



November 11, 2022

Mrs. Janet Binns
Environmental Protection Specialist
Colorado Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, CO 80203

**RE: Annual Hydrology Report
New Horizon North Mine
Permit No. C-2010-089**

Dear Mrs. Binns:

Enclosed please find the Annual Hydrology Report for the 2021 Water Year (October 2020 – September 2021) for Elk Ridge Mining and Reclamation, LLC (Elk Ridge) New Horizon North Mine. Tri-State Generation and Transmission Association, Inc. (Tri-State) is the parent to Elk Ridge, and in accordance with Rule 4.05.13(4)(c) is submitting the Annual Hydrology Report on behalf of the New Horizon North Mine.

If you have any questions about the enclosed report, please contact Tony Tennyson at (970) 326-3560 or ttennyson@tristategt.org.

Sincerely,

DocuSigned by:

A blue ink signature of Chris Gilbreath, written in a cursive style.
D250C711D0BF450...

Chris Gilbreath
Senior Manager,
Remediation and Reclamation

CG:TT:der

Enclosures

cc: Tony Tennyson (via email)
File: G474-11.3(21)b-5

2022 Annual Hydrology Report

Water Year October 1, 2021 to September 30, 2022

Elk Ridge Mining and Reclamation, LLC

New Horizon North Mine

Permit No. C-2010-089

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Rule 4.05.13(4)(c) Annual Hydrology Report Requirements

(i) Water quantity monitoring data for the water year is presented Appendices 1 and 3 of this report.

(ii) Water quality monitoring data for the water year is presented in Appendices 1 and 3 of this report. Discharge monitoring reports (DMR) are submitted to the Colorado Department of Public Health and Environment. Copies of each DMR are provided monthly to the Division during the report year and are included in this report by reference only.

(iii) A written interpretation of the data has been requested by the Division in accordance with Rule 4.05.13(4)(c)(iii) and is included within this annual hydrology report.

The monitoring timeframe for this annual hydrology report is from October 1, 2021 through September 30, 2022.

A description of the surface and ground water monitoring plan including the monitoring frequency is located in Appendix 2.05.6(3)-3. All monitoring locations are shown on Map 2.04-7-1. This information can be located in Permit No. C-2010-089.

Surface Water

Surface water monitoring sites are comprised of several sites, which comprise the current, upstream, and downstream condition and are briefly described below. Please see Map 2.04.7-1 for monitoring locations.

- SW-N202 is located on Meehan Draw and represents the downstream condition below mining.
- SW-N207 is located on Meehan Draw and represents and up gradient condition.
- SW-N213 is located on Nygren Draw and represents the up gradient condition.
- SW-N214 is located on Nygren Draw and represents the down gradient condition.

New Horizon North currently samples each surface water site for a variety of quality parameters. Of all the parameters that are analyzed for, several key indicator parameters have been identified and are addressed annually for the hydrology report. These parameters are laboratory pH, laboratory conductivity, TDS, sulfate, calcium, iron, magnesium, and sodium. Surface water monitoring data for the water year can be found in Appendix 1, and surface water summary graphs of the indicator parameters for all monitoring locations are provided in Appendix 2.

SW-N202 and SW-N207 – Meehan Draw

Data for surface water sites on Meehan Draw, SW-N202 (down gradient) and SW-N207 (up gradient), have been compiled and are shown on the summary tables below and graphically. Summary tables for indicator parameters are provide below for each site and include data from 2008 to the end of September of 2022 if available.

SW-N202							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	8.0	0.4	1.3	8.4	7.1	6/5/19	2/12/15
Lab Cond. (umhos/cm)	1,196	4.4	1,862	2,050	188	2/24/21	2/18/20
TDS (mg/l)	978	438	1,483	1,920	437	2/24/21	5/22/14
Sulfate (mg/l)	565	361	1,152	1,320	168	2/24/21	5/16/17
Calcium (mg/l)	195	77	245	351	106	3/20/12	5/16/17
Iron (tot rec ug/l)	1,664	1,638	9,520	9,770	250	2/21/18	5/23/16
Magnesium (mg/l)	53	23	83	108	26	3/3/10	5/22/14
Sodium (mg/l)	18	6	21	31	11	2/24/21	5/22/14

SW-N207							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	8.4	0.1	0.6	8.6	8.0	6/16/09	2/11/14
Lab Cond. (umhos/cm)	795	156	548	1,070	522	11/18/15	8/11/12
TDS (mg/l)	534	136	458	774	316	3/29/21	8/23/12
Sulfate (mg/l)	182	74	293	393	100	3/29/21	8/25/20
Calcium (mg/l)	109	22	97	149	53	11/27/12	2/11/14
Iron (tot rec ug/l)	339	322	1,350	1,410	60	6/7/10	12/1/10
Magnesium (mg/l)	36	13	51	65	14	10/23/08	8/14/12
Sodium (mg/l)	14	4	17	23	7	11/27/12	8/14/12

A review of the water year data indicates no minimums or maximums values occurred at SW-N202 or SW-N207 for the water year. All indicator parameters tracked within historical trends.

SW-N213 and SW-N214 - Nygren Draw

Data for sites SW-N213 (up gradient) and SW-N214 (down gradient) have been compiled and are shown on the summary tables below and graphically. Summary tables for indicator parameters are provide below for each site and include data from 2008 to the end of September of 2022 if available.

SW-N213							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	8.4	0.1	0.8	8.7	7.9	5/24/21	8/11/21
Lab Cond. (umhos/cm)	982	224	839	1,390	551	11/18/15	5/22/14
TDS (mg/l)	685	204	746	1,060	314	11/18/15	5/22/14
Sulfate (mg/l)	265	96	368	472	104	8/11/21	5/22/14
Calcium (mg/l)	129	30	108	186	78	8/11/21	5/22/14
Iron (tot rec ug/l)	125	106	390	400	10	8/21/12	11/26/13
Magnesium (mg/l)	45.6	14.2	67.0	87.4	20.4	11/18/15	5/22/14
Sodium (mg/l)	23.3	7.8	32.2	42.7	10.5	11/18/15	5/22/14

SW-N214							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	8.4	0.1	0.3	8.6	8.3	10/5/22	5/22/14
Lab Cond. (umhos/cm)	977	222	826	1,380	554	11/18/15	5/22/14
TDS (mg/l)	682	201	718	1,040	322	8/25/20	5/22/14
Sulfate (mg/l)	263	93	363	466	103	8/11/21	5/22/14
Calcium (mg/l)	129	30	109	188	79	8/11/21	5/22/14
Iron (tot rec ug/l)	178	161	660	670	10	5/31/13	11/26/13
Magnesium (mg/l)	44.6	14.5	66.4	87.3	20.9	11/18/15	5/22/14
Sodium (mg/l)	23.2	7.9	31.8	42.5	10.7	11/18/15	5/22/14

A review of the water year data indicates one maximum for laboratory pH occurred at SW-N214. The remaining indicator parameters tracked within historical trends.

Surface Water Data Interpretation

Meehan Draw

As shown on the graphs in Appendix 2 for the indicator parameters, when comparing the up gradient and down gradient locations, SW-N202 tends to historically trend higher for all the indicator parameters. Both the up gradient and down gradient locations show stable conditions in Meehan Draw with seasonal influences from irrigation.

Nygren Draw

As shown in Appendix 2 for the indicator parameters, when comparing the up gradient and down gradient locations on Nygren Draw (SW-N213 and SW-N214), they both trend almost

identically. This indicates normal natural conditions are occurring in Nygren Draw with seasonal influences from irrigation.

Ground Water

Ground water monitoring sites are comprised of several sites which comprise the aquifers upstream and downstream of mining and reclamation activities and are briefly described below. Please see Map 2.04.7-1 for monitoring locations.

- GW-N50 monitors the underburden aquifer and represents the up gradient condition.
- GW-N51 monitors the Dakota coal aquifer and represents the up gradient condition.
- GW-N52 monitors the overburden aquifer and represents the up gradient condition.
- GW-N53 monitors the underburden aquifer and represents the down gradient condition.
- GW-N54 monitors the Dakota coal aquifer which represents the down gradient condition.
- GW-N55 monitors the overburden aquifer which represents the down gradient condition.
- GW-N56 monitors the underburden aquifer down-dip of the mining area.
- GW-N57 monitors the Dakota coal aquifer down-dip of the mining area.
- GW-N58 monitors the overburden aquifer down-dip of the mining area.

New Horizon currently samples each groundwater site for a variety of quality parameters. Of all the parameters that are analyzed for, several key indicator parameters are identified and are addressed annually for the hydrology report. These are laboratory pH, laboratory conductivity, TDS, sulfate, calcium, iron, magnesium, sodium and elevation. Ground water monitoring data for the water year can be found in Appendix 3, and ground water summary graphs of the indicator parameters for all monitoring locations are provided in Appendix 4.

Wells GW-N50, GW-N51, and GW-N52

GW-N50 monitors the underburden aquifer, GW-N51 monitors the Dakota coal aquifer, and GW-N52 monitors the overburden aquifer. This cluster of wells provides groundwater data representative of the up-gradient condition above where mining and reclamation has occurred.

Summary of the indicator parameters for each well are provided as follows:

GW-N50							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	7.8	0.2	0.8	8.1	7.3	6/3/10	8/25/09
Lab Cond. (umhos/cm)	2,518	434	2,337	3,330	993	6/8/20	12/10/20
TDS (mg/l)	2,196	360	1,630	3,020	1,390	6/8/20	9/23/19
Sulfate (mg/l)	1,321	1,119	8,525	9,180	655	9/23/19	3/15/21
Calcium (mg/l)	322	52	198	413	215	3/1/11	11/30/09
Iron (mg/l)	0.1992	0.1831	0.5468	0.5700	0.0232	11/30/21	5/27/21
Manganese (mg/l)	0.89	0.31	1.29	1.55	0.26	3/3/10	1/26/22
Sodium (mg/l)	115.0	30.4	106.3	163.0	56.7	3/10/20	9/23/19
Magnesium (mg/l)	166	51	245	246	1	6/8/20	6/21/22

GW-N51							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	6.8	0.6	2.3	7.9	5.6	2/20/13	11/15/17
Lab Cond. (umhos/cm)	1,016	129	705	1,410	705	5/22/09	12/8/20
TDS (mg/l)	738	148	1,093	1,100	538	5/28/09	3/15/21
Sulfate (mg/l)	451	108	469	700	231	5/26/09	5/21/14
Calcium (mg/l)	110	22	100	167	67	8/25/11	3/15/21
Iron (mg/l)	8.4	3.9	11.3	12.9	1.6	12/8/20	3/15/21
Manganese (mg/l)	0.98	0.40	1.45	1.96	0.52	8/25/11	3/15/21
Sodium (mg/l)	26.4	6.7	35.7	50.3	14.6	5/20/09	2/10/16
Magnesium (mg/l)	49.2	9.9	55.9	85.7	29.8	5/20/09	3/15/21

GW-N52							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab Ph	7.7	0.2	1.3	8.3	7.0	8/26/11	11/15/17
Lab Cond. (umhos/cm)	875	139	604	1,250	646	11/23/11	12/7/20
TDS (mg/l)	625	115	600	1,030	430	12/2/11	5/21/12
Sulfate (mg/l)	276	78	412	580	168	12/1/11	5/15/12
Calcium (mg/l)	162	31	162	279	117	11/22/11	8/23/17
Iron (mg/l)	0.0842	0.1277	0.3726	0.3800	0.0074	1/26/22	5/27/21
Manganese (mg/l)	0.12	0.35	1.43	1.43	0.01	3/15/21	5/28/11
Sodium (mg/l)	7.9	2.1	9.4	15.1	5.7	3/10/20	8/23/17
Magnesium (mg/l)	19.4	6.1	27.1	39.1	12.0	3/10/20	8/23/17

A review of the water year for this series of wells indicates two minimum values for manganese and magnesium occurred at GW-N50. All other analytical results for all the wells in this series trending within previous data sets.

Wells GW-N53, GW-N54, and GW-N55

GW-N53 monitors the underburden aquifer, GW-N54 monitors the Dakota coal aquifer, and GW-N55 monitors the overburden aquifer. This cluster of wells provides data representative of the down gradient condition below where mining occurred.

Summary of the indicator parameters for each well are provided as follows:

GW-N53							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	8.0	0.1	0.5	8.2	7.7	10/18/08	11/13/13
Lab Cond. (umhos/cm)	3,299	255	1,770	3,640	1,870	9/15/21	12/8/20
TDS (mg/l)	2,905	240	730	3,300	2,570	1/26/22	5/28/09
Sulfate (mg/l)	1,601	108	430	1,830	1,400	2/25/15	5/26/09
Calcium (mg/l)	309	19	79	344	265	3/4/20	12/1/10
Iron (mg/l)	0.0368	0.0292	0.0760	0.0900	0.0140	11/30/22	5/27/21
Manganese (mg/l)	0.056	0.042	0.135	0.140	0.005	11/19/16	12/1/09
Sodium (mg/l)	197	21	73	238	165	8/25/11	11/28/17
Magnesium (mg/l)	250	15	73	281	208	11/23/11	12/1/10

GW-N54							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	7.8	0.1	0.7	8.1	7.4	10/18/08	8/11/22
Lab Cond. (umhos/cm)	4,644	958	4,230	6,100	1,870	8/20/14	12/8/20
TDS (mg/l)	4,716	1,042	5,280	6,940	1,660	2/25/15	12/8/10
Sulfate (mg/l)	2,978	856	4,518	5,030	512	2/25/15	9/16/20
Calcium (mg/l)	440	76	333	534	201	11/17/15	9/1/10
Iron (mg/l)	0.1576	0.1073	0.2550	.2900	0.0350	8/11/22	5/27/21
Manganese (mg/l)	0.442	0.223	0.740	0.870	0.130	11/13/13	6/2/10
Sodium (mg/l)	169	32	146	213	67	8/24/09	8/31/10
Magnesium (mg/l)	561	143	654	880	226	11/17/15	12/1/10

GW-N55							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	7.8	0.1	0.6	8.1	7.5	2/27/10	3/4/20
Lab Cond. (umhos/cm)	9,271	2,672	10,450	13,000	2,550	9/16/20	12/8/20
TDS (mg/l)	11,951	3,709	10,800	16,500	5,700	9/16/20	8/26/15
Sulfate (mg/l)	7,887	2,910	10,780	12,600	1,820	3/4/20	5/27/21
Calcium (mg/l)	446	24	93	496	403	3/3/10	12/8/20
Iron (mg/l)	0.2174	0.2062	0.5870	0.6200	0.0330	8/9/22	12/8/20
Manganese (mg/l)	0.50	0.38	1.29	1.30	0.02	9/14/21	8/25/11
Sodium (mg/l)	330	42	174	444	270	8/25/11	8/9/22
Magnesium (mg/l)	1,884	726	2,200	2,840	650	9/16/20	2/18/14

A review of the water year data indicates two maximum values for TDS and iron occurred at GW-N53. GW-N54 exhibited one maximum value for iron and one minimum value laboratory pH. GW-N55 exhibited one maximum value for iron and one minimum value for sodium.

Wells GW-N56, GW-N57, and GW-N58

GW-N56 monitors the underburden aquifer, GW-N57 monitors the Dakota coal, and GW-N58 monitors the overburden aquifer. This cluster of wells provides groundwater data representative of the up gradient condition above where mining occurred.

Summary of the indicator parameters for each well are provided as follows:

GW-N56							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	7.8	0.1	0.4	8.0	7.6	8/14/13	11/27/12
Lab Cond. (umhos/cm)	4,086	445	2,110	5,040	2,930	6/22/22	12/2/20
TDS (mg/l)	3,943	554	2,040	5,160	3,120	6/22/22	8/29/12
Sulfate (mg/l)	2,379	370	1,360	3,260	1,900	5/21/21	5/26/15
Calcium (mg/l)	483	73	288	606	318	5/17/16	8/29/12
Iron (mg/l)	0.1158	0.0798	0.1850	0.2200	0.0350	6/22/22	3/9/21
Manganese (mg/l)	0.36	0.27	1.19	1.20	0.01	5/9/18	5/21/14
Sodium (mg/l)	173	43	254	395	141	11/27/12	5/17/16
Magnesium (mg/l)	213	204	551	570	19	11/10/21	8/29/12

GW-N57							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	7.7	0.1	0.5	8.0	7.5	12/11/19	5/17/16
Lab Cond. (umhos/cm)	4,695	370	1,980	5,240	3,260	9/14/21	11/30/20
TDS (mg/l)	4,834	370	1,520	5,360	3,840	6/22/22	5/26/15
Sulfate (mg/l)	3,103	252	1,160	3,650	2,490	9/21/16	5/26/15
Calcium (mg/l)	505	76	493	548	55	7/24/18	12/11/19
Iron (mg/l)	0.2559	0.2393	0.5551	.5900	0.0349	6/22/22	9/14/21
Manganese (mg/l)	0.68	0.18	0.73	0.99	0.26	8/9/17	8/20/14
Sodium (mg/l)	147	18	73	174	101	2/17/14	5/26/15
Magnesium (mg/l)	524	43	230	620	390	11/10/21	5/26/15

GW-N58							
Parameter	Mean	Std dev	Range	Max.	Min.	Max at	Min at
Lab pH	7.5	0.3	1.1	7.9	6.8	5/28/18	5/28/13
Lab Cond. (umhos/cm)	7,758	3,057	12,540	16,000	3,460	5/28/13	11/30/20
TDS (mg/l)	9,183	4,147	15,150	20,000	4,850	5/28/13	2/14/18
Sulfate (mg/l)	6,297	3,402	11,940	15,000	3,060	5/28/13	2/14/18
Calcium (mg/l)	467	22	102	532	430	11/27/12	5/21/14
Iron (mg/l)	0.905	0.474	1.150	1.61	0.460	11/30/20	6/22/22
Manganese (mg/l)	1.81	1.88	5.99	6.15	0.16	11/27/12	5/9/18
Sodium (mg/l)	261	237	1,308	1,460	152	5/28/13	8/29/12
Magnesium (mg/l)	1,384	819	2,636	3,150	514	11/13/13	2/14/18

A review of the water year data indicates three maximum values occurred for electrical conductivity, TDS, and iron at GW-N56. Three maximum values for TDS, iron, and magnesium were obtained at GW-N57, and one minimum value for iron occurred at GW-N58.

Groundwater Data Interpretation

The graphs in Appendix 4 provides the indicator parameters in comparison with the up gradient and down gradient locations with the overburden, coal, and underburden aquifer shown together accordingly.

Underburden Aquifer

When comparing the up gradient (GW-N50) and down gradient wells (GW-N53 and GW-N56) for the overburden aquifer, GW-N50 tends to historically trend lower for most of the indicator parameters with the exception of iron and manganese versus the two down gradient wells. The overall up-gradient conditions for the overburden aquifer trend in a consistent manner with seasonal influences from local irrigation apparent in the data. The exception to this is manganese and pH as both are slightly trending down overtime.

The down gradient well GW-N53 demonstrates less variability in the data and provides a consistent water quality in the pre-mining and post mining timeframes. Data for down gradient well GW-N56 indicates less stability in the overall water quality in the overburden aquifer with some of the indicator parameters increasing including calcium, magnesium, sulfate, and TDS. Sodium at GW-N56 is trending downward.

Coal Aquifer

When comparing the up gradient (GW-N51) and down gradient wells (GW-N54 and GW-N57) for the coal aquifer, GW-N51 historically trends much lower for most of the indicator parameters versus the two down gradient wells. Similar to the overburden aquifer iron historically trends higher at the up-gradient location GW-N51 as well as manganese. Manganese is trending downward up-gradient of the mining and reclamation areas. The overall up-gradient conditions for the coal aquifer trend in a consistent manner with seasonal influences from local irrigation. The exception to this is manganese and pH as both are slightly trending down overtime.

Historically, both GW-N54 and GW-N57 both trended higher for most the indicator parameters. In general, the data acquired indicates very poor water quality was present prior to the commencement of mining at New Horizon North Mine, and the water quality post mining continues to be of low quality. Both wells exhibit relatively stable trends overtime for all the indicator parameters. Although, manganese is increasing in the coal aquifer down gradient of mining at GW-N57.

Overburden Aquifer

When comparing the up gradient (GW-N52) and down gradient wells (GW-N55 and GW-N58) for the underburden aquifer, GW-N52 historically trends lower for the indicator parameters versus the two down gradient wells. GW-N52 demonstrates for all the indicator parameters trend in a consistent manner with stable water quality up-gradient of mining and reclamation activities.

Like the coal aquifer, the two down gradient wells, GW-N55 and GW-N58 both trend higher for most the indicator parameters. As a whole, the data acquired from both down gradient wells indicates very poor water quality was present prior to the commencement of mining at the New Horizon North Mine, and the water quality post mining continues to be of low quality. TDS levels down-gradient prior to mining at GW-N55 were above 6,000 mg/l, and at GW-N58 TDS levels were above 16,500 mg/l. Further, sulfate at GW-N55 prior to mining was nearly 4,000 mg/l, and at GW-N58 was well above 10,000 mg/l. Electrical conductivity for both down gradient wells was also high at nearly 6,000 umhos/cm (GW-N55) and around 8,000 umhos/cm prior to mining.

Postmining (post 2017) electrical conductivity, magnesium, sulfate, and TDS have been decreasing and stabilizing at well GW-N58, while the same parameters have been increasing at GW-N55.

Appendix 1
Surface Water Monitoring Data

New Horizon North Mine**Analysis Results by Date (column) and Parameter (row)****Date Range: 10/01/2021 to 09/30/2022****Site: SW-N207**

	10/5/2021	1/18/2022	5/11/2022	7/14/2022
Al, tot rec, ug/L	1.27	DRY	0.76	1.51
As, tot rec, ug/L	0.00127		0.00076	0.00151
Ca, diss, mg/L	104		84.5	101
Cd, tot rec, ug/L	<0.0		<0.0	<0.0
Cl, diss, mg/L	7.16		3.6	4.15
Cu, diss, mg/L	<0.0		0.00142	<0.0
Fe, tot rec, ug/L	139		87.4	133
HCO ₃ , mg/L	*		168	256
Hg, tot, mg/L	<0.0		<0.0	<0.0
Mg, diss, mg/L	26.4		17.7	27.8
Mn, diss, mg/L	0.041		<0.0	0.022
Na, diss, mg/L	11.5		7.44	9.9
NH ₃ as N, tot, mg/L	<0.0		<0.0	<0.0
NO ₂ , diss, mg/l	*		<0.0	<0.0
NO ₃ , diss, mg/l	*		<0.0	<0.0
Pb, tot rec	0.22		0.26	<0.0
pH (field), pH	8.1		8.1	8
pH (lab), pH	8.5		8.3	8.2
PO ₄ , tot	0.14		0.0806	0.12
SAR, ratio	0.26		0.19	0.23
Se, diss	0.00024		0.00045	0.00027
SO ₄ , diss, mg/L	140		127	130
Spec. Cond. (lab), umhos/cm	780		563	699
Spec. Cond. (field), umhos/cm	722		547	712
TDS, mg/L	480		388	518
TSS, mg/L	<0.0		<0.0	5.00
Zn, tot rec	<0.0		<0.0	<0.0

*Due to a laboratory error analytical results were not obtained.

New Horizon North Mine

Analysis Results by Date (column) and Parameter (row)

Date Range: 10/01/2021 to 09/30/2022

Site: SW-N213

	10/5/2021	1/18/2022	5/11/2022	7/14/2022
Al, tot rec, ug/L	<0.05	DRY	<0.05	<0.05
As, tot rec, ug/L	0.93		0.95	1.27
Ca, diss, mg/L	152		119	158
Cd, tot rec, ug/L	<0.0		0.429	0.082
Cl, diss, mg/L	10.1		10.4	8.85
Cu, diss, mg/L	<0.0		0.00122	<0.0
Fe, tot rec, ug/L	40.1		37	69.1
HCO3, mg/L	*		208	329
Hg, tot, mg/L	<0.0		<0.0	<0.0
Mg, diss, mg/L	55.7		38.6	49.2
Mn, diss, mg/L	0.027		<0.0	0.024
Na, diss, mg/L	28		22.4	26.9
NH3 as N, tot, mg/L	<0.0		<0.0	<0.0
NO2, diss, mg/l	*		<0.0	<0.0
NO3, diss, mg/l	*		<0.0	0.059
Pb, tot rec	<0.0		<0.0	0.17
pH (field), pH	8.3		8.1	8.1
pH (lab), pH	8.6		8.4	8.2
PO4, tot	0.15		0.18	0.25
SAR, ratio	0.5		0.46	0.48
Se, diss	0.00025		0.0009	0.00037
SO4, diss, mg/L	285		235	323
Spec. Cond. (lab), umhos/cm	1220		896	1130
Spec. Cond. (field), umhos/cm	1121		849	1124
TDS, mg/L	830		648	884
TSS, mg/L	<0.0		<0.0	<0.0
Zn, tot rec	<0.0		<0.0	<0.0

*Due to a laboratory error analytical results were not obtained.

New Horizon North Mine**Analysis Results by Date (column) and Parameter (row)****Date Range: 10/01/2021 to 09/30/2022****Site: SW-N214**

	10/5/2021	1/18/2022	5/11/2022	7/14/2022
Al, tot rec, ug/L	<0.05	DRY	<0.05	<0.05
As, tot rec, ug/L	0.95		0.98	1.3
Ca, diss, mg/L	152		119	159
Cd, tot rec, ug/L	<0.0		<0.0	<0.0
Cl, diss, mg/L	9.98		10.5	8.66
Cu, diss, mg/L	<0.0		0.00104	<0.0
Fe, tot rec, ug/L	40.6		39.1	62.3
HCO ₃ , mg/L	*		205	340
Hg, tot, mg/L	<0.0		<0.0	<0.0
Mg, diss, mg/L	56		38.7	49.6
Mn, diss, mg/L	0.014		<0.0	0.026
Na, diss, mg/L	28.1		22.2	27
NH ₃ as N, tot, mg/L	<0.0		<0.0	<0.0
NO ₂ , diss, mg/l	*		<0.0	<0.0
NO ₃ , diss, mg/l	*		<0.0	0.058
Pb, tot rec	<0.0		<0.0	<0.0
pH (field), pH	8.3		8.4	8.2
pH (lab), pH	8.6		8.4	8.3
PO ₄ , tot	0.15		0.18	0.25
SAR, ratio	0.5		0.46	0.48
Se, diss	0.00023		0.00084	0.00037
SO ₄ , diss, mg/L	290		234	321
Spec. Cond. (lab), umhos/cm	1210		896	1120
Spec. Cond. (field), umhos/cm	1129		864	1131
TDS, mg/L	832		652	872
TSS, mg/L	<0.0		<0.0	<0.0
Zn, tot rec	<0.0		<0.0	<0.0

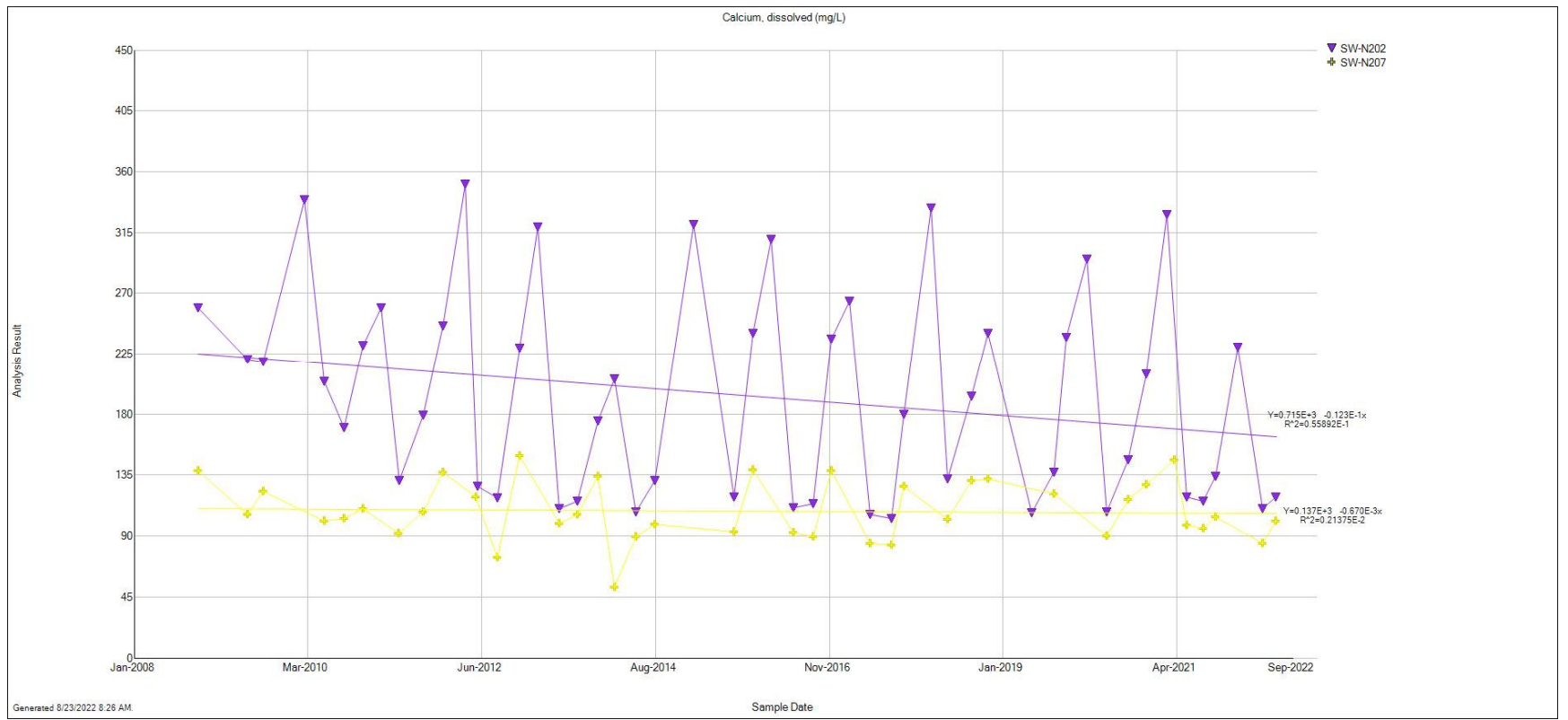
*Due to a laboratory error analytical results were not obtained.

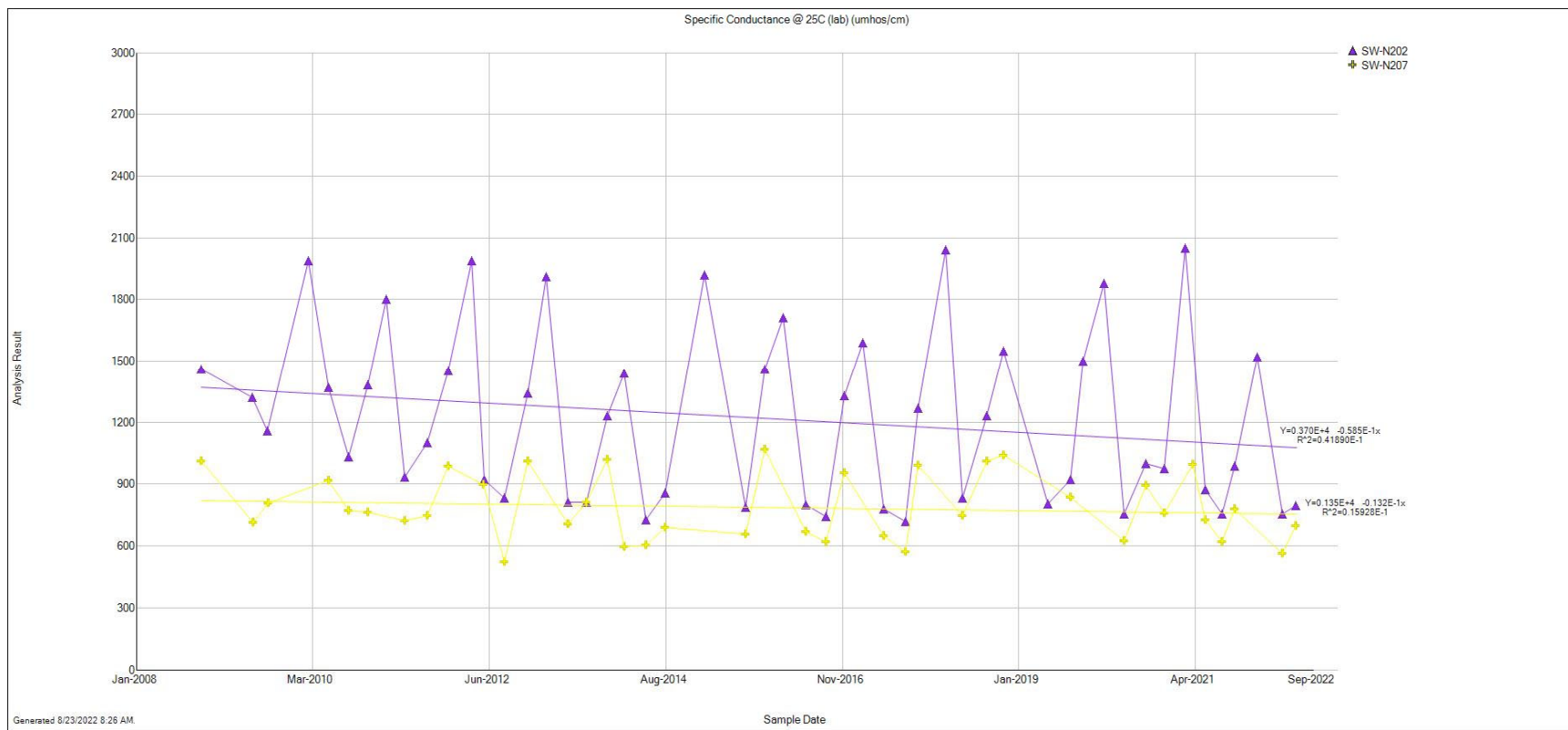
New Horizon North Mine**Analysis Results by Date (column) and Parameter (row)****Date Range: 10/01/2021 to 09/30/2022****Site: SW-N202**

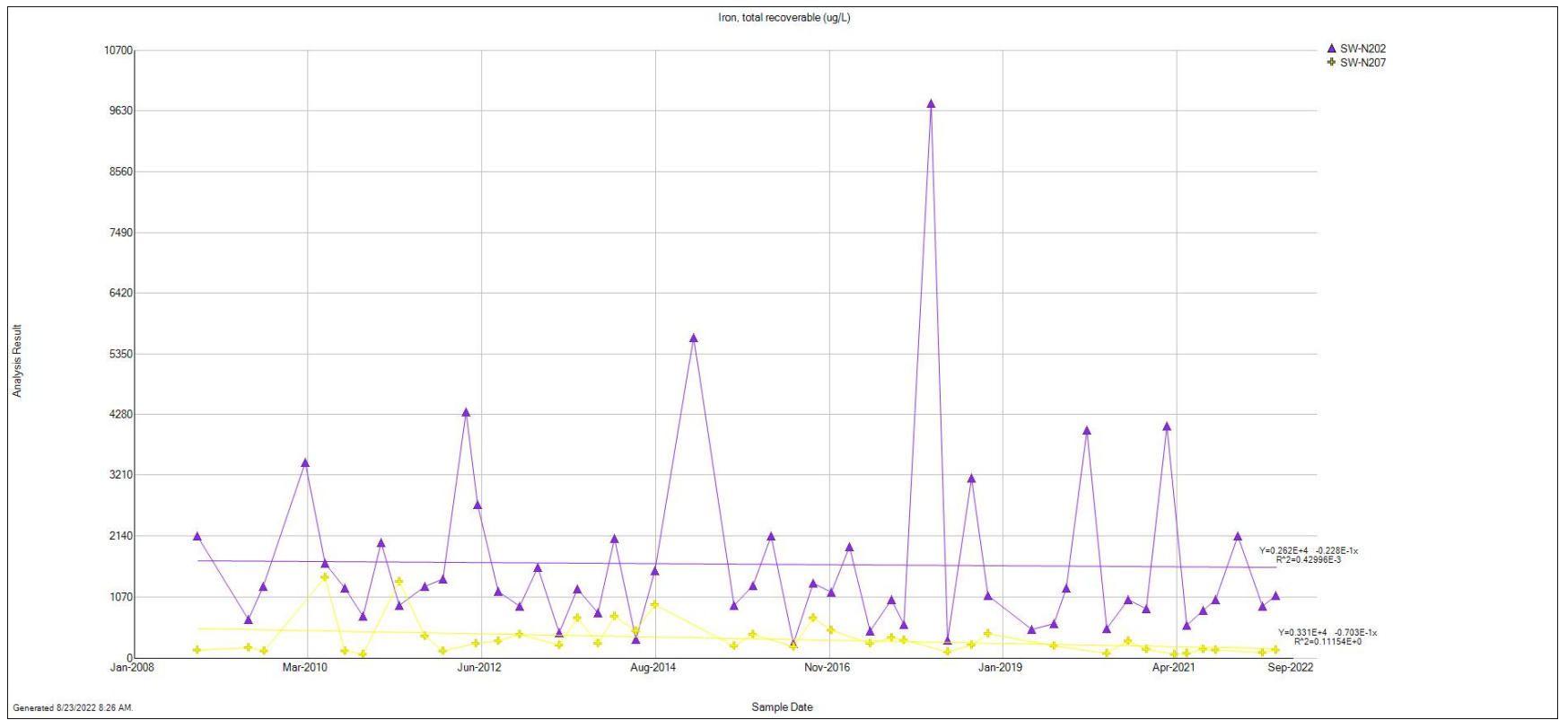
	10/5/2021	1/18/2022	5/11/2022	7/14/2022
Al, tot rec, ug/L	0.482	0.441	0.361	0.164
As, tot rec, ug/L	1.59	0.55	1.18	2.11
Ca, diss, mg/L	134	230	110	119
Cd, tot rec, ug/L	0.106	0.324	0.087	0.099
Cl, diss, mg/L	11.4	7.31	5.26	4.72
Cu, diss, mg/L	<0.0008	<0.0008	0.00556	<0.0008
Fe, tot rec, ug/L	1020	2140	906	1090
HCO3, mg/L	291	86	174	239
Hg, tot, mg/L	<0.0002	<0.0002	<0.0002	<0.0002
Mg, diss, mg/L	35.7	60.4	28.2	30.6
Mn, diss, mg/L	0.108	0.733	0.027	0.042
Na, diss, mg/L	14.6	23.5	11.1	11.8
NH3 as N, tot, mg/L	<0.05	0.216	<0.05	<0.05
NO2, diss, mg/l	*	<0.01	<0.01	<0.01
NO3, diss, mg/l	*	0.077	0.023	<0.02
Pb, tot rec	1.72	0.6	1.53	1.46
pH (field), pH	8	7.2	7.9	7.9
pH (lab), pH	8.4	7.9	8.3	8.1
PO4, tot	0.0527	<0.03	0.0403	0.29
SAR, ratio	0.29	0.36	0.25	0.25
Se, diss	0.00018	<0.0001	0.0047	0.00026
SO4, diss, mg/L	245	826	202	204
Spec. Cond. (lab), umhos/cm	986	1520	757	795
Spec. Cond. (field), umhos/cm	890	1,351	801	717
TDS, mg/L	668	1340	544	600
TSS, mg/L	15	5	17	19
Zn, tot rec	<0.02	0.072	<0.02	<0.02

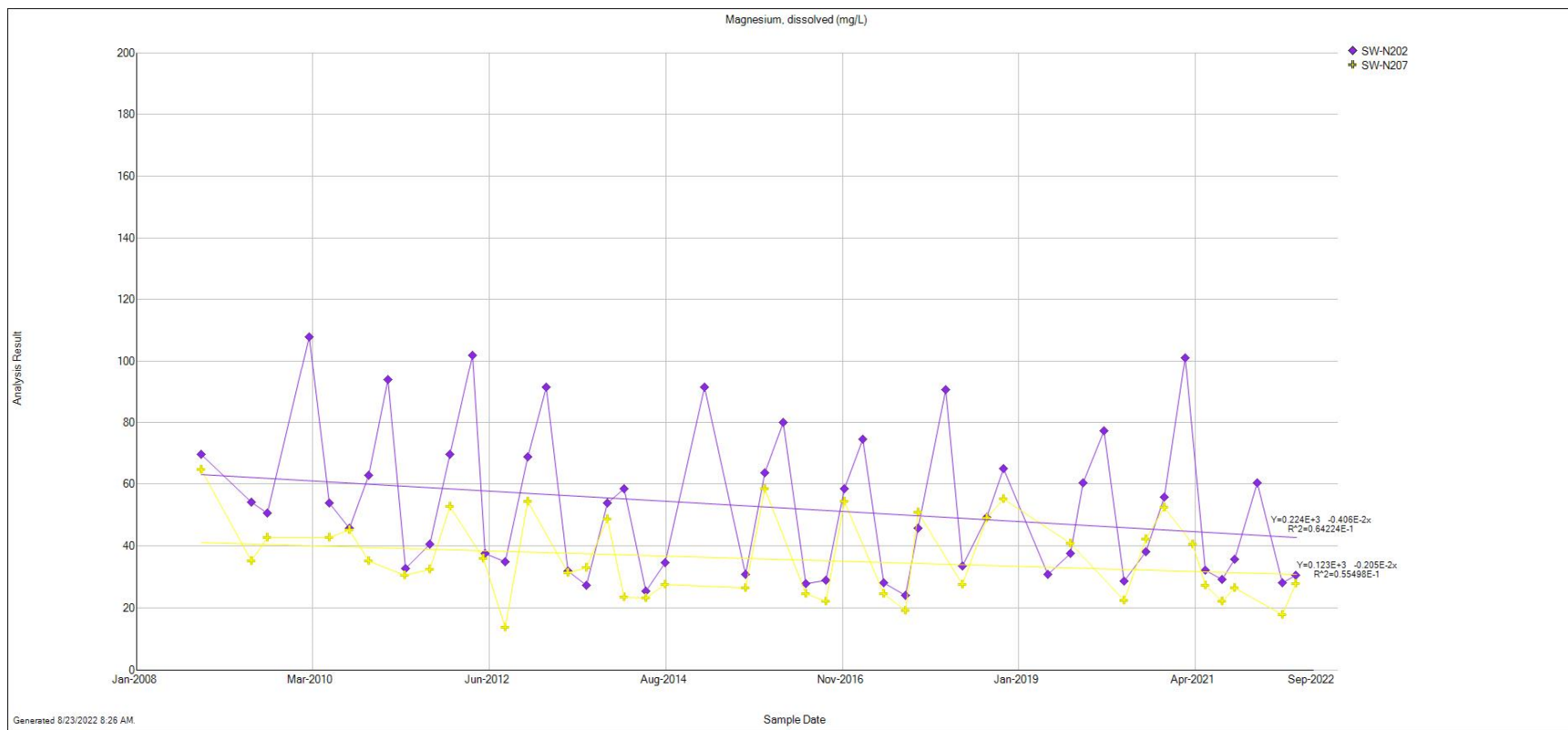
*Due to a laboratory error analytical results were not obtained.

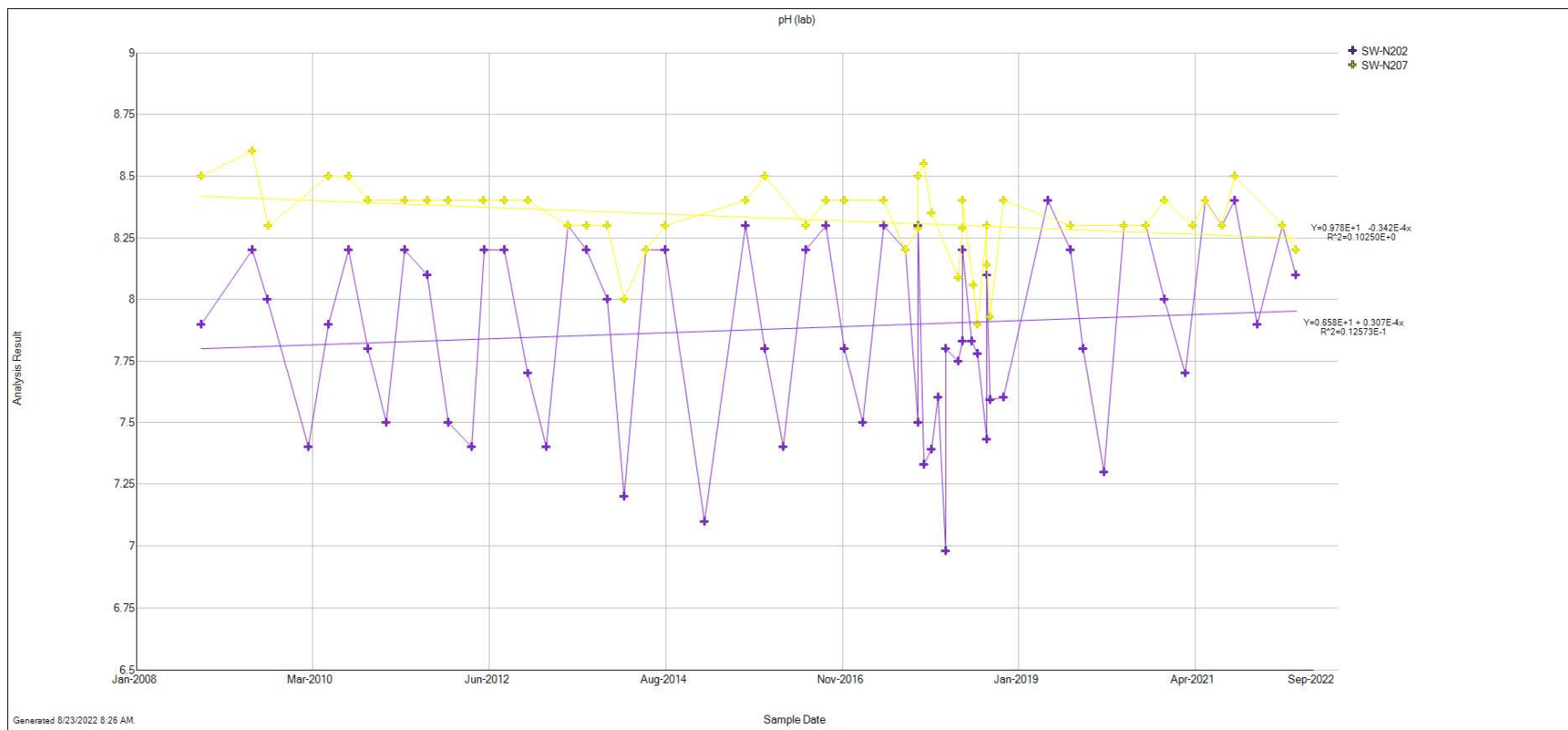
Appendix 2
Surface Water Monitoring Graphs

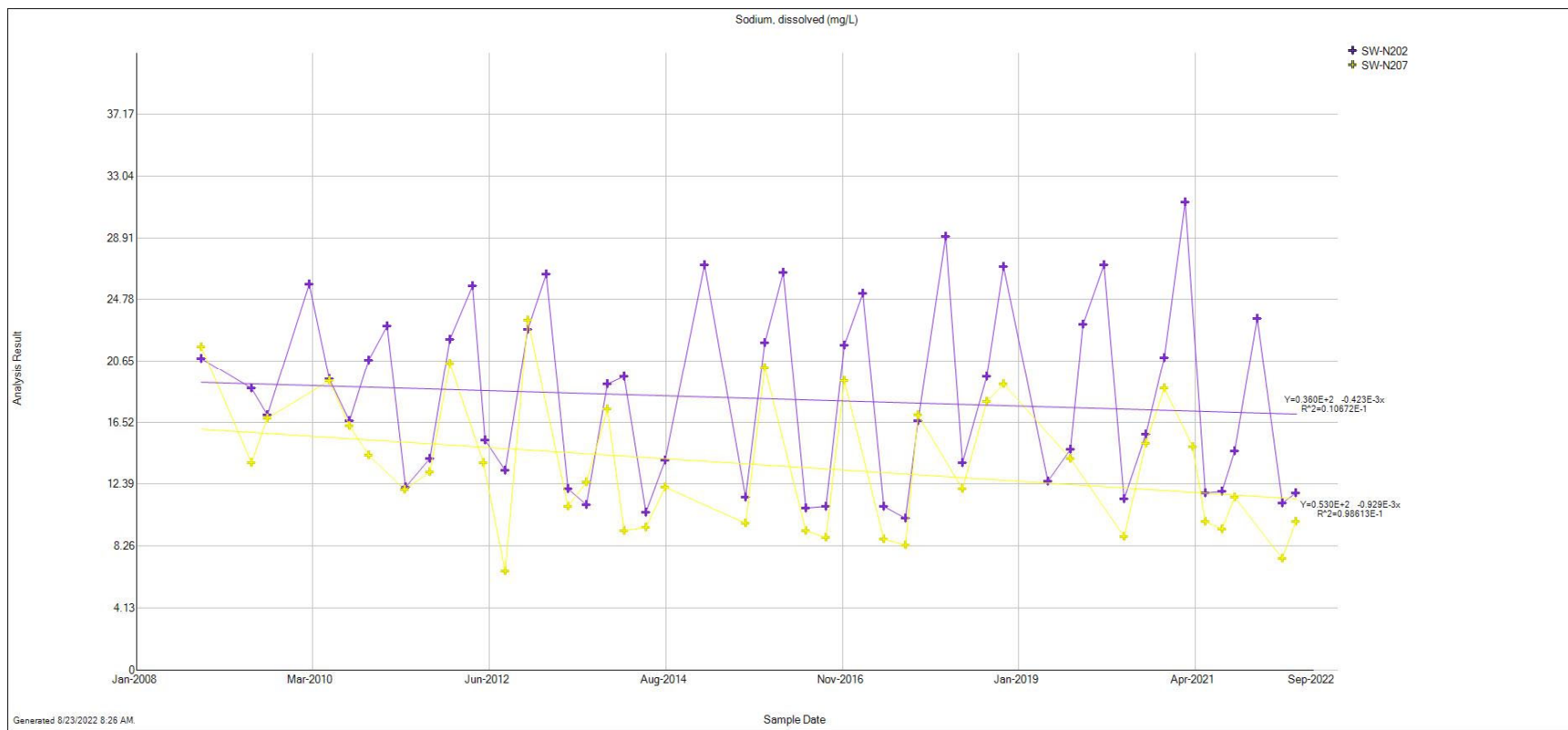


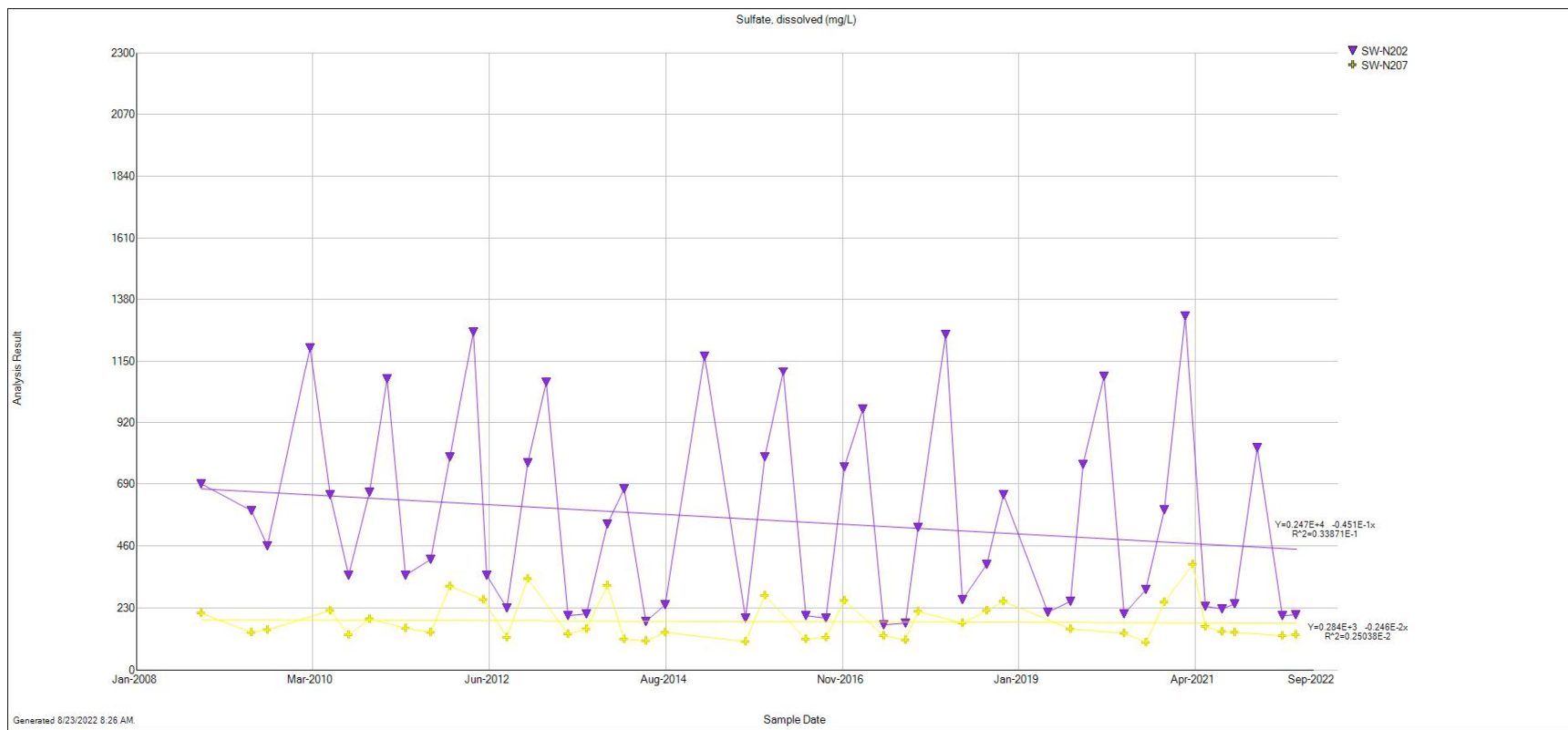


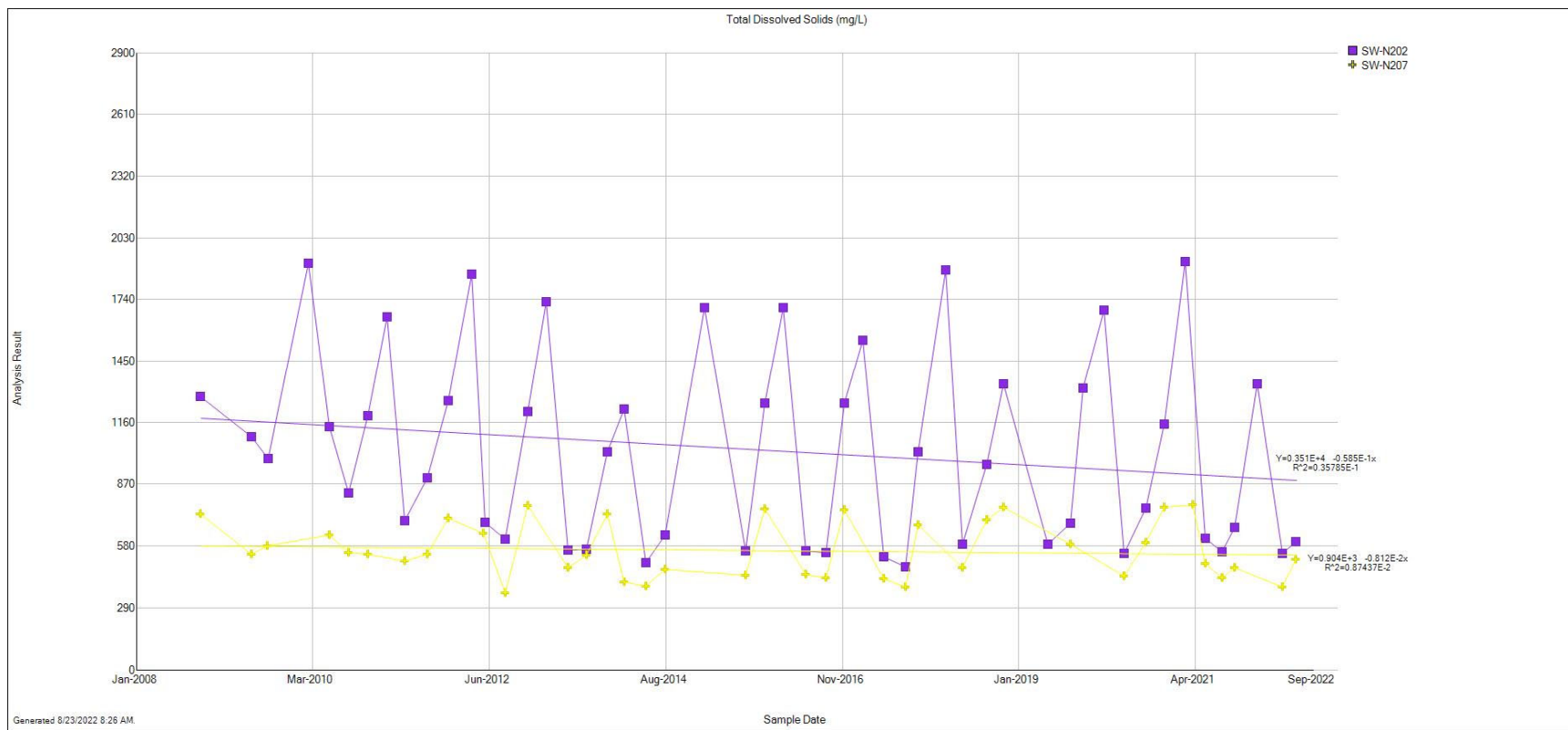


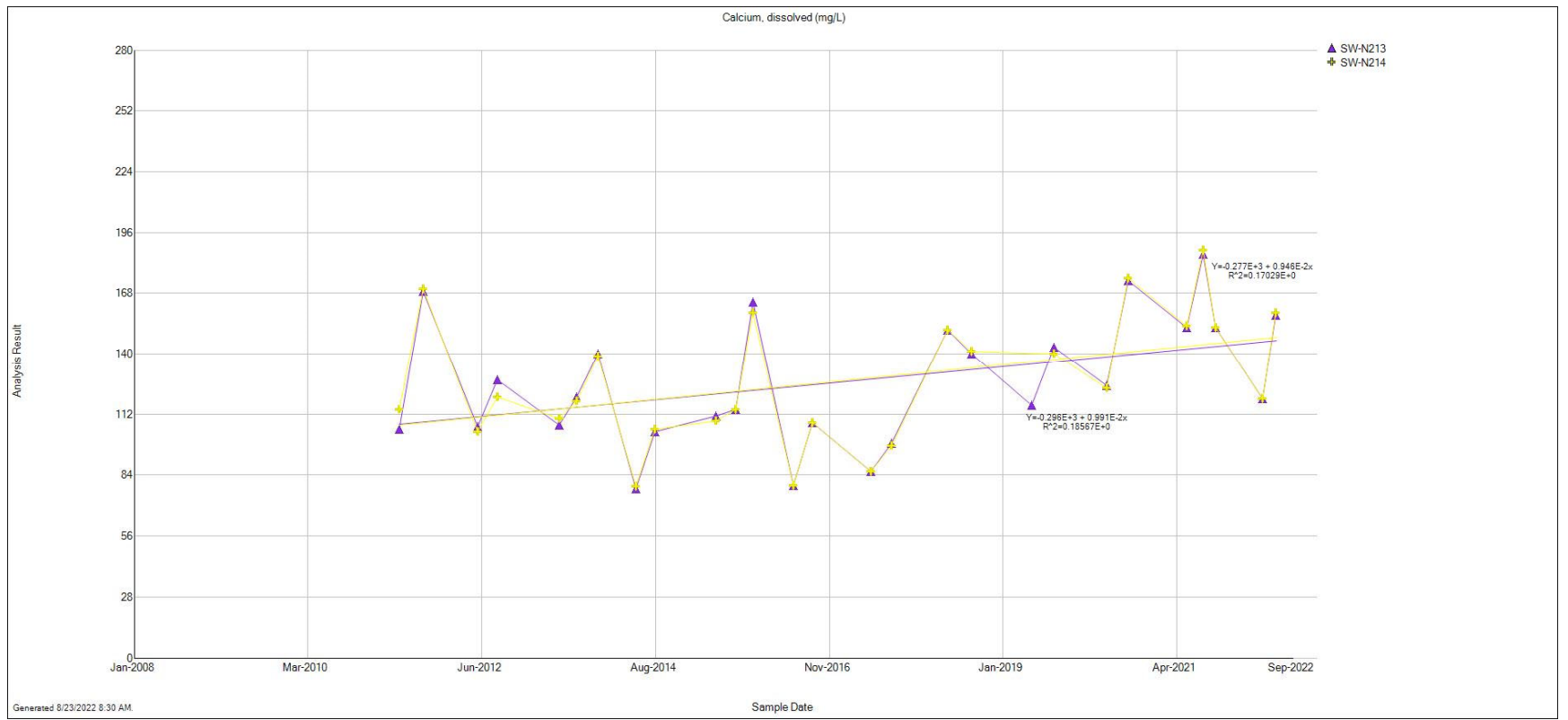


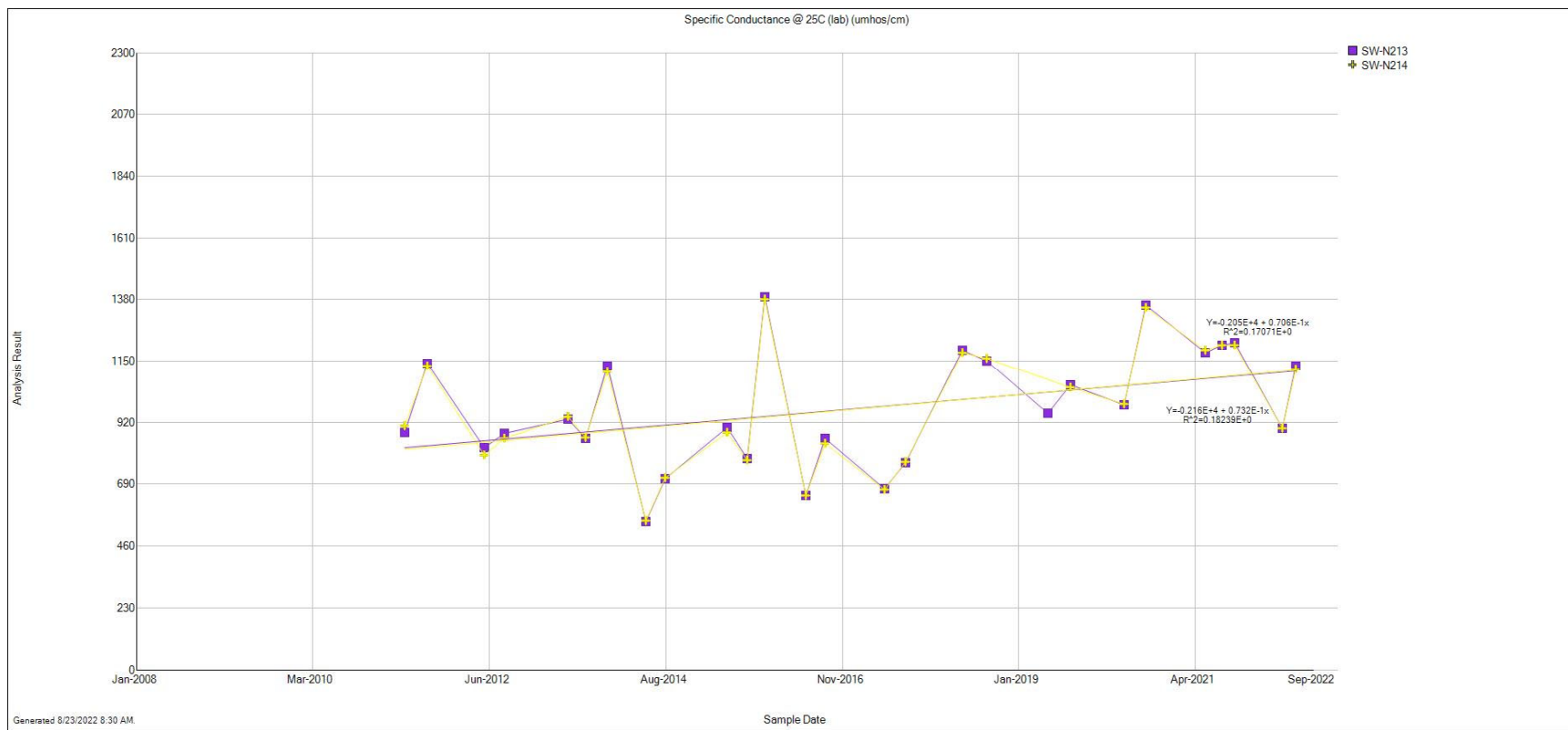


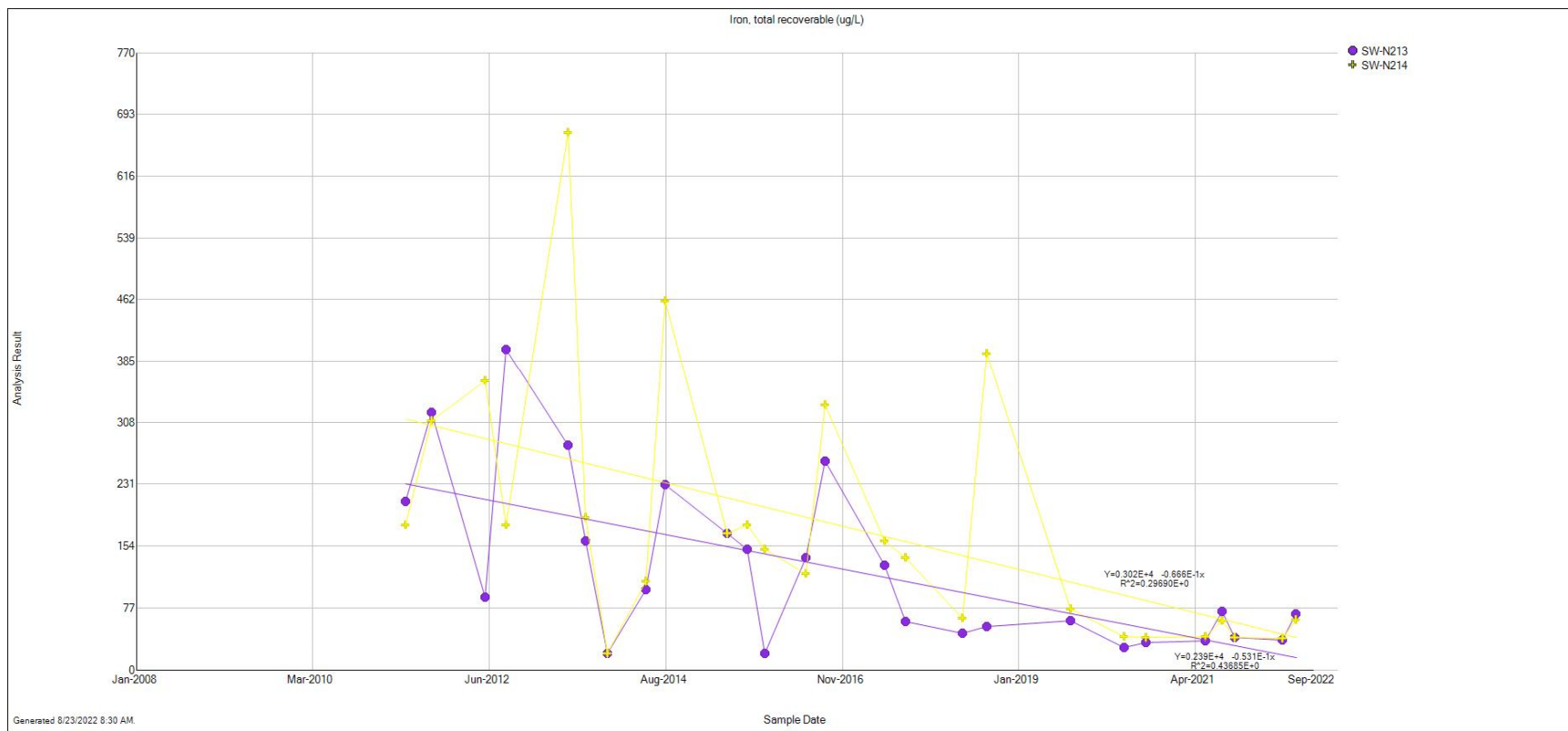


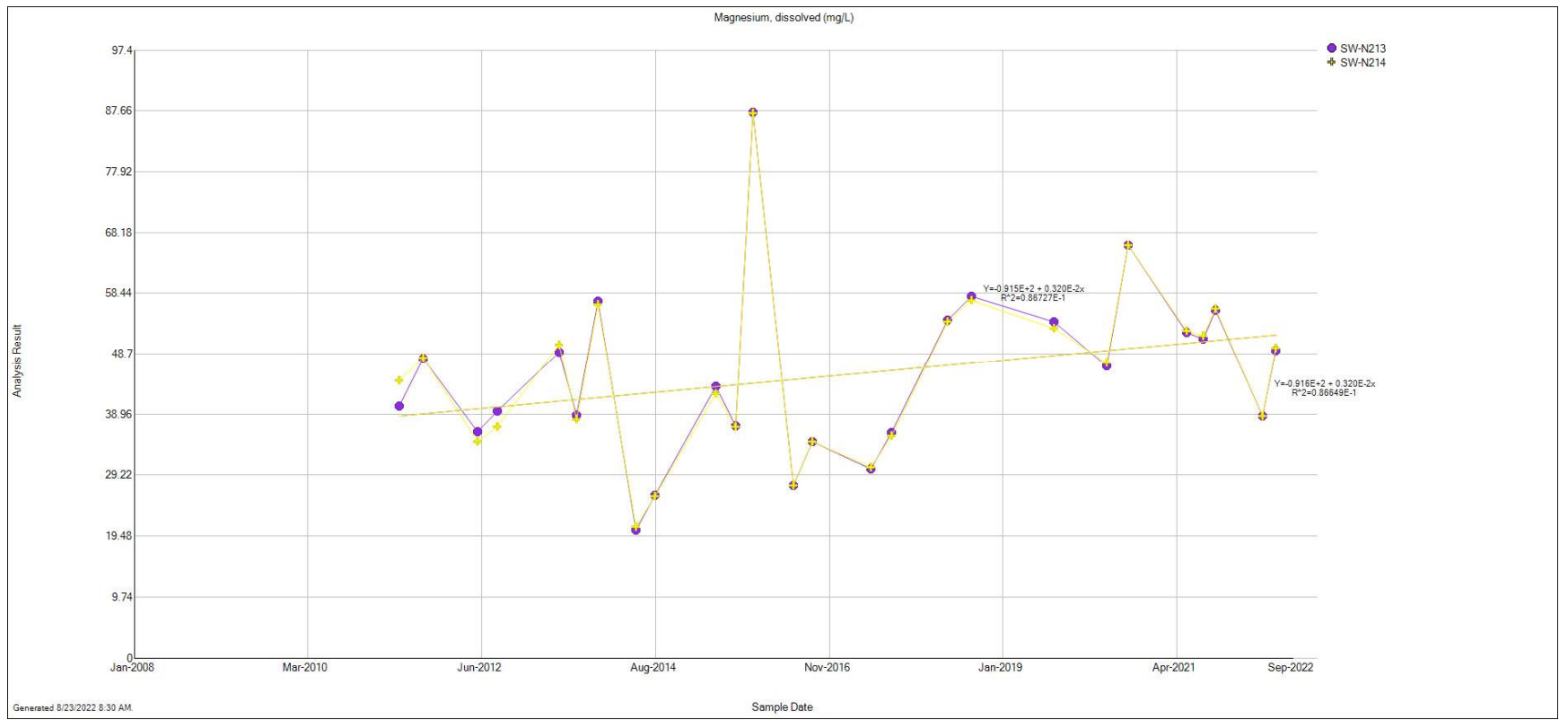




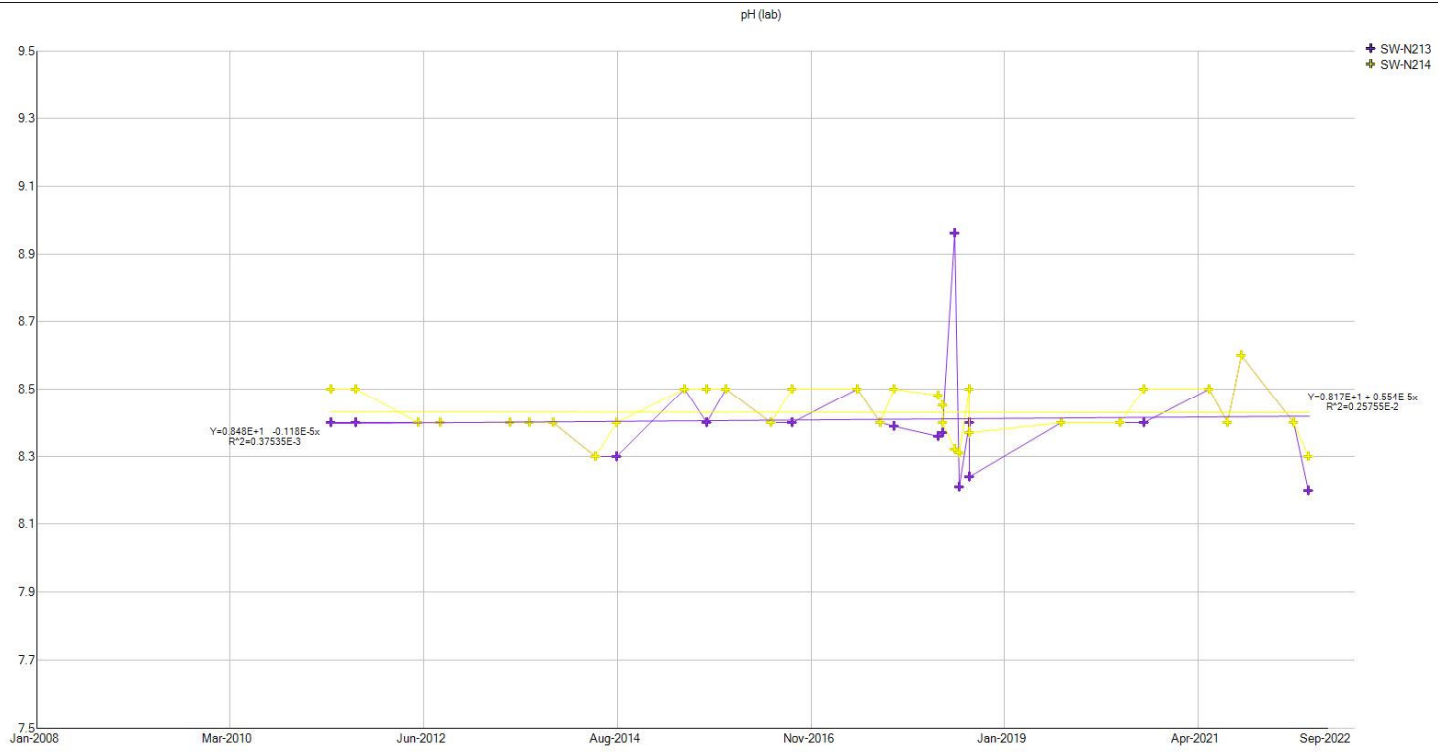


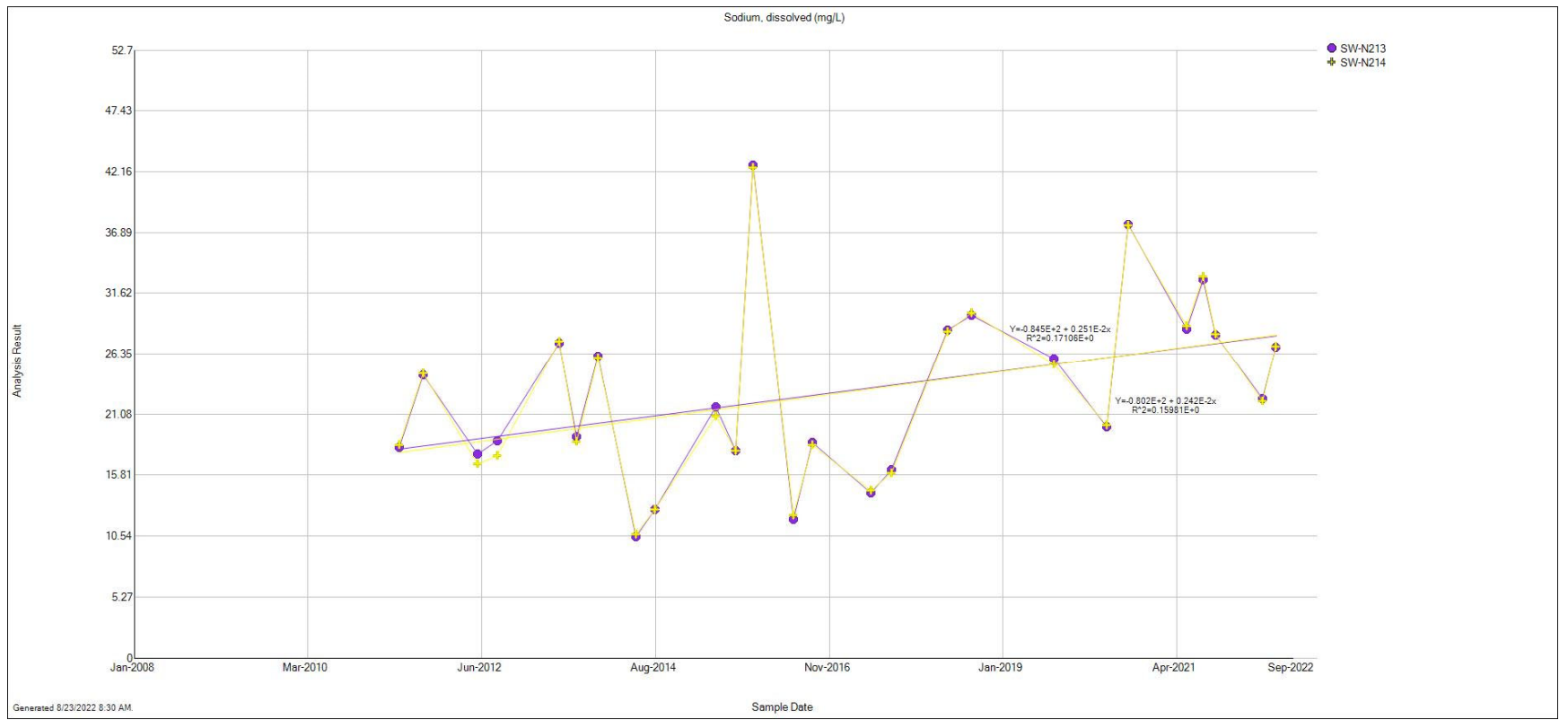


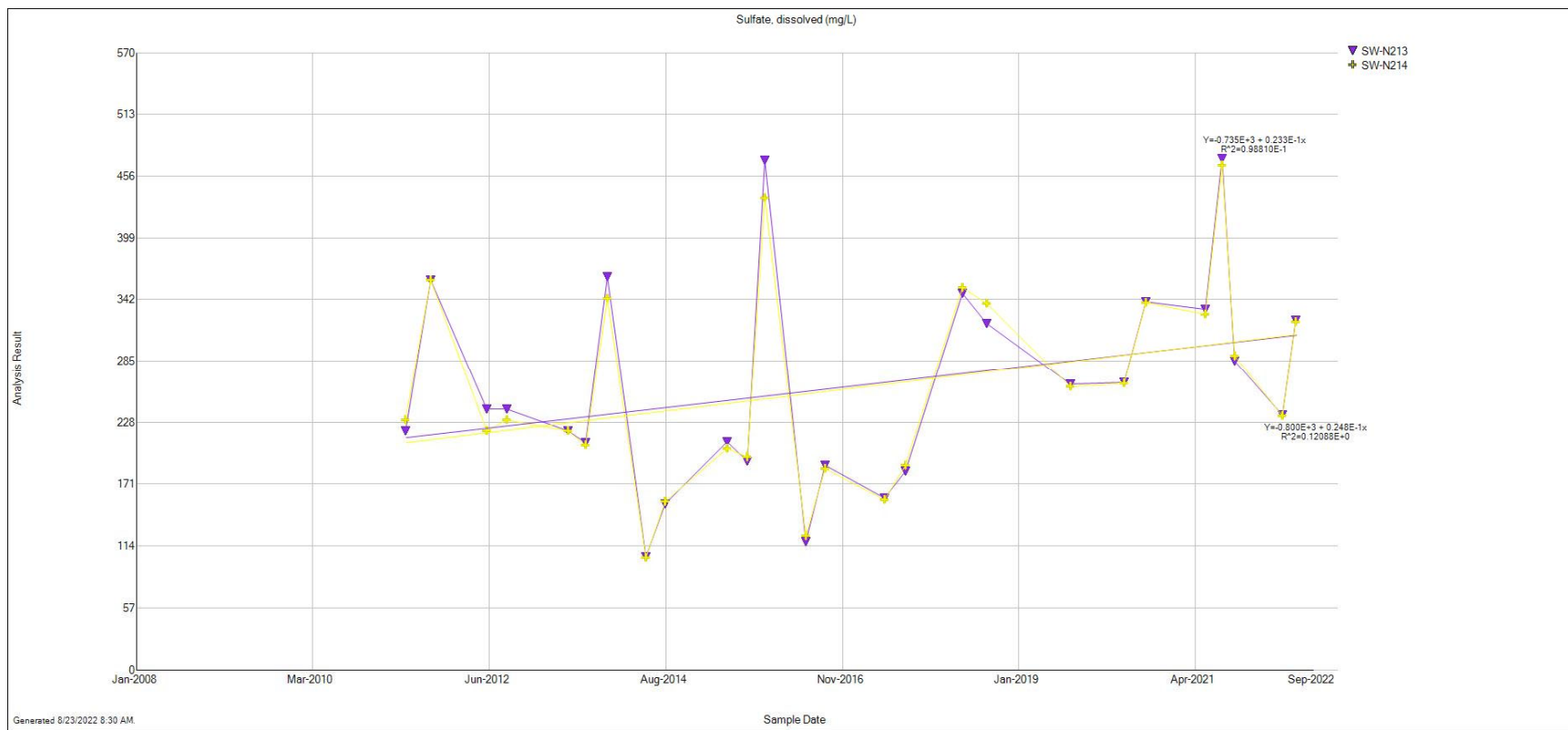


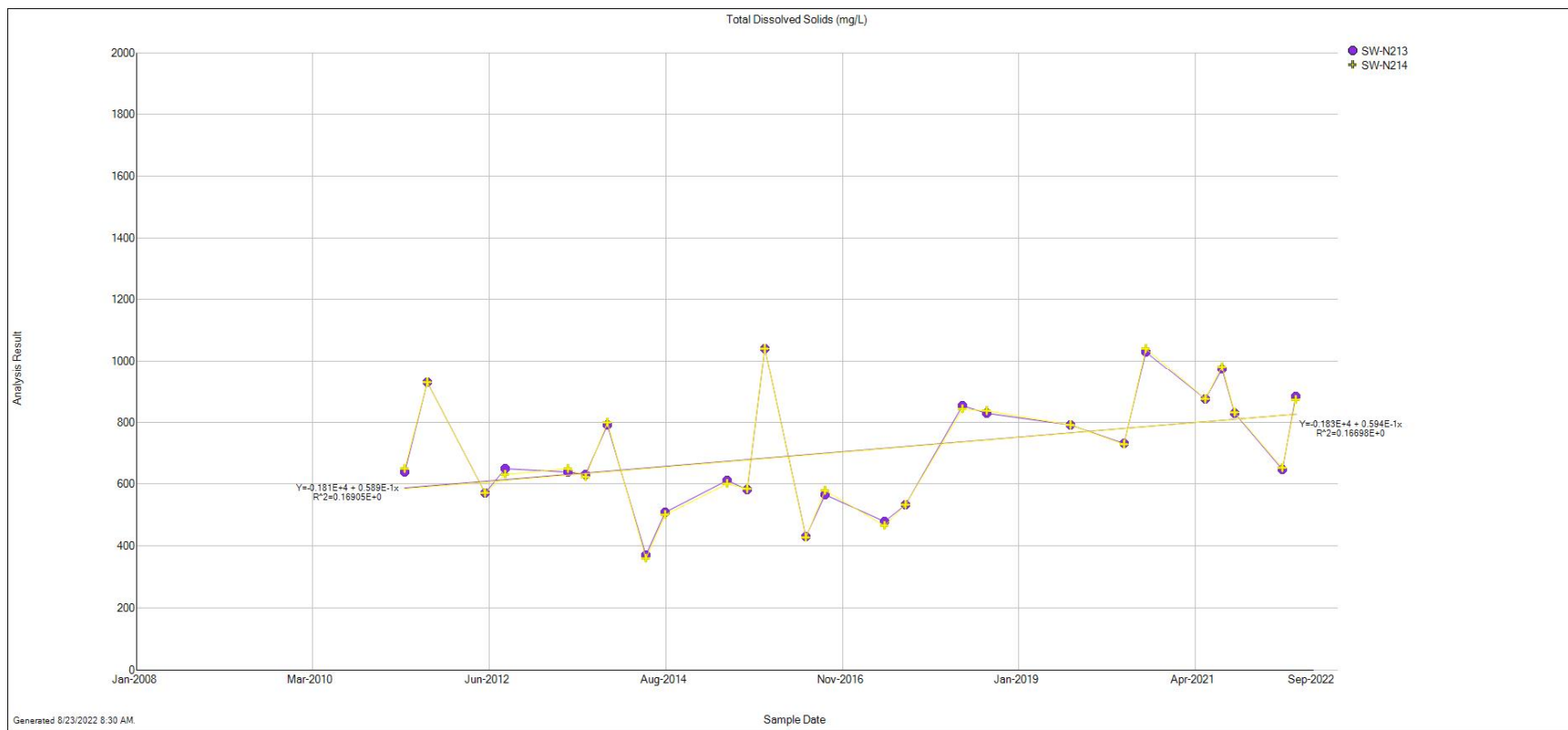


Analysis Result









Appendix 3
Groundwater Monitoring Data

New Horizon North Mine**Analysis Results by Date (column) and Parameter (row)****Date Range: 10/01/2021 to 09/30/2022****Well: GW-N50**

	11/30/2021	1/26/2022	6/21/2022	8/9/2022
Al, diss, mg/L	0.12	0.029	<0.010	0.0051
Alkalinity, lab, mg/L	580	490	490	500
As, diss, mg/L	<0.00040	<0.00040	<0.00040	0.00022
Ca, diss, mg/L	300	270	300	220
Cation-Anion Bal, %	-6.8	-6.5	0	-22
Cl, diss, mg/L	46	38	38	41
CO3, mg/L	<2.0	<2.0	<2.0	<2.0
Fe, diss, mg/L	0.57	0.13	0.089	0.11
HCO3, mg/L	580	490	490	500
Hg, diss, mg/L	<0.00020	<0.00020	<0.00020	<0.00020
K, diss, mg/L	22	19	21	16
Mg, diss, mg/L	160	140	0.67	100
Mn, diss, mg/L	0.3	0.26	0.673	0.57
Mo, diss, mg/L	<0.040	<0.040	<0.040	<0.040
Na, diss, mg/L	110	88	100	61
NH3 as N, diss, mg/L	1.3	0.74	1.6	1.2
NO2, diss, mg/L	0.033	0.04	0.019	0.026
NO3, diss, mg/L	0.41	1.2	0.43	0.79
Orthophosphate, diss, mg/L	<0.030	<0.030	0.056	0.074
Pb, diss, mg/L	0.00039	<0.00020	<0.00020	<0.00010
pH (field), pH	6.6	6.8	6.9	7.1
pH (lab), pH	8	8.1	8.1	7.8
Se, diss, mg/L	<0.00020	<0.00050	<0.00020	<0.00010
SO4, diss, mg/L	1200	1100	1100	1200
Spec. Cond. (lab), umhos/cm	2800	2440	2570	2300
Spec. Cond. (field), umhos/cm	3101	2690	1993	1848
TDS, mg/L	2300	2200	2200	2200
Zn, diss, mg/L	0.87	<0.040	<0.040	<0.040

New Horizon North Mine**Analysis Results by Date****Date Range: 10/01/2021 to 09/30/2022****Well: GW-N51**

	11/30/2021	1/26/2022	6/21/2022	8/9/2022
Al, diss, mg/L	0.46	0.30	0.13	0.22
Alkalinity, lab, mg/L	26	25	52	41
As, diss, mg/L	0.0011	0.00047	0.00049	<0.0040
Ca, diss, mg/L	78	82	97	86
Cation-Anion Bal, %	-2.700	-2.200	0.000	-0.500
Cl, diss, mg/L	7.0	7.8	8.3	7.9
CO3, mg/L	<2.0	<2.0	<2.0	<2.0
Fe, diss, mg/L	11	5.4	9.5	11
HCO3, mg/L	26	25	52	41
Hg, diss, mg/L	<0.00020	<0.00020	<0.00020	<0.00020
K, diss, mg/L	5.7	5.6	6.1	6.1
Mg, diss, mg/L	38	39	43.3	42
Mn, diss, mg/L	0.62	0.63	0.817	0.71
Mo, diss, mg/L	<0.020	<0.020	<0.020	<0.020
Na, diss, mg/L	23	23	25	24
NH3 as N, diss, mg/L	3.4	2.9	3.5	3.4
NO2, diss, mg/L	<0.010	<0.010	<0.010	<0.010
NO3, diss, mg/L	<0.020	<0.020	<0.020	<0.40
Orthophosphate, diss, mg/L	<0.030	0.037	0.068	<0.030
Pb, diss, mg/L	0.00063	0.00010	0.00015	0.00029
pH (field), pH	5.5	5.7	5.7	5.5
pH (lab), pH	6.3	6.7	7.2	5.9
Se, diss, mg/L	0.00011	<0.00010	<0.00010	<0.00010
SO4, diss, mg/L	430	420	470	430
Spec. Cond. (lab), umhos/cm	917	923	970	877
Spec. Cond. (field), umhos/cm	907	929	964	923
TDS, mg/L	700	720	750	730
Zn, diss, mg/L	0.56	0.51	0.44	0.53

New Horizon North Mine**Analysis Results by Date (column) and Parameter (row)****Date Range: 10/01/2021 to 09/30/2022****Well: GW-N53**

	11/30/2021	1/26/2022	6/22/2022	8/11/2022
Al, diss, mg/L	<0.010	<0.010	<0.010	<0.010
Alkalinity, lab, mg/L	550	530	520	510
As, diss, mg/L	<0.00040	<0.00040	0.00086	0.00064
Ca, diss, mg/L	310	330	340	330
Cation-Anion Bal, %	-5.400	-3.100	-2.000	-7.100
Cl, diss, mg/L	66	70	72	74
CO3, mg/L	<2.0	<2.0	<2.0	<2.0
Fe, diss, mg/L	0.090	0.069	<0.014	0.015
HCO3, mg/L	550	530	520	510
Hg, diss, mg/L	<0.00020	<0.00020	<0.00020	<0.00020
K, diss, mg/L	33	34	35	33
Mg, diss, mg/L	250	270	260	260
Mn, diss, mg/L	0.045	0.075	0.056	0.062
Mo, diss, mg/L	<0.040	<0.040	<0.040	<0.040
Na, diss, mg/L	175	178	177	181
NH3 as N, diss, mg/L	2.7	2.6	2.7	2.6
NO2, diss, mg/L	0.20	0.22	0.19	0.19
NO3, diss, mg/L	0.24	0.32	0.30	0.39
Orthophosphate, diss, mg/L	<0.030	0.040	0.090	0.043
Pb, diss, mg/L	<0.00020	<0.00020	0.00022	<0.00020
pH (field), pH	7.2	7.4	7.2	7.1
pH (lab), pH	8.1	8.1	7.6	7.5
Se, diss, mg/L	<0.00020	<0.00050	<0.00020	<0.00020
SO4, diss, mg/L	1700	1770	1810	1730
Spec. Cond. (lab), umhos/cm	3570	3600	3610	3330
Spec. Cond. (field), umhos/cm	3493	3617	3284	3308
TDS, mg/L	3200	3300	3280	3290
Zn, diss, mg/L	<0.040	<0.040	<0.040	<0.040

New Horizon North Mine**Analysis Results by Date (column) and Parameter (row)****Date Range: 10/01/2021 to 09/30/2022****Well: GW-N54**

	11/18/2021	1/25/2022	6/22/2022	8/11/2022
Al, diss, mg/L	<0.025	0.077	<0.025	<0.010
Alkalinity, lab, mg/L	510	500	500	480
As, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.00040
Ca, diss, mg/L	490	460	430	460
Cation-Anion Bal, %	-1.900	-4.200	-5.000	-5.500
Cl, diss, mg/L	73	79	87	81
CO3, mg/L	<2.0	<2.0	<2.0	<2.0
Fe, diss, mg/L	<0.035	0.25	0.25	0.29
HCO3, mg/L	510	500	500	480
Hg, diss, mg/L	<0.00020	<0.00020	<0.00020	<0.00020
K, diss, mg/L	29.0	27.0	26.6	27.0
Mg, diss, mg/L	540	460	440	460
Mn, diss, mg/L	0.21	0.20	0.32	0.16
Mo, diss, mg/L	<0.020	<0.10	<0.10	<0.10
Na, diss, mg/L	190	170	160	170
NH3 as N, diss, mg/L	2.8	2.6	2.4	2.7
NO2, diss, mg/L	0.022	<0.010	<0.010	0.030
NO3, diss, mg/L	0.10	0.20	0.037	0.097
Orthophosphate, diss, mg/L	<0.030	0.047	0.030	<0.030
Pb, diss, mg/L	<0.00050	<0.00050	<0.00050	0.00030
pH (field), pH	6.9	7	6.9	6.9
pH (lab), pH	7.9	7.9	7.5	7.4
Se, diss, mg/L	<0.00050	<0.00050	<0.00050	<0.00020
SO4, diss, mg/L	3200	3000	2900	3100
Spec. Cond. (lab), umhos/cm	4820	4790	4620	4390
Spec. Cond. (field), umhos/cm	4364	4382	4381	4469
TDS, mg/L	4800	4900	4700	4900
Zn, diss, mg/L	0.036	<0.10	<0.10	<0.10

New Horizon North Mine**Analysis Results by Date (column) and Parameter (row)****Date Range: 10/01/2021 to 09/30/2022****Well: GW-N55**

	11/18/2021	1/25/2022	6/22/2022	8/9/2022
Al, diss, mg/L	<0.050	0.28	<0.050	<0.025
Alkalinity, lab, mg/L	770	760	680	710
As, diss, mg/L	<0.0020	<0.0020	<0.0020	<0.0010
Ca, diss, mg/L	428	430	432	419
Cation-Anion Bal, %	-1.400	-3.600	2.300	-3.700
Cl, diss, mg/L	159	161	161	174
CO3, mg/L	<2.0	<2.0	<2.0	<2.0
Fe, diss, mg/L	0.23	0.23	<0.070	0.62
HCO3, mg/L	770	760	680	710
Hg, diss, mg/L	<0.00020	<0.00020	<0.00020	<0.00020
K, diss, mg/L	29	30	33	29
Mg, diss, mg/L	2200	2400	2600	2000
Mn, diss, mg/L	1.2	1.3	0.80	1.1
Mo, diss, mg/L	<0.020	<0.20	<0.20	<0.20
Na, diss, mg/L	280	280	290	270
NH3 as N, diss, mg/L	3.4	2.7	3.1	3.2
NO2, diss, mg/L	0.014	<0.010	0.047	0.026
NO3, diss, mg/L	0.12	0.24	0.35	0.17
Orthophosphate, diss, mg/L	<0.030	0.10	0.078	<0.030
Pb, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.00050
pH (field), pH	6.9	7.1	7.3	6.8
pH (lab), pH	7.8	7.9	7.6	7.5
Se, diss, mg/L	<0.0010	<0.0010	<0.0010	<0.00050
SO4, diss, mg/L	9500	11000	10000	9100
Spec. Cond. (lab), umhos/cm	11000	11900	12300	9580
Spec. Cond. (field), umhos/cm	9770	11490	11190	10200
TDS, mg/L	14000	15000	16000	14000
Zn, diss, mg/L	0.030	<0.20	<0.20	<0.20

New Horizon North Mine**Analysis Results by Date (column) and Parameter (row)****Date Range: 10/01/2021 to 09/30/2022****Well: GW-N56**

	11/10/2021	1/25/2022	6/22/2022	8/9/2022
Al, diss, mg/L	0.031	<0.025	<0.025	Dry
Alkalinity, lab, mg/L	630	620	620	
As, diss, mg/L	0.00030	<0.0010	<0.0010	
Ca, diss, mg/L	486	491	500	
Cation-Anion Bal, %	1.900	-2.000	-3.800	
Cl, diss, mg/L	39	40	38	
CO3, mg/L	<2.0	<2.0	<2.0	
Fe, diss, mg/L	0.16	0.21	0.22	
HCO3, mg/L	630	620	620	
Hg, diss, mg/L	<0.00020	0.00020	<0.00020	
K, diss, mg/L	30	29	29	
Mg, diss, mg/L	570	500	520	
Mn, diss, mg/L	0.75	0.61	0.65	
Mo, diss, mg/L	<0.020	<0.10	<0.10	
Na, diss, mg/L	164	156	160	
NH3 as N, diss, mg/L	2.1	3.2	3.3	
NO2, diss, mg/L	<0.010	<0.010	<0.010	
NO3, diss, mg/L	<0.020	<0.020	<0.020	
Orthophosphate, diss, mg/L	0.030	0.040	0.043	
Pb, diss, mg/L	<0.00010	<0.00050	<0.00050	
pH (field), pH	6.9	7	6.7	
pH (lab), pH	7.9	7.9	7.7	
Se, diss, mg/L	0.00017	<0.00050	0.00057	
SO4, diss, mg/L	2980	3030	3220	
Spec. Cond. (lab), umhos/cm	4910	4880	5040	
Spec. Cond. (field), umhos/cm	4781	4543	4794	
TDS, mg/L	5030	5000	5160	
Zn, diss, mg/L	<0.020	<0.10	<0.10	

New Horizon North Mine**Analysis Results by Date (column) and Parameter (row)****Date Range: 10/01/2021 to 09/30/2022****Well: GW-N52**

	11/30/2021	1/26/2022	6/21/2022	8/9/2022
Al, diss, mg/L	0.036	0.023	0.013	0.014
Alkalinity, lab, mg/L	260	290	190	180
As, diss, mg/L	0.00032	0.00076	<0.00020	<0.00020
Ca, diss, mg/L	150	160	150	130
Cation-Anion Bal, %	-1.000	0.000	-0.600	0.000
Cl, diss, mg/L	6.2	7.1	4.1	3.4
CO3, mg/L	<2.0	<2.0	<2.0	<2.0
Fe, diss, mg/L	0.14	0.38	0.013	0.058
HCO3, mg/L	260	290	190	180
Hg, diss, mg/L	<0.00020	<0.00020	<0.00020	<0.00020
K, diss, mg/L	1.3	2.4	0.89	1.1
Mg, diss, mg/L	21	39	16	14
Mn, diss, mg/L	0.31	1.4	<0.01	<0.010
Mo, diss, mg/L	<0.020	<0.020	<0.020	<0.020
Na, diss, mg/L	11	14	7.2	7.3
NH3 as N, diss, mg/L	0.055	0.024	<0.050	<0.050
NO2, diss, mg/L	<0.010	<0.010	<0.010	<0.010
NO3, diss, mg/L	0.068	0.024	0.23	0.078
Orthophosphate, diss, mg/L	0.037	<0.030	<0.030	<0.030
Pb, diss, mg/L	0.00039	0.00018	<0.00010	0.00022
pH (field), pH	6.7	6.9	6.5	6.7
pH (lab), pH	7.8	7.8	8.1	7.1
Se, diss, mg/L	0.00021	<0.00020	0.0020	0.0011
SO4, diss, mg/L	230	310	240	200
Spec. Cond. (lab), umhos/cm	877	1080	814	689
Spec. Cond. (field), umhos/cm	907	1099	806	716
TDS, mg/L	620	790	580	530
Zn, diss, mg/L	0.27	<0.020	<0.020	<0.020

New Horizon North Mine**Analysis Results by Date (column) and Parameter (row)****Date Range: 10/01/2021 to 09/30/2022****Well: GW-N57**

	11/10/2021	1/25/2022	6/22/2022	8/11/2022
Al, diss, mg/L	<0.0050	0.046	<0.025	<0.010
Alkalinity, lab, mg/L	660	660	630	630
As, diss, mg/L	0.00039	<0.0010	<0.0010	0.00040
Ca, diss, mg/L	500	520	540	530
Cation-Anion Bal, %	0.600	-4.200	-3.000	-3.000
Cl, diss, mg/L	33	34	34	37
CO3, mg/L	<2.0	<2.0	<2.0	<2.0
Fe, diss, mg/L	0.45	0.55	0.59	0.23
HCO3, mg/L	660	660	630	630
Hg, diss, mg/L	<0.00020	<0.00020	<0.00020	<0.00020
K, diss, mg/L	29	28	29	29
Mg, diss, mg/L	620	550	570	570
Mn, diss, mg/L	0.71	0.71	0.73	0.72
Mo, diss, mg/L	<0.020	<0.10	<0.10	<0.10
Na, diss, mg/L	163	157	158	160
NH3 as N, diss, mg/L	2.9	3.4	3.4	3.3
NO2, diss, mg/L	<0.010	<0.010	<0.010	<0.010
NO3, diss, mg/L	<0.020	<0.020	<0.020	<0.020
Orthophosphate, diss, mg/L	<0.030	0.047	0.040	<0.030
Pb, diss, mg/L	<0.00010	0.0017	<0.00050	<0.00020
pH (field), pH	6.8	6.8	6.7	6.7
pH (lab), pH	7.9	7.8	7.7	7.2
Se, diss, mg/L	0.00032	<0.00050	<0.00050	<0.00020
SO4, diss, mg/L	3280	3400	3510	3470
Spec. Cond. (lab), umhos/cm	5130	5180	5240	4740
Spec. Cond. (field), umhos/cm	4734	5000	5089	4880
TDS, mg/L	5340	5310	5360	5330
Zn, diss, mg/L	<0.020	<0.10	<0.10	<0.10

New Horizon North Mine**Analysis Results by Date (column) and Parameter (row)****Date Range: 10/01/2020 to 09/30/2021****Well: GW-N58**

	11/10/2021	1/25/2022	6/22/2022	8/11/2022
Al, diss, mg/L	0.0072	0.053	<0.025	<0.010
Alkalinity, lab, mg/L	610	610	580	590
As, diss, mg/L	0.00022	<0.0010	<0.0010	<0.00040
Ca, diss, mg/L	460	470	460	460
Cation-Anion Bal, %	1.100	-2.900	-4.400	-4.000
Cl, diss, mg/L	35	41	40	39
CO3, mg/L	<2.0	<2.0	<2.0	<2.0
Fe, diss, mg/L	0.73	0.63	0.46	1.6
HCO3, mg/L	610	610	580	590
Hg, diss, mg/L	<0.00020	<0.00020	<0.00020	<0.00020
K, diss, mg/L	25	24	25	25
Mg, diss, mg/L	730	640	680	660
Mn, diss, mg/L	0.92	0.80	0.89	0.91
Mo, diss, mg/L	<0.020	<0.10	<0.10	<0.020
Na, diss, mg/L	160	163	157	156
NH3 as N, diss, mg/L	2.0	2.0	2.3	2.2
NO2, diss, mg/L	<0.010	<0.010	<0.010	<0.010
NO3, diss, mg/L	<0.020	<0.020	0.090	<0.20
Orthophosphate, diss, mg/L	0.034	0.040	0.037	<0.030
Pb, diss, mg/L	<0.00010	<0.00050	<0.00050	<0.00020
pH (field), pH	6.8	6.9	6.7	6.6
pH (lab), pH	7.9	7.8	7.7	7.2
Se, diss, mg/L	0.00035	<0.00050	<0.00050	<0.00020
SO4, diss, mg/L	3600	3620	3910	3770
Spec. Cond. (lab), umhos/cm	5430	5450	5630	4880
Spec. Cond. (field), umhos/cm	4734	5242	5343	5104
TDS, mg/L	5630	5640	6010	5880
Zn, diss, mg/L	<0.020	<0.10	<0.10	<0.020

Appendix 4
Groundwater Monitoring Graphs

