

Environmental Protection Agency,  
Castlebar Regional Inspectorate,  
Castlebar,  
Co. Mayo.

**IPC Reg. No. P0021-02**

28<sup>th</sup> September 2022

**Reference: Bi-annual Borehole Analysis 2022**

Dear Sir/Madam,

In accordance with Schedule C.6 of P0021-02 please find enclosed major anion / cation, Phenol, Ammonia and pH results for the three, site boreholes for the second bi-annual monitoring report 2022.

The facility groundwater borehole locations are shown on the site map in Appendix A.

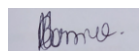
The analysis data where GTVs exist are included in Table 1 for each of the three boreholes for 2016 and 2017 and 2018 and 2019, 2020, 2021 and 2022. All test results are below the GTVs with the exception of Ammonia which is highlighted in the table and graphed to show each boreholes trend for the past five years.

With regards to ammonia the test data although above the ground water threshold values is stable with no increase or decrease in levels evident. This trend of stable monitoring results has been in place since before the commencement of operations of the facility meaning that the ammonia present is not as a result of site activities. Groundwater quality under the facility has been fully assessed in detail by an external hydro geological consultant in accordance with the requirements of Condition 6.6.1 of the license. The findings of this report which has been submitted to EPA confirm that the ammonia is not as a result of site activities.

Ammonia data will continue to be trended for future reports to assess if any changes occur and all other remaining parameters will be compared to groundwater GTVs.

The full suite of test data for each borehole is shown in Appendix B.

Yours sincerely,



Camila Batista  
Environmental & Sustainability Leader

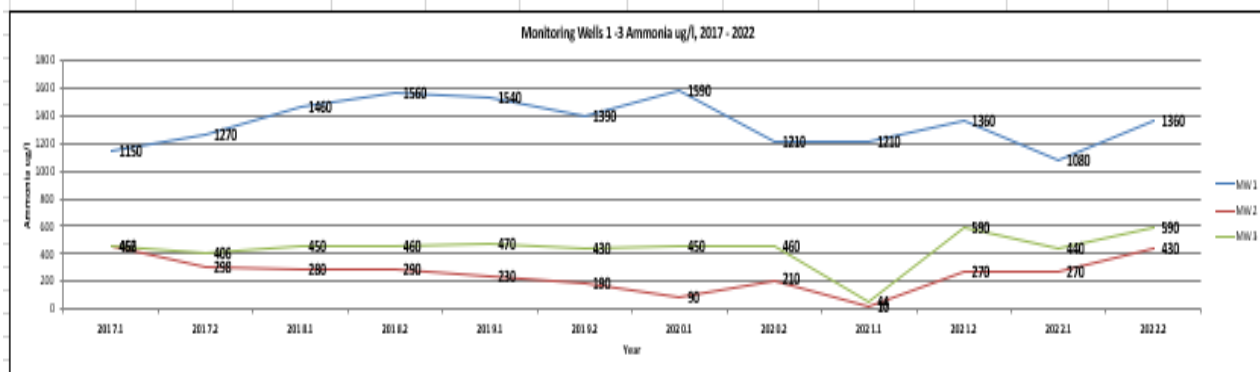
**Table 1: Bi-Annual Borehole Analysis in Accordance with Schedule C.6**

**Table 1: Bi-Annual Borehole Analysis in Accordance with Schedule C.6**

MW 1											Units:	GTV'S
Parameter	Bi Annual 1 2018	Bi Annual 2 2018	Bi Annual 1 2019	Bi Annual 2 2019	Bi Annual 1 2020	Bi Annual 2 2020	Bi Annual 1 2021	Bi Annual 2 2021	Bi Annual 1 2022	Bi Annual 2 2022		
Ammonia	1460	1560	1540	1390	1590	1210	1210	1360	1080	1360	µg/l N	65 - 175 µg/l N
Arsenic	1			<1	<1		4		< 2.5		µg/l	150 µg/l
Cadmium	<1			<1	<1		<0.2		<0.5		µg/l	3.75 µg/l
Chloride	28.00	24.94	22.00	21.00	19.00	20.50	19.60	15.70	16.50	18.40	mg/l	24 - 187.5 mg/l
Chromium	<3			<2	<2		<0.9		< 1.5		µg/l	37.5 µg/l
Copper	1			<1	<1		<2.0		< 7		µg/l	1500 µg/l
Mercury	0.18			<0.08	<0.08		<0.05		< LOD		µg/l	0.75 µg/l
Nickel	<1			<1	<1		<0.5		< 2		µg/l	15 µg/l
Nitrate	0.48	<0.47	<0.47	<0.47	<0.47	<0.47	<2.0	<0.05	<0.05	<0.2	mg/l	37.5 mg/l
Nitrite	<0.002	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.006	<0.006	<0.02	mg/l	0.375 mg/l
Sodium	30.00	28.70	28.20	34.00	35.3	32.3	33.3	27.7	25.5	24	mg/l	150 mg/l
Sulphate	21.00	26.00	20.00	22.00	22	17	24.6	26.5	35.6	38.5	mg/l	187.5 mg/l
PAH's	<0.01			<0.01	<0.01		0.03		< LOD		µg/l	0.075 µg/l

MW 2											Units:	GTV'S
Parameter	Bi Annual 1 2018	Bi Annual 2 2018	Bi Annual 1 2019	Bi Annual 2 2019	Bi Annual 1 2020	Bi Annual 2 2020	Bi Annual 1 2021	Bi Annual 2 2021	Bi Annual 1 2022	Bi Annual 2 2022		
Ammonia	280	290	290	190	90	210	<10	270	270	430	µg/l N	65 - 175 µg/l N
Arsenic	3.00			2.00	2		3		< 2.5		µg/l	150 µg/l
Cadmium	<1			<1	<1		0.3		<0.5		µg/l	3.75 µg/l
Chloride	17.00	19.05	18.00	22.00	19	19.9	29.3	18.6	17	15.4	mg/l	24 - 187.5 mg/l
Chromium	<3			<2	<2		1.7		< 1.5		µg/l	37.5 µg/l
Copper	1			1	<1		9.4		< 7		µg/l	1500 µg/l
Mercury	0.12			<0.08	<0.08		<0.05		< LOD		µg/l	0.75 µg/l
Nickel	2.00			1.00	1.00		0.70		< 2		µg/l	15 µg/l
Nitrate	0.72	<0.47	<0.47	<0.47	<0.47	<0.47	<2.0	<0.05	<0.05	<0.2	mg/l	37.5 mg/l
Nitrite	<0.002	<0.01	<0.01	0.03	0.05	<0.01	<0.05	<0.006	<0.006	<0.02	mg/l	0.375 mg/l
Sodium	29.50	33.10	30.20	44.10	38.6	33.3	57.4	35.0	33.5	26.4	mg/l	150 mg/l
Sulphate	41.00	44.00	38.00	41.00	43	37	45	37	38	38	mg/l	187.5 mg/l
PAH's	<0.01			<0.01	<0.01		<0.01		< LOD		µg/l	0.075 µg/l

MW 3											Units:	GTV'S
Parameter	Bi Annual 1 2018	Bi Annual 2 2018	Bi Annual 1 2019	Bi Annual 2 2019	Bi Annual 1 2020	Bi Annual 2 2020	Bi Annual 1 2021	Bi Annual 2 2021	Bi Annual 1 2022	Bi Annual 2 2022		
Ammonia	450	460	470	430	450	460	440	590	440	590	µg/l N	65 - 175 µg/l N
Arsenic	2			3	3		3		< 2.5		µg/l	150 µg/l
Cadmium	<1			<1	<1		<0.2		<0.5		µg/l	3.75 µg/l
Chloride	27.00	25.17	24.00	24.00	31	24.7	23.5	21.5	20.9	21.3	mg/l	24 - 187.5 mg/l
Chromium	<3			<2	<2		2.4		< 1.5		µg/l	37.5 µg/l
Copper	1.00			<1	1		3		< 7		µg/l	1500 µg/l
Mercury	0.14			<0.08	<0.08		<0.05		< LOD		µg/l	0.75 µg/l
Nickel	2.00			1.00	1		1.7		< 2		µg/l	15 µg/l
Nitrate	<0.11	<0.47	<0.47	<0.47	<0.47	<0.47	<2	<0.05	<0.05	0.30	mg/l	37.5 mg/l
Nitrite	<0.002	<0.01	<0.01	<0.01	<0.01	<0.01	0.049	<0.006	<0.006	<0.02	mg/l	0.375 mg/l
Sodium	36.00	38.50	33.70	38.10	37.8	32.3	32.2	28.7	30.5	28.5	mg/l	150 mg/l
Sulphate	58.00	57.00	50.00	54.00	48	50	100	42.6	44.3	43.2	mg/l	187.5 mg/l
PAH's	<0.01			<0.01	<0.01		<0.01		< LOD		µg/l	0.075 µg/l



# APPENDIX A

