STATE OF COLORADO

Lennberg - DNR, Patrick <patrick.lennberg@state.co.us>

Additional Information Required, 2nd Quarter 2022 Groundwater and Surface Water Monitoring Report; Cross Gold Mine, Permit No. M-1977-410

rmittasch@nedmining.com <rmittasch@nedmining.com> Thu, Oct 6, 2022 at 12:14 PM
To: "Lennberg - DNR, Patrick" <patrick.lennberg@state.co.us>
Cc: Daniel Takami <danieltakami@gmail.com>, Sergio Rivera <sergio.rivera@novametallix.com>

Dear Patrick.

Here is the Additional Information Required, 2nd Quarter 2022 Groundwater and Surface Water Monitoring Report: Cross Gold Mine, Permit No. M-1977-410

Please review if you have any questions, please don't hesitate to contact any of us.

Kind Regards,

Richard Mittasch, Vice President

Nederland Mining Consultants, Inc.

Phone: 720-893-3749

Mobile: 516 582-0833

Email: Rmittasch@nedmining.com <mailto:Rmittasch@nedmining.com>

4415 Caribou Rd, PO Box 3395, Nederland, CO 80466

5 attachments

- **Table 4 - Groundwater Sampling Parameter List.pdf** 368K
- **Figure 1 - May22 Water Levels.pdf** 1264K
- **Figure 2 - June22 Water Levels.pdf** 1254K
- **Figure 3 - Surface & Groundwater Sampling Locations - Rev2.pdf** 1260K
- **2022.10.04 DRMS SW GW Additional Information Responses - v2rB.pdf** 802K

GRAND ISLAND
RESOURCES

P.O. Box 3395
Nederland, CO 80466
October 6, 2022

Mr. Patrick Lennberg
Colorado Division of Reclamation Mining and Safety
Department of Natural Resources
1313 Sherman Street, Room 215
Denver, Colorado 80203

RE: Additional Information Required, 2nd Quarter 2022 Groundwater and Surface Water Monitoring Report; Cross Gold Mine, Permit No. M-1977-410

General

1. *Please explain why samples were collected only 14 days apart. The Operator committed, in TR-10, to collecting samples on a monthly basis which would mean that the June sampling event would at least occur sometime during the week of June 27th. The samples, as collected, are not considered monthly samples and could be interpreted to be the same sampling event.*

TR-10 was approved by DRMS on April 28th, 2022. GIR immediately initiated the process of identification of water quality testing with required certifications and availability. Upon selection of the laboratory, GIR ordered sample bottles and appointed GIR to perform the sample collection tasks which included personnel training. The May 2022 samples were collected just before the end of the month. Given that GIR had given priority to sample collection, GIR's staff collected the samples as soon as practical during the month of June. Going forward and per GIR conversations with DRMS, GIR will collect monthly samples not less than 3 weeks apart and not longer than 4 weeks apart.

2. *The Operator in TR-10 committed to collecting duplicate samples at the rate of one duplicate sample for each media sampled. Therefore, for each sampling event the Operator shall collect a one duplicate sample for surface water, one duplicate for groundwater and one duplicate for effluent. Explain why no duplicate samples were collected.*

GIR collected duplicate samples of 1 groundwater location and 1 surface water location per each sampling event starting in September. An additional 1 duplicate for the effluent will be collected starting in October, thereby correcting the oversight.

P.O. Box 3395
Nederland, CO 80466
October 6, 2022

3. *Additionally, other QA/QC samples such as rinsates, field blanks and matrix spikes samples were not collected, why?*

This resulted from an administrative oversight between GIR and the testing laboratories. Moving forward field blanks and matrix spikes will be taken once every 20 samples: 1 per groundwater sampling event, 1 per surface water sampling event and 1 per effluent sampling event.
Rinsate samples are not considered necessary because all wells are equipped with permanent pumping infrastructure, i.e., no peristaltic pump or tubing are being used to collect the samples and therefore no cross-contamination during sampling occurs.

Surface Water

4. *Please provide a location map that clearly depicts the surface water sampling locations.*

The attached Figure 3 shows the surface water sampling locations.

5. *Please update Tables 1-3 to include the concentrations of each analyte that the results are to be compared to. Please use the 30-day average maximum value for the month the samples were collected in.*

Please see below for the updated Tables 1-3. Additional Tables were created to showcase the varying months 30-day averages separately.

GRAND ISLAND RESOURCES

P.O. Box 3395
Nederland, CO 80466
October 6, 2022

May 27, 2022, Results for Surface Station 2022-01

Parameter	Units	Results	CDPHE 30-day Average
		5/27/2022	**MAY**
		280-162851-1	
pH	SU	7.0	
Temp	Degrees C	18.0	
Specific Cond	umhos/cm	39.0	
TSS	mg/L	<4	30
Arsenic (TR)	ug/L	<5	Report
Arsenic (PD)	ug/L	<5	
Cadmium (TR)	ug/L	<1	50
Cadmium (PD)	ug/L	<1	0.62
Chromium (III, TR)	ug/L	<20	
Chromium (III, PD)	ug/L	<20	Report
Chromium (VI)	ug/L	<20	Report
Copper (TR)	ug/L	2.6	150
Copper (PD)	ug/L	2.4	13
Iron (TR)	ug/L	330.0	Report
Lead (TR)	ug/L	<1	300
Lead (PD)	ug/L	<1	3.8
Manganese (PD)	ug/L	15.0	Report
Mercury (Tot)	ug/L	<0.2	1
Mercury (Tot, LL)	ng/L	4.9	Report
Nickel (PD)	ug/L	<2	Report
Selenium (PD)	ug/L	<5	Report
Silver (PD)	ug/L	<0.5	0.12
Zinc (TR)	ug/L	14.0	750
Zinc (PD)	ug/L	<10	182
Sulfide (as H2S)	mg/L	<1	Report

GRAND ISLAND RESOURCES

P.O. Box 3395
Nederland, CO 80466
October 6, 2022

June 2 and June 10, 2022, Results for Surface Station 2022-01

Parameter	Units	Results	Results	CDPHE 30-day Average
		6/2/2022	6/10/2022	Month of June
		280-16299-1	280-163355-1	
pH	SU	7.2		
Temp	Degrees C	19.0		
Specific Cond	umhos/cm	39.0		
TSS	mg/L	<4		30
Arsenic (TR)	ug/L	<5		Report
Arsenic (PD)	ug/L	<5		
Cadmium (TR)	ug/L	<1		50
Cadmium (PD)	ug/L	<1		0.89
Chromium (III, TR)	ug/L	<20		
Chromium (III, PD)	ug/L	<20		Report
Chromium (VI)	ug/L	<20		Report
Copper (TR)	ug/L	2.0		150
Copper (PD)	ug/L	2.2		13
Iron (TR)	ug/L	160.0		Report
Lead (TR)	ug/L	<1		300
Lead (PD)	ug/L	<1		5.4
Manganese (PD)	ug/L	4.7		Report
Mercury (Tot)	ug/L	<0.2		1
Mercury (Tot, LL)	ng/L		4.4	Report
Nickel (PD)	ug/L	<2		Report
Selenium (PD)	ug/L	<5		Report
Silver (PD)	ug/L	<0.5		0.17
Zinc (TR)	ug/L	<10		750
Zinc (PD)	ug/L	<10		262
Sulfide (as H2S)	mg/L	<1		Report

GRAND ISLAND RESOURCES

P.O. Box 3395
Nederland, CO 80466
October 6, 2022

May 27, 2022, Results for Outfall-001

Parameter	Units	Results	CDPHE 30-day Average
		5/27/2022	Month of May
		280-162328-1	
pH	SU	7.9	
Temp	Degrees C	21.0	
Specific Cond	umhos/cm	190.0	
TSS	mg/L	<4	30
Arsenic (TR)	ug/L	<5	Report
Arsenic (PD)	ug/L	<5	
Cadmium (TR)	ug/L	<1	50
Cadmium (PD)	ug/L	<1	0.62
Chromium (III, TR)	ug/L	<20	
Chromium (III, PD)	ug/L	<20	Report
Chromium (VI)	ug/L	<20	Report
Copper (TR)	ug/L	2.1	150
Copper (PD)	ug/L	<2	13
Iron (TR)	ug/L	300.0	Report
Lead (TR)	ug/L	3.2	300
Lead (PD)	ug/L	3.0	3.8
Manganese (PD)	ug/L	2.4	Report
Mercury (Tot)	ug/L	<0.2	1
Mercury (Tot, LL)	ng/L	N/A	Report
Nickel (PD)	ug/L	<2	Report
Selenium (PD)	ug/L	<5	Report
Silver (PD)	ug/L	<0.5	0.12
Zinc (TR)	ug/L	<10	750
Zinc (PD)	ug/L	<10	182
Sulfide (as H2S)	mg/L	<1	Report

GRAND ISLAND RESOURCES

P.O. Box 3395
Nederland, CO 80466
October 6, 2022

June 10, 2022, Results for Outfall-001

Parameter	Units	Results	CDPHE 30-day Average
		6/10/2022	Month of June
		280-163315-1	
pH	SU	7.1	
Temp	Degrees C	20.0	
Specific Cond	umhos/cm	89.0	
TSS	mg/L	<4	30
Arsenic (TR)	ug/L	<5	Report
Arsenic (PD)	ug/L	<5	
Cadmium (TR)	ug/L	<1	50
Cadmium (PD)	ug/L	<1	0.89
Chromium (III, TR)	ug/L	<20	
Chromium (III, PD)	ug/L	<20	Report
Chromium (VI)	ug/L	<20	Report
Copper (TR)	ug/L	<2	150
Copper (PD)	ug/L	<2	13
Iron (TR)	ug/L	<100	Report
Lead (TR)	ug/L	2.1	300
Lead (PD)	ug/L	1.6	5.4
Manganese (PD)	ug/L	<2	Report
Mercury (Tot)	ug/L	<0.2	1
Mercury (Tot, LL)	ng/L	N/A	Report
Nickel (PD)	ug/L	<2	Report
Selenium (PD)	ug/L	<5	Report
Silver (PD)	ug/L	<0.5	0.17
Zinc (TR)	ug/L	<10	750
Zinc (PD)	ug/L	<10	262
Sulfide (as H2S)	mg/L	<1	Report

GRAND ISLAND RESOURCES

P.O. Box 3395
Nederland, CO 80466
October 6, 2022

May 27, 2022, Results for Surface Station 2022-02

Parameter	Units	Results	CDPHE 30-day Average
		5/27/2022	Month of May
		280-162851-1	
pH	SU	7.4	
Temp	Degrees C	19.0	
Specific Cond	umhos/cm	60.0	
TSS	mg/L	35.0	30
Arsenic (TR)	ug/L	<5	Report
Arsenic (PD)	ug/L	<5	
Cadmium (TR)	ug/L	<1	50
Cadmium (PD)	ug/L	<1	0.62
Chromium (III, TR)	ug/L	<20	
Chromium (III, PD)	ug/L	<20	Report
Chromium (VI)	ug/L	<20	Report
Copper (TR)	ug/L	6.6	150
Copper (PD)	ug/L	2.4	13
Iron (TR)	ug/L	2000.0	Report
Lead (TR)	ug/L	19.0	300
Lead (PD)	ug/L	17.0	3.8
Manganese (PD)	ug/L	56.0	Report
Mercury (Tot)	ug/L	<0.2	1
Mercury (Tot, LL)	ng/L	19.0	Report
Nickel (PD)	ug/L	<2	Report
Selenium (PD)	ug/L	<5	Report
Silver (PD)	ug/L	<0.5	0.12
Zinc (TR)	ug/L	36.0	750
Zinc (PD)	ug/L	37.0	182
Sulfide (as H2S)	mg/L	<1	Report

GRAND ISLAND RESOURCES

P.O. Box 3395
Nederland, CO 80466
October 6, 2022

June 2 and June 10, 2022, Results for Surface Station 2022-02

Parameter	Units	Results	Results	CDPHE 30-day Average
		6/2/2022	6/10/2022	Month of June
		280-16299-1	280-163355-1	
pH	SU	7.6		
Temp	Degrees C	19.0		
Specific Cond	umhos/cm	79.0		
TSS	mg/L	<4		30
Arsenic (TR)	ug/L	<5		Report
Arsenic (PD)	ug/L	<5		
Cadmium (TR)	ug/L	<1		50
Cadmium (PD)	ug/L	<1		0.89
Chromium (III, TR)	ug/L	<20		
Chromium (III, PD)	ug/L	<20		Report
Chromium (VI)	ug/L	<20		Report
Copper (TR)	ug/L	3.7		150
Copper (PD)	ug/L	2.5		13
Iron (TR)	ug/L	310.0		Report
Lead (TR)	ug/L	4.5		300
Lead (PD)	ug/L	3.9		5.4
Manganese (PD)	ug/L	10.0		Report
Mercury (Tot)	ug/L	<0.2		1
Mercury (Tot, LL)	ng/L		5.8	Report
Nickel (PD)	ug/L	<2		Report
Selenium (PD)	ug/L	<5		Report
Silver (PD)	ug/L	<0.5		0.17
Zinc (TR)	ug/L	18.0		750
Zinc (PD)	ug/L	24.0		262
Sulfide (as H2S)	mg/L	<1		Report

6. *What were the flow rates each time a surface water sample was collected? Please include a row in the summary tables that accounts for flow measured.*

P.O. Box 3395
Nederland, CO 80466
October 6, 2022

Surface Water Flow is measured via water surface velocity (stopwatch method), flow depth and channel width (at the 2 surface water monitoring stations).

An administrative error during the month of May resulted in flow measurements not being recorded.

Flow measurements are being recorded during the monthly sampling events and the results will be included in future quarterly report submittals.

7. *The field sheets have not been signed. In future sampling events please insure the field sheets are completely filled out.*

Field sheets will be signed and completely filled out for all future sampling events.

8. *On Tables 1 and 3 please clarify what is meant by the double asterixis located in the upper left-hand corner of each table.*

This was an administrative oversight and the asterixis were intended for internal use.

9. *Please explain why the Operator collected groundwater samples and had them analyzed for Regulation 41 (Reg. 41) Table A, Groundwater Organic Chemical Standards, compounds when TR-10 only required groundwater samples to be analyzed and compared to the most conservative concentrations of constituents listed on Reg. 41 Tables 1-4.*

Per the approved TR-10, all groundwater sample will be generated from Table 4. although we reserve the right to go above and beyond in additional testing from Reg 41 tables one through 4.

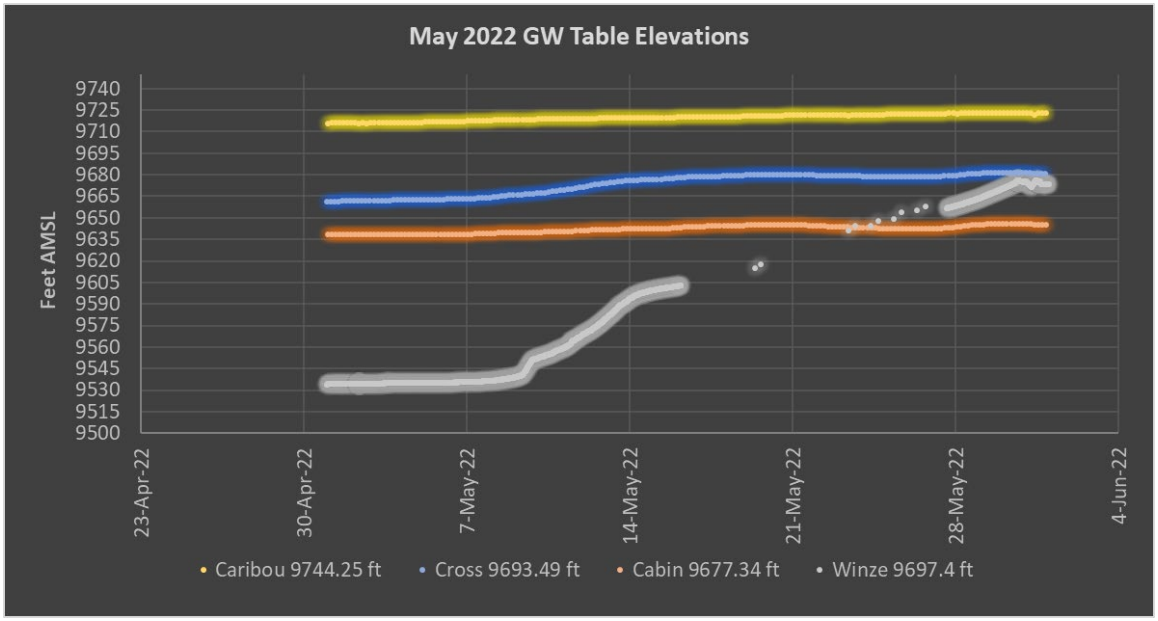
10. *Please comment on the following. All metals, expect Silver, were analyzed as the total metals concentrations. In Reg. 41 Tables 1-4 the concentrations given are the dissolved metals concentrations. Additionally, the Division specifically directed the Operator to include dissolved metals concentrations as part of the analyte list.*

Table 4. of the latest TR-10 approval has been used by GIR to conduct sampling, dissolved metals were not included. GIR will adjust the protocols to include dissolved metals as indicated by DRMS. (Table 4 of the approved document is attached for reference).

11. *Please provide the potentiometric surface map the Operator committed to providing in the quarterly report in TR-10.*

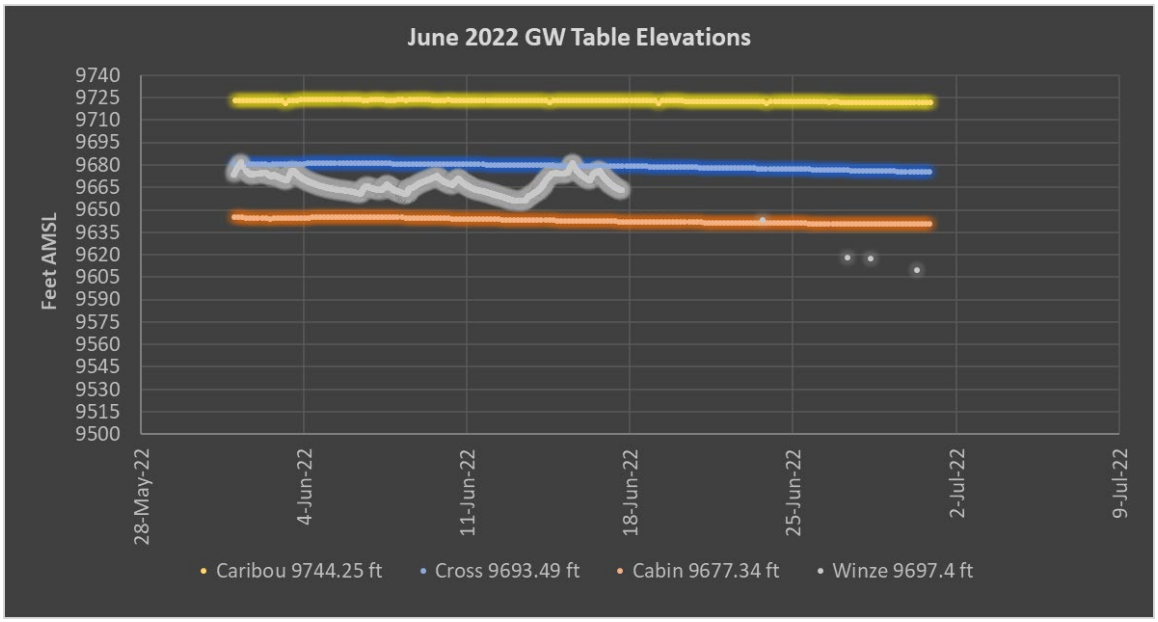
The Potentiometric surface maps for the Month of May 2022 and June 2022 are included as an appendix to this response letter.

The following Graphs provide Ground Water Levels recorded for the 3 monitoring wells and the Cross Winze for the months of May and June 2022. The recording and automated via pressure transducer permanently installed in each well



GRAND ISLAND
RESOURCES

P.O. Box 3395
Nederland, CO 80466
October 6, 2022



12. *Please address the following, the field sheets provided do not reflect the groundwater wells were purged following the approved SOP in TR-10. Specifically, the wells were not purged a minimum of 3 casing volumes prior to sample collection.*

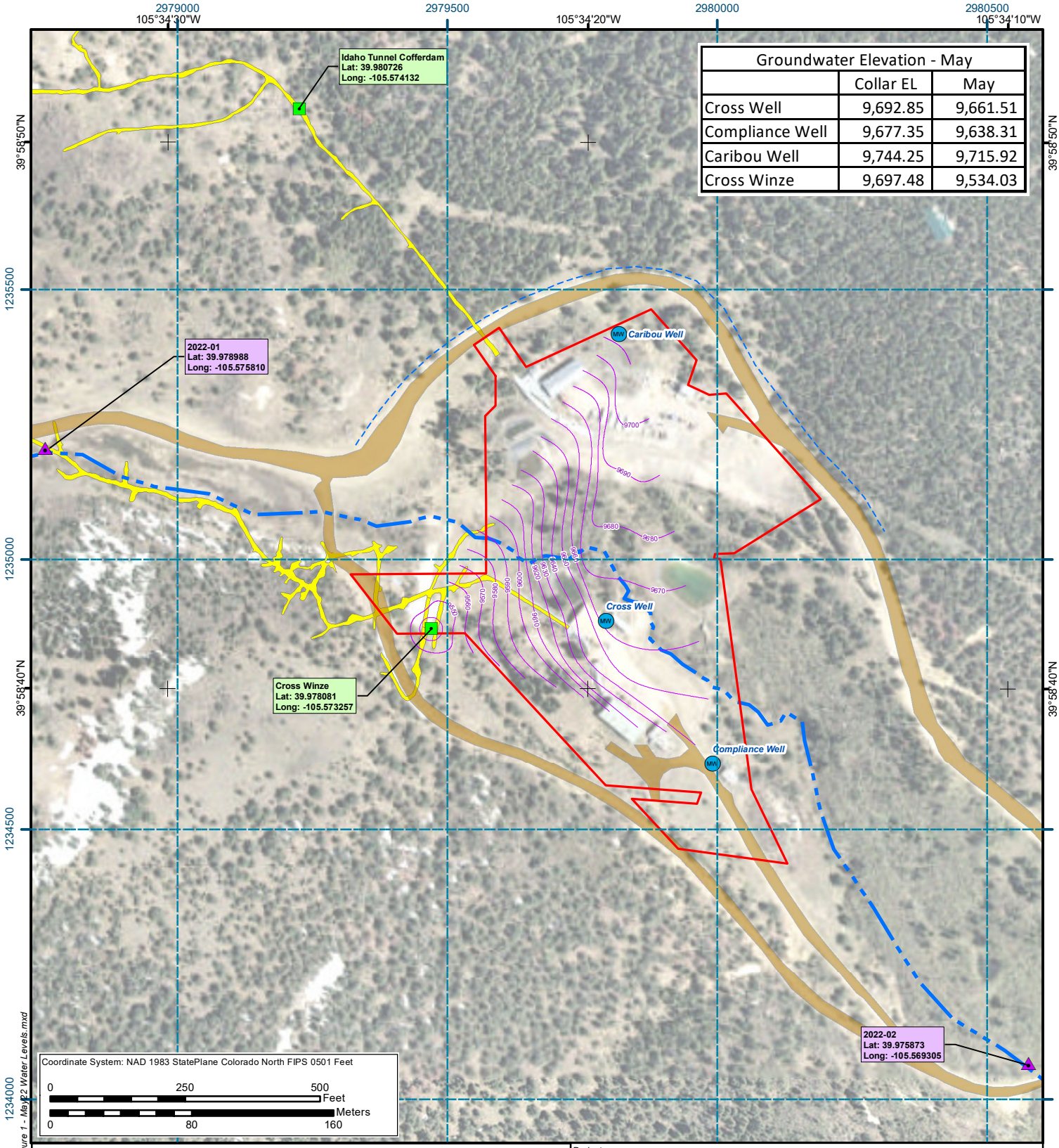
GIR did purge the wells 3 casing volumes at minimum. An administrative oversight did not record the total volume of purged water extracted. Purge volumes will be recorded during all future sampling events.

13. *The groundwater field sheets have not been signed. In future sampling events please ensure the field sheets are completely filled out.*

Field sheets will be signed and filled out for all future sampling events.

Sincerely,

Daniel Takami
President
Grand Island Resources, LLC



Groundwater Elevation - May		
	Collar EL	May
Cross Well	9,692.85	9,661.51
Compliance Well	9,677.35	9,638.31
Caribou Well	9,744.25	9,715.92
Cross Winze	9,697.48	9,534.03

Permit Boundary (9.6 ac)
Existing Roads
Underground Workings
Water Table Contours
Mine Effluent (Groundwater) Sampled as Surface Water
Surface Water Sampling Location
MW Groundwater Sampling Location (Caribou, Cross & Cabin wells)

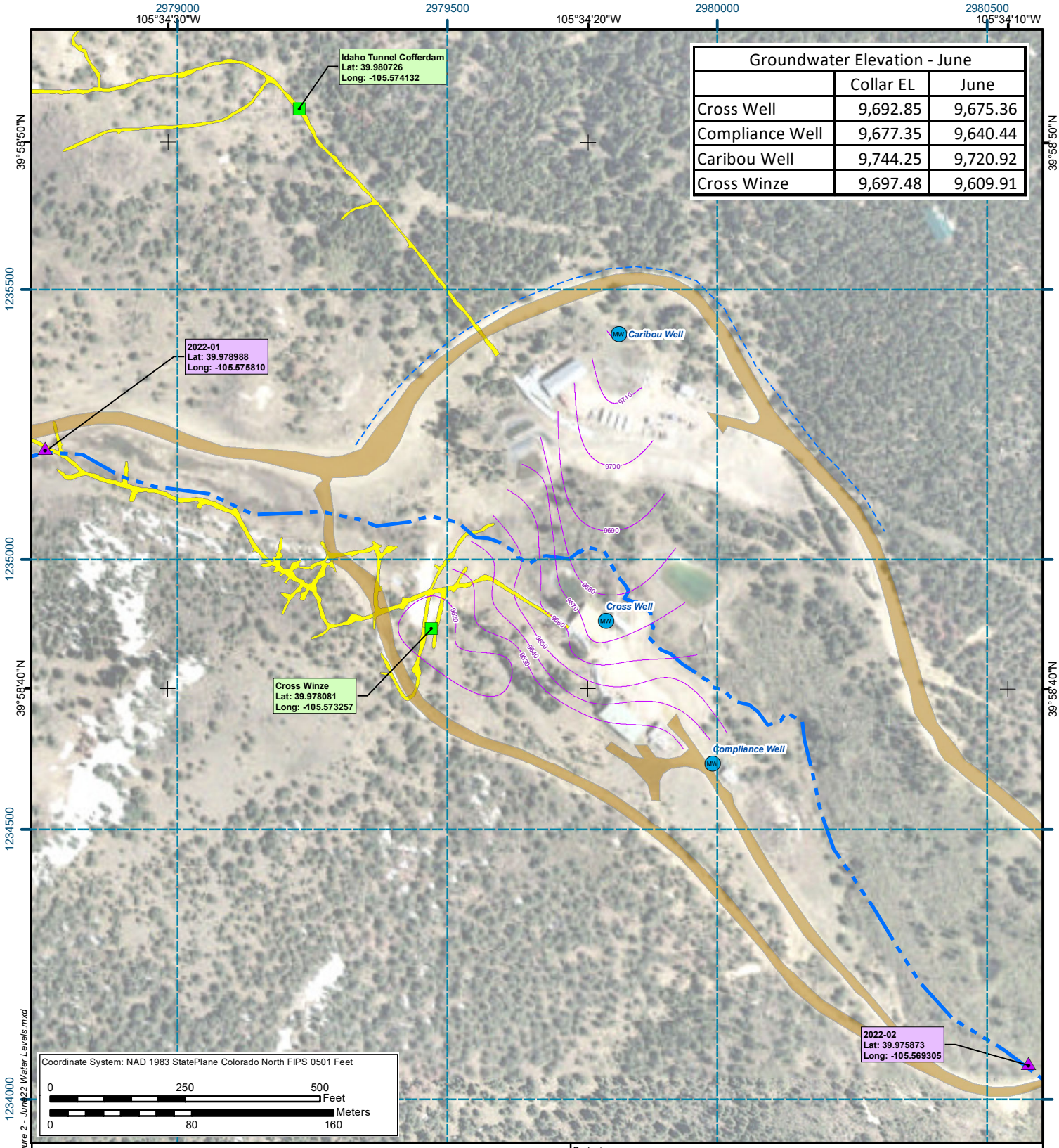
Path: G:\Projects\Nederland\ArcMap\GW Monitoring\Figure 1 - May22 Water Levels.mxd

Project: Groundwater Monitoring

Title: **Potentiometric Surface Map May 2022**

GRAND ISLAND RESOURCES

Project No. US 0801			File No.	
GIS:	JST	10/05/22	Scale As Shown	Rev 0
Check:	JST	10/05/22	**Figure 1**	
Review:	JST	10/05/22		



Groundwater Elevation - June		
	Collar EL	June
Cross Well	9,692.85	9,675.36
Compliance Well	9,677.35	9,640.44
Caribou Well	9,744.25	9,720.92
Cross Winze	9,697.48	9,609.91

- Existing Roads
- Underground Workings
- Water Table Contours
- Mine Effluent (Groundwater) Sampled as Surface Water
- Surface Water Sampling Location
- MW Groundwater Sampling Location (Caribou, Cross & Cabin wells)

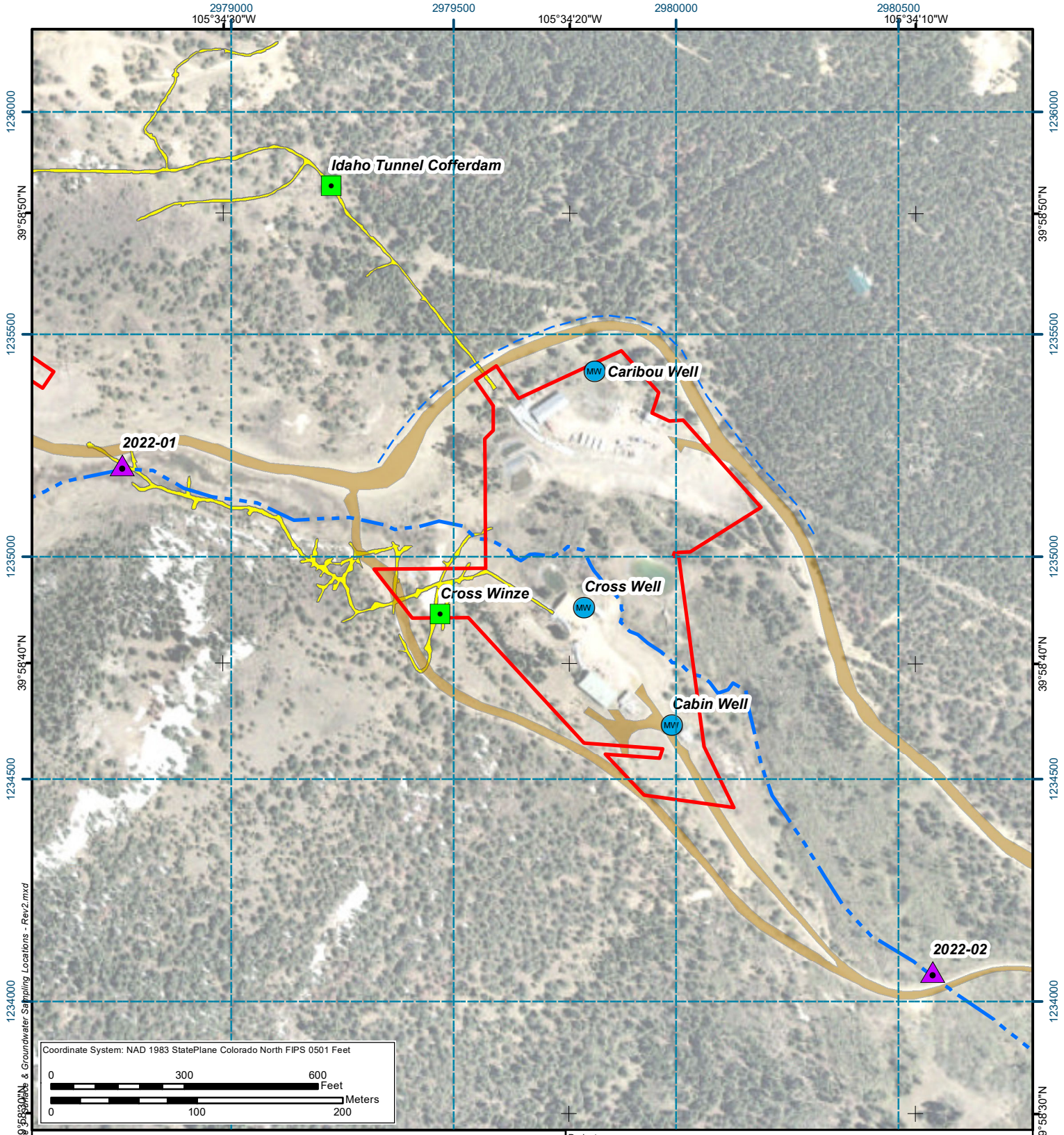
Project: Groundwater Monitoring

Title: **Potentiometric Surface Map June 2022**

GRAND ISLAND RESOURCES

Project No. US 0801			File No.	
GIS:	JST	10/05/22	Scale As Shown	Rev 0
Check:	JST	10/05/22	**Figure 2**	
Review:	JST	10/05/22		

Path: G:\Projects\Nederland\ArcMap\GW Monitoring\Figure 2 - Jun22 Water Levels.mxd



Permit Boundary (9.6 ac)
Existing Roads
Underground Workings
MW Groundwater Sampling Location (Caribou, Cross & Cabin wells)
Mine Effluent (Groundwater) Sampled as Surface Water
Surface Water Sampling Location

Project: Cross Mine Technical Revision No. 10

Title: **Groundwater, Effluent and Surface Water Locations**

GRAND ISLAND RESOURCES

Project No. US 0801			File No.	
GIS:	JST	10/05/22	Scale As Shown	Rev 0
Check:	JST	10/05/22	**Figure 3**	
Review:	JST	10/05/22		

Path: G:\Projects\Nederland\ArcMap\DRMS\TR10\Figure 3 Surface & Groundwater Sampling Locations - Rev2.mxd

Table 4. Cross Gold Mine Semi-Annual Groundwater Sampling Parameter List

Parameter	Standard	Unit	Method	Preservation	Reg. 41 Table
Unfiltered Samples					
pH	6.5 - 8.5	pH units	SM[a] 4500-H-B	≤ 4°C	Table 2
TDS	400	mg/l	SM 2540-C	≤ 4°C	Table 4
Corrosivity	Non Corrosive	Langlier Units	SM 2330-B	≤ 4°C	Table 2
Alkalinity	Non Scaling	mg/l as $CaCO_3$	SM 2320-B	≤ 4°C	Table 2
Cyanide [Free]	0.2	mg/l	EPA 335.4	NaOHpH≥12,≤6°C	Table 1
Chlorophenol	0.0002	mg/l	EPA 420.1	H_2SO_4 pH<2,≤ 4°C	Table 2
Phenol	0.3	mg/l	EPA 420.1	H_2SO_4 pH<2,≤ 4°C	Table 2
Odor	3	odor units	SM 2150 B	≤ 4°C	Table 2
Color	15	color units	SM 2120 A	≤ 4°C	Table 2
Foaming Agents	0.5	mg/l	SM 5540 C	≤ 4°C	Table 2
Asbestos	7,000,000	fibers/liter	EPA 100.1	≤ 4°C	Table 1
30-day Total Coliforms	2.2	org/100 ml	SM 9221-9223	≤ 4°C	Table 1
Max Total Coliforms	23	org/100 ml	SM 9221-9223	≤ 4°C	Table 1
Samples Field-Filtered To 0.45 Micron (re: dissolved)					
Gross Alpha	15	pCi/l	EPA 900.0	≤ 4°C	Table 1
Beta and Photon	4	mrem/year	EPA 900.0	≤ 4°C	Table 1
Aluminum	5	mg/l		HNO_3 pH <2, ≤ 4°C	Table 3
Antimony	0.006	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Arsenic	0.01	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Barium	2	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Beryllium	0.004	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Boron	0.75	mg/l		HNO_3 pH <2, ≤ 4°C	Table 3
Cadmium	0.005	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Calcium	NA	mg/l as $CaCO_3$	EPA 200.7	HNO_3 pH <2, ≤ 4°C	Corrosivity [B]
Chloride	250	mg/l		HNO_3 pH <2, ≤ 4°C	Table 2
Chromium	0.1	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1

Parameter	Standard	Unit	Method	Preservation	Reg. 41 Table
Cobalt	0.05	mg/l		HNO_3 pH <2, ≤ 4°C	
Copper	0.2	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 2
Fluoride	2	mg/l		HNO_3 pH <2, ≤ 4°C	Table 3
Iron	0.3	mg/l	EPA 200.7	HNO_3 pH <2, ≤ 4°C	Table 2
Lead	0.05	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Lithium	2.5	mg/l		HNO_3 pH <2, ≤ 4°C	Table 3
Manganese	0.05	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 2
Mercury	0.002	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Molybdenum	0.21	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Nitrate, dissolved	10.0	mg/l as N	EPA 353.2	H_2SO_4 pH<2,≤ 4°C	Table 1
Nitrate + Nitrate (Total), dissolved	10.0	mg/l as N	EPA 353.2	H_2SO_4 pH<2,≤ 4°C	Table 1
Nitrite, dissolved	1.0	mg/l as N	EPA 353.2	H_2SO_4 pH<2,≤ 4°C	Table 1
Nickel	0.1	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Selenium	0.02	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Silver	0.02	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Silver, dissolved	0.05	mg/l	EPA 200.8	H_2SO_4 pH<2,≤ 4°C	Table 1
Sulfate, dissolved	250	mg/l	EPA 375.2	Cool to 4°C	Table 2
Thallium	0.002	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Uranium	0.0168 - 0.03	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1
Vanadium	0.1	mg/l		HNO_3 pH <2, ≤ 4°C	Table 3
Zinc	2	mg/l	EPA 200.8	HNO_3 pH <2, ≤ 4°C	Table 1

Notes:

[a] SM methods are from Standard Methods for the Examination of Water and Wastewater (APHA et al. 1998).

[b] Calcium data needed for corrosivity/scaling calculations .