Date Testing Commenced	06/12/2023
		Received or Collected	By Fitz: Pick up Cathal
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	P1574	Date of Report	21/12/2023
Customer Ref	R.Clare	Sample Type	Ground Water
Ref 2			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Bicarbonate (CaCO3)	102	Colorimetry	315.4	mg/L CaCO3	
Calcium (Ground Water)	184	ICPMS	123.8	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	17	mg/L	INAB
Iron (Ground Water)	177	ICPMS	375	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	5.2	mg/L	INAB
Manganese (Ground Water)	177	ICPMS	42	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	2	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	<0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.61	pH Units	INAB
Phosphate (Ortho) Ground Water	117	Colorimetry	0.02	mg/L as P	INAB
Potassium (Ground Water)	184	ICPMS	2.4	mg/L	INAB
Sodium (Ground water)	184	ICPMS	9.9	mg/L	INAB
Solids (Total Dissolved)	105	Filtration/ Evaporation @ 180C	427	mg/L	
Solids (Total Suspended)	106	Gravimetry	<2	mg/L	
Sulphate (Ground Water)	119	Colorimetry	12	mg/L as SO4	INAB

Ref 3

Signed:

Aoife Harmon - Laboratory Supervisor

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Date: 21/12/2023

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	Hydro-Environmental Services	Date of Receipt	06/12/2023
	22 Lower Main Street	Sampled On	05/12/2023
	Dungarvan	Date Testing Commenced	06/12/2023
		Received or Collected	By Fitz: Pick up Cathal
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	P1574	Date of Report	21/12/2023
Customer Ref	Anbally gws	Sample Type	Ground Water
Ref 2			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Bicarbonate (CaCO3)	102	Colorimetry	363.5	mg/L CaCO3	
Calcium (Ground Water)	184	ICPMS	138.8	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	17	mg/L	INAB
Iron (Ground Water)	177	ICPMS	31	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	7.9	mg/L	INAB
Manganese (Ground Water)	177	ICPMS	1	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	2	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	<0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.12	pH Units	INAB
Phosphate (Ortho) Ground Water	117	Colorimetry	0.02	mg/L as P	INAB
Potassium (Ground Water)	184	ICPMS	2.1	mg/L	INAB
Sodium (Ground water)	184	ICPMS	9.8	mg/L	INAB
Solids (Total Dissolved)	105	Filtration/ Evaporation @ 180C	433	mg/L	
Solids (Total Suspended)	106	Gravimetry	<2	mg/L	
Sulphate (Ground Water)	119	Colorimetry	13	mg/L as SO4	INAB

Ref 3

Signed:

Aoife Harmon - Laboratory Supervisor

Acc. : Accredited Parameters by ISO/IEC 17025:2017

ISO 17025 IN ABB ACCREDITED TESTING

Date: 21/12/2023

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Report No: HYDR-868240823 Document No: EF0011

CERTIFICATE OF ANALYSIS

Client	Hydro Environmental Services	Date Submitted	24/08/2023
	22 Lower Main Street	Date Reported	14/09/2023
	Dungarvan Co. Waterford	Order Number	P1574

ro Environmental Services
ro Environmental Services

Comments

N/A

Report Authorised by:

Thomas Koseman

Rosemary Thomas Environmental Chemistry Manager

Conditions:

- 1. Results in this report relate only to the items tested
- 2. Reports may not be reproduced except in full without the approval of ALS Life Sciences Ltd
- 3. All queries regarding this report should be addressed to the Technical Manager at the above address
- 4. A * next to a method reference signifies that ALS Life Sciences Ltd is NOT INAB accredited for this method
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- 6. SUBCON* indicates analysis subcontracted to approved subcontractors who do not hold accreditation for this test
- 7. SUBCON^ indicates analysis subcontracted to approved subcontractors who hold accreditation for this test
- 8. Where sampling is undertaken by ALS personnel, sampling activities are outside the scope of INAB accreditation 9. Dil next to a method reference indicates that a dilution of the water sample was undertaken during testing
- 10. Statement of conformity made against the result does not take into account the uncertainty of measurement associated with the method





Report No:

HYDR-868240823

Document No: E

EF0011

CERTIFICATE OF ANALYSIS

		Date Su	ibmitted 24/08/20	023
		Date Re	ported 14/09/20	023
		Order N		
Client ID L Date Tested 2	Effluent Laurelough SW1 24/08/2023 5724513			
<u>Test</u> Suspended Solids Phosphorus BOD 5 day Total wit Orthophosphate Chloride Nitrate Nitrite Ammonia Total Oxidised Nitrog Nitrogen (Total)		Result <5 0.11 2 <0.02 15.3 <5.0 <0.05 <0.02 0.95 1.2	Unit mg / I mg/I P mg/I O2 mg/I P mg/I CI mg/I NO3 mg/I NO2 mg/I NH3-N mg/L N	Method P202 P207 P280 P281 P281 P281 P281 P281 P281 P285
Client ID L Date Tested 2	Effluent Laurelough SW2 24/08/2023 5724514			
<u>Test</u> Suspended Solids Phosphorus BOD 5 day Total wit Orthophosphate Chloride Nitrate Nitrate Ammonia Total Oxidised Nitrog Nitrogen (Total)		Result 35 0.10 2 0.06 18.1 6.6 0.08 0.12 1.51 1.8	Unit mg / I mg/I P mg/I O2 mg/I P mg/I CI mg/I NO3 mg/I NO2 mg/I NH3-N mg/L N	Method P202 P207 P280 P281 P281 P281 P281 P281 P281 P285

Report Authorised by:

Rosemary Thomas Environmental Chemistry Manager





Report No: HYDR-870061223 Document No: EF0011

CERTIFICATE OF ANALYSIS

Client	Hydro Environmental Services	Date Submitted	06/12/2023
	22 Lower Main Street	Date Reported	20/12/2023
	Dungarvan Co. Waterford	Order Number	P1574

For the Attention of:	lydro Environmental Services
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Sample Reception	2 sample(s) received in good condition
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Comments

N/A

Report Authorised by:

Thomas Koseman

Rosemary Thomas

Environmental Chemistry Manager

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- 10. Statement of conformity made against the result does not take into account the uncertainty of measurement associated with the method





Report No:

HYDR-870061223

Document No: EF

EF0011

CERTIFICATE OF ANALYSIS

	Date Sub	omitted 06/12/20	023
	Date Rep	oorted 20/12/20	023
	Order Nu	umber P1574	
Sample TypeUSDA SwabClient IDLaurclabaghDate Tested07/12/2023ALS ID5883579	sw1		
<u>Test</u> Suspended Solids Phosphorus BOD 5 day Total with ATU Orthophosphate Chloride Nitrate Nitrite Ammonia Total Oxidised Nitrogen Nitrogen (Total)	Result <10 <0.10 <1 <0.02 16.5 6.7 <0.05 0.04 1.52 1.9	Unit mg / I mg/I P mg/I O2 mg/I P mg/I CI mg/I NO3 mg/I NO2 mg/I NH3-N mg/L N	Method P202 P207 P280 P281 P281 P281 P281 P281 P281 P285
Sample TypeUSDA SwabClient IDLaurclabaghDate Tested07/12/2023ALS ID5883580	sw2		
<u>Test</u> Suspended Solids Phosphorus BOD 5 day Total with ATU Orthophosphate Chloride Nitrate Nitrite Ammonia Total Oxidised Nitrogen Nitrogen (Total)	Result 18 0.31 3 <0.02 21.5 16.2 <0.05 0.09 3.67 3.6	Unit mg / I mg/I P mg/I O2 mg/I P mg/I CI mg/I NO3 mg/I NO2 mg/I NH3-N mg/L N	Method P202 P207 P280 P281 P281 P281 P281 P281 P281 P285

Report Authorised by:

Rosemary Thomas Environmental Chemistry Manager