



## 2021 Annual Groundwater Monitoring and Corrective Action Report - Revision 1

*Sandow Steam Electric Station AX Landfill - Milam County, Texas*

Prepared for:

**Luminant Generation Company LLC**

Prepared by:

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## **ACRONYMS AND ABBREVIATIONS**

CCR	Coal Combustion Residuals
C.F.R.	Code of Federal Regulations
GWPS	Groundwater Protection Standard
MCL	Maximum Concentration Level
mg/L	Milligrams per Liter
NA	Not Applicable
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
T.A.C	Texas Administrative Code
USEPA	United States Environmental Protection Agency

## DOCUMENT REVISION RECORD

<b>Issue No.</b>	<b>Date</b>	<b>Details of Revisions</b>
<b>Revision 0</b>	January 31, 2022	Original Document
<b>Revision 1</b>	November 2022	Added groundwater potentiometric surface maps, laboratory analytical reports, additional information on alternate source demonstration, and professional seals to figures where applicable

## EXECUTIVE SUMMARY

Golder Associates USA Inc. (Golder), Member of WSP, has prepared this report on behalf of Luminant Generation Company LLC (Luminant) to satisfy the 2021 annual groundwater monitoring and corrective action reporting requirements of 40 C.F.R. Part 257 and 30 T.A.C. Chapter 352 for the AX Landfill (the “CCR unit”) at the former Sandow Steam Electric Station in Milam County, Texas. The CCR units and CCR monitoring well network are shown on Figure 1.

At the beginning and end of the 2021 reporting period, the CCR unit was operating under a Detection Monitoring Program as described in §257.94. The Detection Monitoring Program for the AX Landfill was established in September 2017. Statistically significant increases (SSIs) above background prediction limits were identified for several Appendix III parameters as part of the 2017 through 2020 Detection Monitoring events; however, Alternate Source Demonstrations were completed which indicated that a source other than the CCR unit caused the SSIs. During 2021, SSIs were also identified for several Appendix III constituents, including for calcium in wells AX-24, AX-26, and AX-27; and sulfate in wells AX-24 and AX-26. Alternate sources for the SSIs identified in the 2021 sample data are being evaluated in accordance with §257.94. If an alternate source is not identified to be the cause of the 2021 SSIs, an Assessment Monitoring Program will be established in accordance with §257.94(e)(2).

## 1.0 INTRODUCTION

Golder Associates, Inc. (Golder) has prepared this report on behalf of Luminant Generation Company LLC (Luminant) to satisfy the 2021 annual groundwater monitoring and corrective action reporting requirements of the Coal Combustion Residuals (CCR) Rule for the AX Landfill at the former Sandow Steam Electric Station in Milam County, Texas. The CCR units and CCR monitoring well network are shown on Figure 1.

The CCR Rule (40 C.F.R. 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. TCEQ has adopted portions of the federal CCR rule at 30 T.A.C. Chapter 352 (Texas CCR Rule), and USEPA published its final approval of the Texas CCR rule on June 28, 2021. See 86 Fed. Reg. 33,892 (June 28, 2021). The Texas CCR Rule became effective on July 28, 2021, and it adopts and incorporates by reference the requirements for the annual groundwater monitoring report located at 40 C.F.R. § 257.90. See 30 T.A.C. § 352.901. It further adopts and incorporates by reference the Federal CCR Program requirements for detection and assessment monitoring in 30 T.A.C. §352.941 and 30 T.A.C. §352.951, respectively. Pursuant to 30 T.A.C. § 352.902, this report will be submitted to TCEQ for review no later than 30 days after the report has been placed in the facility's operating record. For existing CCR landfills and surface impoundments, the CCR Rule requires that the owner or operator prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year. Per §257.90(e) of the CCR Rule, the report should contain the following information, to the extent available:

- (1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;
- (2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;
- (3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;
- (4) A narrative discussion of any transition between monitoring programs (*e.g.*, the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

- (5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.
  
- (6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:
  - (i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;
  - (ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;
  - (iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to § 257.94(e):
    - (A) Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and
    - (B) Provide the date when the assessment monitoring program was initiated for the CCR unit.
  - (iv) If it was determined that there was a SSL above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to § 257.95(g) include all of the following:
    - (A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;
    - (B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;
    - (C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and
    - (D) Provide the date when the assessment of corrective measures was completed for the CCR unit.
  - (v) Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and
  - (vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

## 2.0 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The AX Landfill CCR unit is currently in a Detection Monitoring Program. The initial Detection Monitoring Program groundwater samples were collected from the AX Landfill CCR monitoring well network in October 2017.

Subsequent Detection Monitoring Program groundwater samples were collected on a semi-annual basis since that time. Data evaluation is completed using procedures described in the Statistical Analysis Plan (PBW, 2017) to identify statistically significant increases (SSIs) of Appendix III parameters over background concentrations.

The Detection Monitoring Program sampling dates and parameters are summarized in the following table:

**Detection Monitoring Program Summary**

Sampling Dates	Parameters	SSIs	Assessment Monitoring Program Established
October 2017 March 2018 (re-samples)	Appendix III	Yes	No (Alternate Source Demonstration Completed)
March 2018 October 2018	Appendix III	Yes	No (Alternate Source Demonstration Completed)
June 2019 November 2019	Appendix III	Yes	No (Alternate Source Demonstration Completed)
May 2020 November 2020	Appendix III	Yes	To Be Determined (Alternate Source Demonstration Completed)
June 2021 November 2021	Appendix III	Yes	To Be Determined (Alternate Source Currently Being Assessed)

The statistical background values and Appendix III analytical data are presented in Tables 1 and 2, respectively. SSIs of Appendix III parameters were identified during each Detection Monitoring Program sampling event thus far. An initial Alternate Source Demonstration was completed in 2018, which indicated that a source other than the CCR unit caused the SSIs observed in the 2017 sample data and 2018 re-sample data. Similarly, subsequent Alternate Source Demonstrations were completed in 2019 through 2021 based on sample data collected during the previous year. As a result, the AX Landfill has remained in the Detection Monitoring Program. A summary of the Alternate Source Demonstration based on data collected in 2020 is presented in Attachment 1 as required by §257.94(e)(2).



Detection Monitoring Program groundwater samples were collected from the CCR groundwater monitoring network on a semi-annual basis in 2021, as required by the CCR Rule. The analytical data from the 2021 semi-annual Detection Monitoring Program sampling events were evaluated using procedures described in the Statistical Analysis Plan to identify SSIs of Appendix III parameters over background concentrations. SSIs of Appendix III parameters over background concentrations were identified for calcium and sulfate, which are constituents for which SSIs had previously been attributed to alternate sources. Alternate sources for the SSIs identified in the 2021 sample data are being evaluated in accordance with §257.94. If an alternate source is not identified to be the cause of the SSI, an Assessment Monitoring Program will be established in accordance with §257.94(e)(2).

### 3.0 KEY ACTIONS COMPLETED IN 2021

Semi-annual Detection Monitoring Program groundwater monitoring events were conducted in June and November 2021. The number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and the analytical results for the groundwater samples are summarized in Table 2. A map showing the CCR units and monitoring wells is provided as Figure 1. No wells were installed or decommissioned during 2021.

As noted in Section 2.0, SSIs were observed during the initial and subsequent CCR groundwater monitoring events at the Site. SSIs have been observed for boron, calcium, fluoride, and/or sulfate, which are all naturally occurring constituents in groundwater. The SSIs were not attributed to a release from the AX Landfill because: (1) Concentrations of the constituents with SSIs were higher in groundwater samples from other Site wells where SSIs were not observed, including from wells hydraulically upgradient of the AX Landfill, and (2) Groundwater flow characteristics indicate that groundwater could not have traveled from the active landfill cells to the wells where SSIs were observed during the time since CCR was first placed in the cells. The AX Landfill is constructed within highly heterogeneous mine spoil material that was previously excavated and backfilled during lignite mining operations at the Sandow Lignite Mine. The disruption of stratified sediments during mining and exposure of sediment surfaces and pore spaces in fine-grained materials that were previously isolated from the groundwater flow system results in increased dissolved solids and increased heterogeneity in groundwater composition during the post-mining period. Alternate Source Demonstration Reports have been completed in accordance with the CCR rule requirements, which attributed the SSIs to natural variation in groundwater quality due to the post-mine increase in dissolved solids and heterogeneity of the mine spoil groundwater system. Additional details on the SSI evaluations are provided in the 2021 and 2022 Alternate Source Demonstration reports in Attachment 1.

Water elevations measured in the CCR wells during the semi-annual groundwater sampling events were used to develop groundwater potentiometric surface maps, which are presented in Attachment 2. The inferred direction of groundwater flow was to the east during both semi-annual ground sampling events in 2021.

Laboratory analytical reports for the 2021 groundwater samples are presented in Attachment 3.

## **4.0 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS**

No problems were encountered with the CCR groundwater monitoring program in 2021.

## 5.0 KEY ACTIVITIES PLANNED FOR 2022

The following key activities are planned for 2022:

- Luminant submitted a registration application to TCEQ under the Texas CCR Rule for the Sandow AX Landfill on January 24, 2022.
- Continue the Detection Monitoring Program in accordance with applicable provisions of 40 C.F.R. §257.95 and 30 T.A.C. §352.941.
- If an alternate source is identified to be the cause of the SSIs observed in 2021, which are described in this report, a written demonstration will be completed within 90 days of SSI determination and included in the following Annual Groundwater Monitoring and Corrective Action Report.

## 6.0 REFERENCES

Pastor, Behling & Wheeler, LLC, 2017. Coal Combustion Residual Rule Statistical Analysis Plan, Sandow Steam Electric Station, AX Landfill, Rockdale, Texas.

## Signature Page

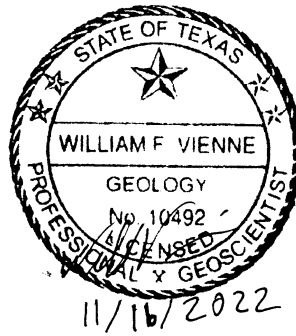
### Golder Associates Inc.



Patrick J. Behling  
*Principal Engineer*

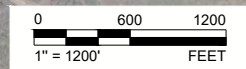
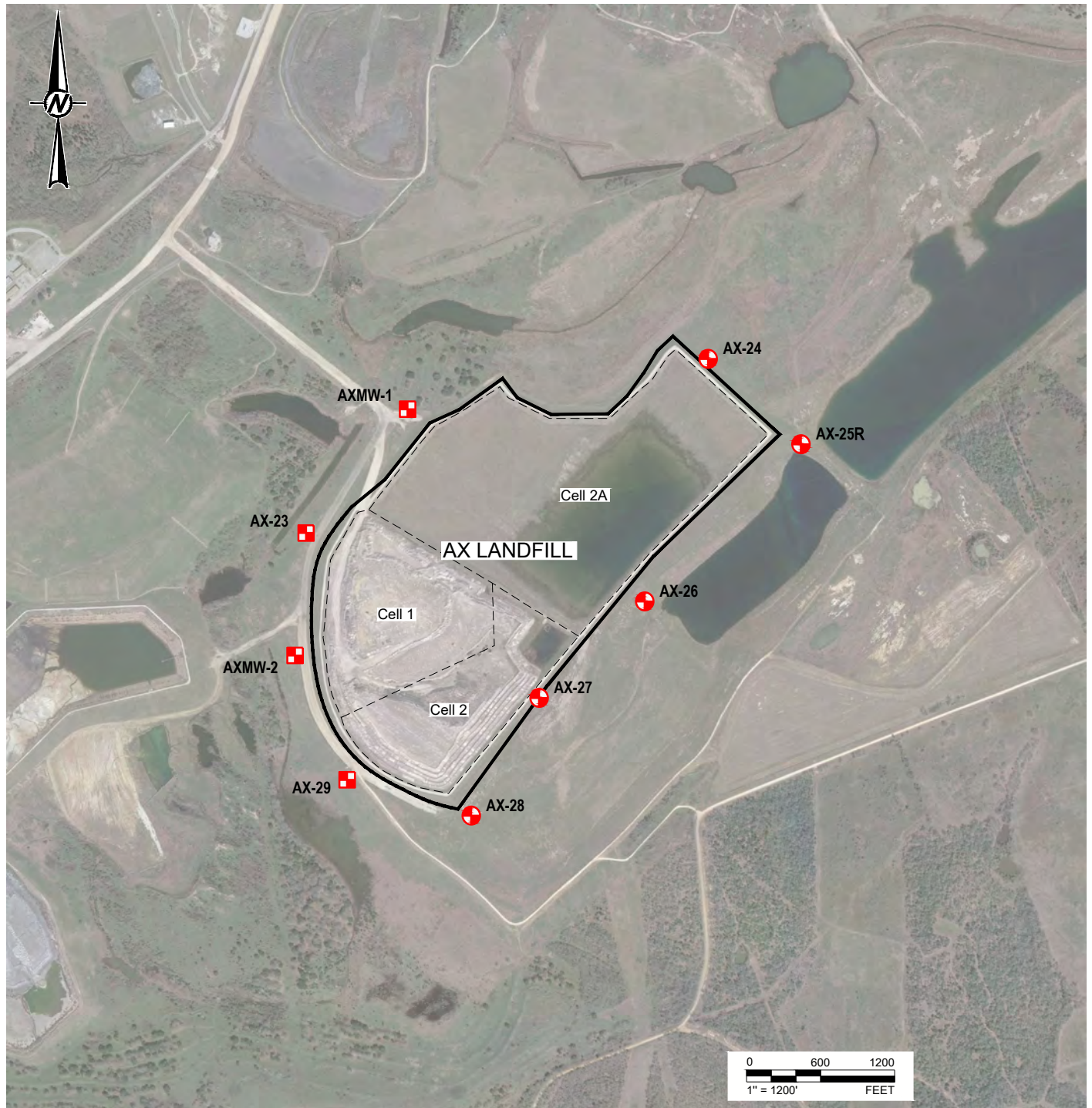


William F. Vienne  
*Senior Hydrogeologist*



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## FIGURES



**LEGEND**

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- DEED RESTRICTION BOUNDARY
- WASTE BOUNDARY

CLIENT  
**LUMINANT**

PROJECT  
**SANDOW 5 GENERATING PLANT  
ROCKDALE, TEXAS**

TITLE  
**DETAILED SITE PLAN - AX LANDFILL**

CONSULTANT



YYYY-MM-DD	2022-11-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WVW
APPROVED	WVW

**REFERENCE(S)**

BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY DATED MARCH 2022.

PROJECT NO.  
**31404097.004**

REV.  
**0**

FIGURE  
**1**



## TABLES

**Table 1  
Statistical Background Values  
Sandow Steam Electric Station AX Landfill**

<b>Sample Location</b>	<b>Boron (mg/L)</b>	<b>Calcium (mg/L)</b>	<b>Chloride (mg/L)</b>	<b>Fluoride (mg/L)</b>	<b>Field pH (s.u.)</b>	<b>Sulfate (mg/L)</b>	<b>Total Dissolved Solids (mg/L)</b>
<b>Upgradient Wells</b>							
AXMW-1	0.681	569	491	0.4	5.49 7.09	2,660	5,820
AXMW-2	3.62	943	391	1.88	4.6 7.63	3,040	4,940
AX-23	1.1	475	313	0.4	3.24 7.95	1,030	3,090
AX-29	0.432	791	306	0.4	2.73 7.01	1,440	3,370
<b>Downgradient Wells</b>							
AX-24	0.311	273	580	0.4	3.89 9.38	1,010	2,520
AX-25(R)	0.298	262	1,140	0.507	4.69 9.2	795	3,980
AX-26	0.446	915	3,040	0.4	5.07 8.14	1,200	8,300
AX-27	0.281	366	1,020	0.4	6.08 7.3	478	3,620
AX-28	0.393	633	756	0.4	4.67 8.55	2,280	3,790

**Table 2**  
**Appendix III Analytical Results**  
**Sandow Steam Electric Station AX Landfill**

Sample Location	Date Sampled	B	Ca	Cl	F	Field pH	SO <sub>4</sub>	TDS
<b>Upgradient Wells</b>								
AXMW-1	10/03/17	0.46	477	348	<0.1	5.75	1990	3620
	03/21/18	0.50	425	267	0.122 J	5.89	2050	3680
	10/09/18	0.51	473	229	0.37	6.31	2260	3730
	06/27/19	0.80	371	242	0.37	5.10	1720	2810
	11/12/19	1.14	362	138	0.115 J	5.33	1540	2800
	05/19/20	2.27	296	137	<0.100	4.87	1570	2680
	11/11/20	4.08	369	202	0.112 J	5.55	1560	2680
	06/07/21	5.43	293	146	<0.100	4.50	1360	2290
	11/17/21	8.21	292	160	0.181 J	5.85	1470	2600
AXMW-2	10/03/17	2.14	644	207	<0.1	5.93	1990	3640
	03/21/18	2.64	628	218	1.18	5.80	2280	4050
	10/09/18	1.47	562	179	0.84	6.66	1960	3280
	06/27/19	1.75	578	203	1.39	5.87	1720	3280
	11/12/19	0.88	483	147	0.228 J	6.14	1160	2480
	05/19/20	0.74	396	143	<0.100	6.19	1150	2490
	11/11/20	0.67	539	180	<0.100	6.35	1240	2610
	06/07/21	0.58	449	131	<0.100	6.28	1180	2550
	11/17/21	0.622	423	118	0.224 J	6.44	1160	2620
AX-23	10/03/17	0.31	316	184	<0.1	6.43	631	1620
	03/23/18	0.31	309	193	0.77	6.09	655	1730
	10/09/18	0.38	305	210	0.45	7.00	636	1700
	06/27/19	0.31	335	224	0.49	6.19	652	1760
	11/12/19	0.34	304	183	0.186 J	6.28	590	1640
	05/19/20	0.35	277	232	<0.100	6.14	641	1750
	11/11/20	0.35	357	256	0.105 J	6.40	677	1800
	06/09/21	0.335	318	238	0.368 J	6.17	655	1720
	11/17/21	0.278	300	248	0.259 J	6.35	651	1860

**Table 2**  
**Appendix III Analytical Results**  
**Sandow Steam Electric Station AX Landfill**

Sample Location	Date Sampled	B	Ca	Cl	F	Field pH	SO <sub>4</sub>	TDS
AX-29	10/03/17	0.32	392	276	<0.1	6.20	1110	2480
	03/23/18	0.30	356	285	0.81	5.89	1160	2450
	10/09/18	0.36	339	274	0.45	6.99	1060	2390
	06/27/19	0.31	352	275	<1.00	5.85	1110	2460
	11/13/19	0.47	449	281	<0.100	5.80	1210	2850
	05/19/20	0.37	308	261	<0.100	5.85	1050	2560
	11/11/20	0.39	429	320	<0.100	5.96	1190	2700
	06/10/21	0.37	365	245	<0.100	6.17	1090	2580
	11/16/21	0.341	339	297	0.201 J	5.90	1120	2630
<b>Downgradient Wells</b>								
AX-24	10/02/17	0.13	252	307	<0.1	6.12	632	1810
	03/26/18	0.13	254	309	0.279 J	5.82	762	1880
	10/08/18	0.18	260	283	0.59	6.82	759	1840
	07/02/19	0.14	325	244	0.49	5.80	887	2060
	11/13/19	0.20	319	226	<0.100	5.91	752	2040
	05/19/20	0.19	271	256	<0.100	5.87	800	2080
	11/12/20	0.17	368	300	<0.100	5.98	947	2180
	06/09/21	0.166	339	201	<0.100	5.86	1040	2240
	11/18/21	0.153	333	179	0.138 J	6.00	1070	2390
AX-25	10/03/17	0.21	325	586	<0.1	6.37	504	2400
	3/16/2018 resample	--	302	--	--	--	--	--
	03/26/18	0.20	281	583	0.75	6.38	526	2420
	10/08/18	0.23	324	586	1.01	7.09	492	2360
	07/02/19	0.20	384	616	0.87	6.26	608	2590
	11/12/19							
	05/07/20							
AX-25R	05/19/20	0.28	218	573	0.269 J	6.25	592	2470
	11/11/20	0.23	264	515	0.270 J	6.38	524	2210
	06/07/21	0.213	228	355	0.42	6.36	475	2020
	11/16/21	0.197	210	400	0.493	6.50	492	2120

**Table 2**  
**Appendix III Analytical Results**  
**Sandow Steam Electric Station AX Landfill**

Sample Location	Date Sampled	B	Ca	Cl	F	Field pH	SO <sub>4</sub>	TDS
AX-26	10/02/17	0.35	666	1100	<0.1	6.38	945	3740
	03/26/18	0.34	912	1820	<0.1	6.41	1300	4980
	10/08/18	0.40	905	1720	<0.1	7.09	1220	4680
	07/02/19	0.36	409	465	0.45	6.14	643	2380
	11/13/19	0.39	651	1010	<0.100	5.91	853	3350
	05/19/20	0.38	617	1240	<0.100	6.20	838	3830
	11/12/20	0.40	980	2060	<0.100	6.29	1240	5110
	06/09/21	0.383	896	1790	<0.100	5.95	1120	4800
	11/18/21	0.360	939	2230	<0.100	6.13	1280	5930
AX-27	10/02/17	0.21	462	652	<0.1	6.19	569	2490
	3/16/2018 resample	--	453	--	--	--	659	--
	3/16/2018 dup	--	456	--	--	--	648	--
	03/26/18	0.21	438	584	<0.1	6.29	661	2350
	10/08/18	0.25	422	540	0.14	7.17	554	2220
	07/02/19	0.21	379	459	0.59	6.05	520	2090
	11/13/19	0.26	395	465	<0.100	6.05	480	2050
	05/19/20	0.30	329	479	<0.100	6.20	450	1930
	11/12/20	0.29	432	569	<0.100	6.47	522	2080
	06/09/21	0.307	384	464	<0.100	6.03	535	1980
	11/18/21	0.249	390	461	0.204 J	6.47	419	1980
AX-28	10/02/17	0.21	664	384	<0.1	6.25	1670	3350
	3/16/2018 resample	--	634	--	--	--	--	--
	03/23/18	0.20	621	354	<0.1	6.17	1720	3430
	10/08/18	0.31	578	230	0.47	6.87	1710	3300
	10/8/18 dup	0.32	577	233	0.51		1780	3370
	06/27/19	0.30	585	146	0.15	5.87	1870	3320
	11/13/19	0.23	616	235	<0.100	5.57	1820	3560
	05/19/20	0.23	492	153	<0.100	5.97	1870	3250
	11/11/20	0.21	577	126	<0.100	6.09	1810	3200
	06/09/21	0.188	461	80.2	<0.100	5.91	1610	2810
11/16/21	0.256	466	61.9	0.198 J	5.99	1760	3040	

Notes:

1. Abbreviations: mg/L - milligram per liter; s.u. - standard units.
2. J - concentration is below method quantitation limit; result is an estimate.

**ATTACHMENT 1**  
**ALTERNATE SOURCE DEMONSTRATION REPORTS**

**ALTERNATE SOURCE DEMONSTRATION SUMMARY**  
**SANDOW STEAM ELECTRIC STATION – AX LANDFILL**

**Introduction**

This Alternate Source Demonstration Summary was prepared to document that a source other than the AX Landfill (the Site) caused the statistically significant increases (SSIs) over background levels observed during the 2020 Coal Combustion Residual (CCR) Detection Monitoring Program sampling events as required by 40 CFR 257.94(e)(2) (the “CCR Rule”).

**AX Landfill History and CCR Monitoring Well Network**

A Site Plan showing the AX Landfill and vicinity is shown on Figure 1. The AX Landfill consists of Cells 1 and 2 and covers an area of approximately 70 acres (Figure 1). Cell 2A of the AX Landfill was constructed adjacent to Cells 1 and 2, but was never used. Construction of Cell 1 was completed in July 2013 and construction of Cell 2 was completed in October 2015. Placement of Unit No. 5 CCR began in Cell 1 in May 2015 and Cell 2 in September 2016. CCR has never been placed in Cell 2A. The Sandow Steam Electric Station, which was formerly the source of CCR to the AX Landfill, ceased power generation operations in 2018. CCR has not been placed in the AX Landfill since the plant shut down in 2018.

The AX Landfill is constructed within highly heterogeneous overburden spoil material that was previously excavated and backfilled during lignite mining operations at the Sandow Lignite Mine. The uppermost aquifer at the Site occurs under unconfined conditions within the overburden spoil and extends to the base of the spoil, where lignite and/or clay confining units are encountered. An average linear flow velocity of 0.15 feet/day was calculated for the AX Landfill based on aquifer characteristics presented in the Groundwater Monitoring System Certification for the Site (PBW, 2017a).

The CCR groundwater monitoring well system at AX Landfill consists of six monitoring wells (MW-02, MW-05, MW-07, MW-08R, MW-09, and AL-10) that are each screened in the uppermost aquifer at the Site. Groundwater elevations have consistently been highest west of the AX Landfill and lowest east of the AX Landfill, with a groundwater flow direction generally from west to east. Based on the observed groundwater potentiometric surface at the Site, the location of each CCR monitoring well relative to the AX Landfill 1 is as follows:

Upgradient/Background Wells	Downgradient Wells
AXMW-1	AX-24
AXMW-2	AX-25/25R
AX-23	AX-26
AX-29	AX-27
	AX-28

**Previous Detection Monitoring Results**

Detection Monitoring Program groundwater data collected from the AX Landfill CCR monitoring well network from 2017 through 2020 are summarized in Table 1. The initial Detection Monitoring Program groundwater samples were collected from the AX Landfill in October 2017. SSIs were observed during the initial sampling event for calcium in wells AX-25, AX-27, and AX-28 and sulfate in well AX-27. SSIs were subsequently observed during the 2018 semi-annual groundwater sampling events for calcium in wells AX-25 and AX-27, sulfate in wells AX-26

and AX-27, and fluoride in wells AX-23, AX-24, AX-25, AX-28, and AX-29. Alternate Source Demonstration Reports (PBW 2018; Golder 2019; Golder 2020) attributed the SSIs to natural variation in groundwater quality due to the heterogeneity of the spoil groundwater system based on: (1) Concentrations of the constituents with SSIs were higher in groundwater samples from other Site wells, including from wells hydraulically upgradient of the AX Landfill, and (2) Groundwater flow velocity calculations indicate that groundwater could not have traveled from the active landfill cells to the wells where SSIs were observed during the time since CCR was first placed in the cells. Based on the results of the Alternate Source Demonstrations, the AX Landfill has remained in the Detection Monitoring Program.

### **2020 Semi-Annual Detection Monitoring Results**

Detection Monitoring Program groundwater samples were collected on a semi-annual basis from the AX Landfill CCR monitoring well network in 2020 in accordance with 40 CFR 257.94. SSIs were observed during the 2020 semi-annual groundwater sampling events in downgradient wells AX-24 (calcium), AX-25R (calcium), AX-26 (calcium and sulfate), and AX-27 (boron, calcium, and sulfate).

Data variability across the CCR monitoring network is very high. Boron, calcium, and sulfate concentrations in downgradient wells where SSIs were indicated have generally been lower than other wells where SSIs were not indicated and/or in background wells. For example, calcium concentrations in downgradient wells AX-24, AX-25R and AX-27 (where SSIs are indicated for calcium) are similar to or lower than calcium concentrations in downgradient well AX-28 where SSIs were not indicated and in upgradient well AXMW-2. The calcium SSI observed in well AX-26 in November 2020 (980 mg/L) is higher than calcium concentrations in other downgradient and upgradient wells; however, this calcium concentration is similar to historical calcium concentrations observed in samples from AX-26 that did not indicate SSIs and, as discussed in the paragraph below, AX-26 is located sufficiently far from the landfill cells containing CCR that groundwater from these areas would not have reached AX-26 by 2020. Concentrations of sulfate in the downgradient wells where SSIs were indicated (AX-26 and AX-27) have consistently been lower than concentrations in downgradient wells where SSIs were not indicated and in upgradient wells. Boron concentrations in downgradient well AX-27 are lower than all boron concentrations in 2020 groundwater samples from all upgradient wells. Based on the high site-wide variability in boron, calcium, and sulfate sample concentrations, the SSIs observed during the 2020 semi-annual monitoring events are attributed to natural variability in groundwater quality related to heterogeneity of the mine spoil rather than a release from the AX Landfill.

This conclusion is further supported by the location of the wells where SSIs were identified relative to Cells 1 and 2. Based on the timing of CCR placement in the AX Landfill and the calculated average linear groundwater velocity (0.15 feet/day) by PBW (2017a), wells AX-24, AX-25R, and AX-26 are all located sufficiently far from Cells 1 and 2 that affected water in contact with the cells would not have reached these wells by the time that the 2020 Detection Monitoring Program groundwater samples were collected. CCR was first placed in Cell 1 in May 2015 and in Cell 2 in September 2016. Using the conservative assumptions that the wells are located directly downgradient of the active cells (Cells 1 and 2) and that chemical adsorption is negligible, the theoretical amount of time for groundwater in contact with the active cells to reach AX-26 (approximately 800 feet from the former active cells) and AX-24 and AX-25 (both approximately 2,500 feet from the former active cells) is 15 and 40-50 years, respectively.

The other downgradient well where an SSI was identified was AX-27 (boron, calcium, and sulfate). AX-27 is located approximately 70 feet from Cell 2. The estimated amount of time it would take groundwater in contact with Cell 2 to reach AX-27 is approximately 1.3 years. Theoretically, groundwater in contact with Cell 2 could have reached AX-27 before the 2020 semi-annual groundwater samples were collected; however, the boron, calcium, and sulfate concentrations observed in the 2020 samples from well AX-27 are similar to those observed



in historical samples collected from the well before groundwater from Cell 2 would have theoretically reached AX-27. Additionally, the boron, calcium, and sulfate concentrations observed in the 2020 samples from well AX-27 are lower than concentrations observed in upgradient wells.

### Conclusion

SSIs were identified for boron, calcium, and sulfate in one or more downgradient wells during the 2020 Detection Monitoring Program semi-annual groundwater sampling events at the AX Landfill. However, all observed SSIs are attributed to natural variability in groundwater quality due to the heterogeneity of the mine spoil groundwater system and are not considered evidence of a release from the CCR unit. In accordance with Section 257.94(e)(2), Luminant should continue the Detection Monitoring Program at the unit. Initiation of an Assessment Monitoring Program is not required at this time.

### References

- Pastor, Behling & Wheeler, LLC (PBW), 2017a. Coal Combustion Residual Rule, Groundwater Monitoring System Certification, Sandow 5 Generating Plant, AX Landfill, Rockdale, Texas. October 16, 2017.
- Pastor, Behling & Wheeler, LLC (PBW), 2018. Coal Combustion Residual Rule, Alternate Source Demonstration Report, Sandow 5 Generating Plant, AX Landfill, Rockdale, Texas.
- Golder Associates (Golder), 2019. Coal Combustion Residual Rule, Alternate Source Demonstration Report, Sandow 5 Generating Plant, AX Landfill, Rockdale, Texas.
- Golder Associates (Golder), 2020. Coal Combustion Residual Rule, Alternate Source Demonstration Report, Sandow 5 Generating Plant, AX Landfill, Rockdale, Texas.

### PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Golder Associates Inc. under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that the alternative source demonstration at the referenced facility meets the requirements of Section 257.94(e)(2) of the CCR Rule.



Patrick J. Behling, P.E.  
Principal Engineer  
GOLDER ASSOCIATES INC.



**Table 1**  
**CCR Groundwater Detection Monitoring Data Summary**  
**Sandow Steam Electric Station - AX Landfill**

Sample Location	Date Sampled	B		Ca		Cl		F		Field pH		SO <sub>4</sub>		TDS	
		Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
<b>Upgradient Wells</b>															
AXMW-1	10/03/17	0.68	0.46	569	477	491	348	0.40	<0.1	5.49 7.09	5.75	2660	1990	5820	3620
	03/21/18		0.50		425		267		0.122 J		5.89		2050		3680
	10/09/18		0.51		473		229		0.37		6.31		2260		3730
	06/27/19		0.80		371		242		0.37		5.10		1720		2810
	11/12/19		1.14		362		138		0.115 J		5.33		1540		2800
	05/19/20		2.27		296		137		<0.100		4.87		1570		2680
	11/11/20		4.08		369		202		0.112 J		5.55		1560		2680
AXMW-2	10/03/17	3.62	2.14	943	644	391	207	1.88	<0.1	4.6 7.63	5.93	3040	1990	4940	3640
	03/21/18		2.64		628		218		1.18		5.80		2280		4050
	10/09/18		1.47		562		179		0.84		6.66		1960		3280
	06/27/19		1.75		578		203		1.39		5.87		1720		3280
	11/12/19		0.88		483		147		0.228 J		6.14		1160		2480
	05/19/20		0.74		396		143		<0.100		6.19		1150		2490
	11/11/20		0.67		539		180		<0.100		6.35		1240		2610
AX-23	10/03/17	1.10	0.31	475	316	313	184	0.40	<0.1	3.24 7.95	6.43	1030	631	3090	1620
	03/23/18		0.31		309		193		0.77		6.09		655		1730
	10/09/18		0.38		305		210		0.45		7.00		636		1700
	06/27/19		0.31		335		224		0.49		6.19		652		1760
	11/12/19		0.34		304		183		0.186 J		6.28		590		1640
	05/19/20		0.35		277		232		<0.100		6.14		641		1750
	11/11/20		0.35		357		256		0.105 J		6.40		677		1800

**Table 1  
CCR Groundwater Detection Monitoring Data Summary  
Sandow Steam Electric Station - AX Landfill**

Sample Location	Date Sampled	B		Ca		Cl		F		Field pH		SO <sub>4</sub>		TDS	
		Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
AX-29	10/03/17	0.43	0.32	791	392	306	276	0.40	<0.1	2.73 7.01	6.20	1440	1110	3370	2480
	03/23/18		0.30		356		285		0.81		5.89		1160		2450
	10/09/18		0.36		339		274		0.45		6.99		1060		2390
	06/27/19		0.31		352		275		<1.00		5.85		1110		2460
	11/13/19		0.47		449		281		<0.100		5.80		1210		2850
	05/19/20		0.37		308		261		<0.100		5.85		1050		2560
	11/11/20		0.39		429		320		<0.100		5.96		1190		2700
<b>Downgradient Wells</b>															
AX-24	10/02/17	0.31	0.13	273	252	580	307	0.40	<0.1	3.89 9.38	6.12	1010	632	2520	1810
	03/26/18		0.13		254		309		0.279 J		5.82		762		1880
	10/08/18		0.18		260		283		0.59		6.82		759		1840
	07/02/19		0.14		325		244		0.49		5.80		887		2060
	11/13/19		0.20		319		226		<0.100		5.91		752		2040
	05/19/20		0.19		271		256		<0.100		5.87		800		2080
	11/12/20		0.17		368		300		<0.100		5.98		947		2180
AX-25	10/03/17	0.30	0.21	262	325	1140	586	0.51	<0.1	4.69 9.20	6.37	795	504	3980	2400
	03/16/18		--		302		--		--		--		--		
	03/26/18		0.20		281		583		0.75		6.38		526		2420
	10/08/18		0.23		324		586		1.01		7.09		492		2360
	07/02/19		0.20		384		616		0.87		6.26		608		2590
	11/12/19		Well Damaged												
	05/07/20	Well Plugged and Abandoned													

**Table 1  
CCR Groundwater Detection Monitoring Data Summary  
Sandow Steam Electric Station - AX Landfill**

Sample Location	Date Sampled	B		Ca		Cl		F		Field pH		SO <sub>4</sub>		TDS	
		Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
AX-25R	05/19/20	0.30	0.28	262	218	1140	573	0.51	0.269 J	4.69 9.20	6.25	795.00	592	3980	2470
	11/11/20		0.23		264		515		0.270 J		6.38		524		2210
AX-26	10/02/17	0.45	0.35	915	666	3040	1100	0.40	<0.1	5.07 8.14	6.38	1200	945	8300	3740
	03/26/18		0.34		912		1820		<0.1		6.41		1300		4980
	10/08/18		0.40		905		1720		<0.1		7.09		1220		4680
	07/02/19		0.36		409		465		0.45		6.14		643		2380
	11/13/19		0.39		651		1010		<0.100		5.91		853		3350
	05/19/20		0.38		617		1240		<0.100		6.20		838		3830
	11/12/20		0.40		980		2060		<0.100		6.29		1240		5110
AX-27	10/02/17	0.28	0.21	366	462	1020	652	0.40	<0.1	6.08 7.3	6.19	478	569	3620	2490
	03/16/18		--		453		--		--		--		659		--
	/16/2018 du		--		456		--		--		--		648		--
	03/26/18		0.21		438		584		<0.1		6.29		661		2350
	10/08/18		0.25		422		540		0.14		7.17		554		2220
	07/02/19		0.21		379		459		0.59		6.05		520		2090
	11/13/19		0.26		395		465		<0.100		6.05		480		2050
	05/19/20		0.30		329		479		<0.100		6.20		450		1930
	11/12/20		0.29		432		569		<0.100		6.47		522		2080

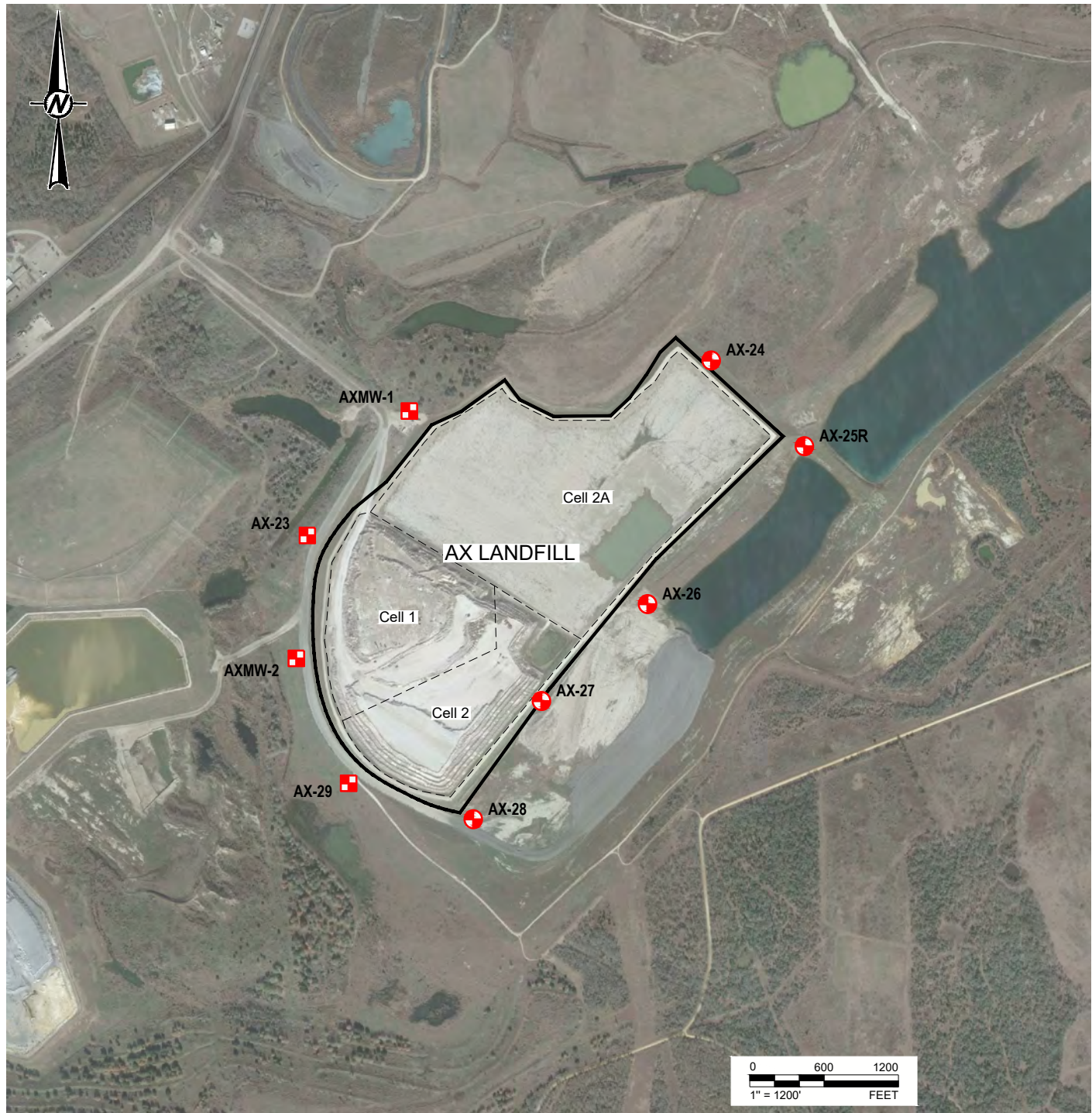
**Table 1**  
**CCR Groundwater Detection Monitoring Data Summary**  
**Sandow Steam Electric Station - AX Landfill**

Sample Location	Date Sampled	B		Ca		Cl		F		Field pH		SO <sub>4</sub>		TDS	
		Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
AX-28	10/02/17	0.39	0.21	633	664	756	384	0.40	<0.1	4.67 8.55	6.25	2280	1670	3790	3350
	03/16/18		--		634		--		--		--				
	03/23/18		0.20		621		354		<0.1		6.17		1720		3430
	10/08/18		0.31		578		230		0.47		1710		3300		
	10/8/18 dup		0.32		577		233		0.51		1780		3370		
	06/27/19		0.30		585		146		0.15		1870		3320		
	11/13/19		0.23		616		235		<0.100		1820		3560		
	05/19/20		0.23		492		153		<0.100		1870		3250		
	11/11/20		0.21		577		126		<0.100		1810		3200		

Notes:

Notes:

1. Abbreviations: mg/L - milligram per liter; s.u. - standard units.
2. J - concentration is below method quantitation limit; result is an estimate.



**LEGEND**



DOWNGRADIENT CCR MONITORING WELL



UPGRADIENT CCR MONITORING WELL

**NOTE(S)**

CLIENT  
**LUMINANT**

PROJECT  
**SANDOW 5 GENERATING PLANT  
ROCKDALE, TEXAS**

TITLE  
**DETAILED SITE PLAN - AX LANDFILL**

CONSULTANT



YYYY-MM-DD      2020-01-23

DESIGNED      AJD

PREPARED      AJD

REVIEWED      WFV

APPROVED      WFV

**REFERENCE(S)**

BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY DATED 1/7/18.

PROJECT NO.  
**19122262**

REV.  
**0**

FIGURE  
**1**

**ALTERNATE SOURCE DEMONSTRATION SUMMARY**  
**SANDOW STEAM ELECTRIC STATION – AX LANDFILL**

**Introduction**

This Alternate Source Demonstration Summary was prepared to document that a source other than the AX Landfill (the Site) caused the statistically significant increases (SSIs) over background levels observed during the 2020 Coal Combustion Residual (CCR) Detection Monitoring Program sampling events as required by 40 CFR 257.94(e)(2) of the federal CCR Rule. The Texas Commission on Environmental Quality (TCEQ) has adopted portions of the federal CCR rule at 30 T.A.C. Chapter 352 (Texas CCR Rule). The Texas CCR Rule became effective on July 28, 2021, and it adopts and incorporates by reference the requirements for the annual groundwater monitoring report located at 40 C.F.R. §257.90 (See 30 T.A.C. §352.901) and the Federal CCR Program requirements for detection and assessment monitoring at 40 C.F.R. §257.94 and §257.95 (See 30 T.A.C. §352.941 and 30 T.A.C. §352.951). Pursuant to 30 T.A.C. §352.941(c)(1), a notification was submitted to the Executive Director on January 14, 2022 indicating an intent to pursue an Alternate Source Demonstration. This Alternate Source Demonstration will be submitted to the Executive Director pursuant to 30 T.A.C. §352.941(c)(2).

**AX Landfill History and CCR Monitoring Well Network**

A Site Plan showing the AX Landfill and vicinity is shown on Figure 1. The AX Landfill consists of Cells 1 and 2 and covers an area of approximately 70 acres (Figure 1). Cell 2A of the AX Landfill was constructed adjacent to Cells 1 and 2 but was never used. Construction of Cell 1 was completed in July 2013 and construction of Cell 2 was completed in October 2015. Placement of Unit No. 5 CCR began in Cell 1 in May 2015 and Cell 2 in September 2016. CCR has never been placed in Cell 2A. The Sandow Steam Electric Station, which was formerly the source of CCR to the AX Landfill, ceased power generation operations in 2018. CCR has not been placed in the AX Landfill since the plant shut down in 2018.

The AX Landfill is constructed within highly heterogeneous overburden spoil material that was previously excavated and backfilled during lignite mining operations at the Sandow Lignite Mine. The uppermost aquifer at the Site occurs under unconfined conditions within the overburden spoil and extends to the base of the spoil, where lignite and/or clay confining units are encountered. An average linear flow velocity of 0.15 feet/day was calculated for the AX Landfill based on aquifer characteristics presented in the Groundwater Monitoring System Certification for the Site (PBW 2017).

The CCR groundwater monitoring well system at AX Landfill consists of nine monitoring wells that are each screened in the uppermost aquifer at the Site. Groundwater elevations have consistently been highest west of the AX Landfill and lowest east of the AX Landfill, with a groundwater flow direction generally from west to east. Based on the observed groundwater potentiometric surface at the Site, the location of each CCR monitoring well relative to the AX Landfill 1 is as follows:

Upgradient/Background Wells	Downgradient Wells
AXMW-1	AX-24
AXMW-2	AX-25/25R
AX-23	AX-26
AX-29	AX-27
	AX-28

### Previous Detection Monitoring Results

Detection Monitoring Program groundwater data collected from the AX Landfill CCR monitoring well network from 2017 through 2021 are summarized in Table 1. The initial Detection Monitoring Program groundwater samples were collected from the AX Landfill in October 2017. SSIs were observed during the initial and subsequent sampling events for boron, calcium, fluoride, and/or sulfate. Alternate Source Demonstration Reports attributed the SSIs to natural variation in groundwater quality due to the heterogeneity of the spoil groundwater system based on: (1) Concentrations of the constituents with SSIs were higher in groundwater samples from other Site wells, including from wells hydraulically upgradient of the AX Landfill, and (2) Groundwater flow velocity calculations indicate that groundwater could not have traveled from the active landfill cells to the wells where SSIs were observed during the time since CCR was first placed in the cells. Based on the results of the Alternate Source Demonstrations, the AX Landfill has remained in the Detection Monitoring Program.

### 2021 Semi-Annual Detection Monitoring Results

Detection Monitoring Program groundwater samples were collected on a semi-annual basis from the AX Landfill CCR monitoring well network in 2021 in accordance with 40 CFR 257.94. SSIs were observed during the 2021 semi-annual groundwater sampling events in downgradient wells AX-24 (calcium and sulfate), AX-26 (calcium and sulfate), and AX-27 (calcium).

Data variability across the CCR monitoring network is very high. Calcium and sulfate concentrations in downgradient wells where SSIs were indicated in 2021 were generally lower than in other wells where SSIs were not indicated and/or in background wells. For example, calcium concentrations in downgradient wells AX-24 and AX-27 (where SSIs are indicated for calcium) are similar to or lower than calcium concentrations in downgradient wells where SSIs were not indicated and in upgradient wells. The calcium SSI observed in 2021 in well AX-26 (max concentration of 939 mg/L) is higher than calcium concentrations in other downgradient and upgradient wells; however, this calcium concentration is similar to historical calcium concentrations observed in samples from AX-26 that did not indicate SSIs and, as discussed in the paragraph below, AX-26 is located sufficiently far from the landfill cells containing CCR that groundwater from these areas would not have reached AX-26 by 2021. Concentrations of sulfate in the downgradient wells where SSIs were indicated (AX-24 and AX-26) have consistently been lower than concentrations in downgradient wells where SSIs were not indicated and in upgradient wells. Based on the high site-wide variability in calcium and sulfate sample concentrations, the SSIs observed during the 2021 semi-annual monitoring events are attributed to natural variability in groundwater quality related to heterogeneity of the mine spoil rather than a release from the AX Landfill.

This conclusion is further supported by the location of the wells where SSIs were identified relative to Cells 1 and 2. Based on the timing of CCR placement in the AX Landfill and the calculated average linear groundwater velocity (0.15 feet/day) by PBW (2017), wells AX-24 and AX-26 are located sufficiently far from Cells 1 and 2 that affected water in contact with the cells would not have reached these wells by the time that the 2021 Detection Monitoring Program groundwater samples were collected. CCR was first placed in Cell 1 in May 2015 and in Cell 2 in September 2016. Using the conservative assumptions that the wells are located directly downgradient of the active cells (Cells 1 and 2) and that chemical adsorption is negligible, the theoretical amount of time for groundwater in contact with the active cells to reach AX-26 (approximately 800 feet from the former active cells) and AX-24 (approximately 2,500 feet from the former active cells) is 15 and 40-50 years, respectively.

The other downgradient well where an SSI was identified was AX-27 (calcium). AX-27 is located approximately 70 feet from Cell 2. The estimated amount of time it would take groundwater in contact with Cell 2 to reach AX-27 is approximately 1.3 years. Theoretically, groundwater in contact with Cell 2 could have reached AX-27 before the 2021 semi-annual groundwater samples were collected; however, the calcium concentrations observed in the 2021 samples from well AX-27 are similar to those observed in historical samples collected from the well before



groundwater from Cell 2 would have theoretically reached AX-27. Additionally, the calcium concentrations observed in the 2021 samples from well AX-27 are lower than concentrations observed in upgradient wells.

### Conclusion

SSIs were identified for calcium and sulfate in one or more downgradient wells during the 2021 Detection Monitoring Program semi-annual groundwater sampling events at the AX Landfill. However, all observed SSIs are attributed to natural variability in groundwater quality due to the heterogeneity of the mine spoil groundwater system and are not considered evidence of a release from the CCR unit. In accordance with Section 257.94(e)(2), Luminant should continue the Detection Monitoring Program at the unit. Initiation of an Assessment Monitoring Program is not required at this time.

### References

Pastor, Behling & Wheeler, LLC (PBW), 2017. Coal Combustion Residual Rule, Groundwater Monitoring System Certification, Sandow 5 Generating Plant, AX Landfill, Rockdale, Texas. October 16, 2017.

## PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Golder Associates USA Inc., Member of WSP, under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that the alternative source demonstration at the referenced facility meets the requirements of Section 257.94(e)(2) of the CCR Rule.



A handwritten signature in blue ink that reads "Patrick J. Behling".

Patrick J. Behling, P.E.  
Principal Engineer  
GOLDER ASSOCIATES USA INC., Member of WSP

**Table 1**  
**Appendix III Analytical Results**  
**Sandow Steam Electric Station AX Landfill**

Sample Location	Date Sampled	B		Ca		Cl		F		Field pH		SO <sub>4</sub>		TDS	
		Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
<b>Upgradient Wells</b>															
AXMW-1	10/03/17	0.68	0.46	569	477	491	348	0.40	<0.1	5.49 7.09	5.75	2660	1990	5820	3620
	03/21/18		0.50		425		267		0.122 J		5.89		2050		3680
	10/09/18		0.51		473		229		0.37		6.31		2260		3730
	06/27/19		<b>0.80</b>		371		242		0.37		<b>5.10</b>		1720		2810
	11/12/19		<b>1.14</b>		362		138		0.115 J		<b>5.33</b>		1540		2800
	05/19/20		<b>2.27</b>		296		137		<0.100		<b>4.87</b>		1570		2680
	11/11/20		<b>4.08</b>		369		202		0.112 J		5.55		1560		2680
	06/07/21		<b>5.43</b>		293		146		<0.100		<b>4.50</b>		1360		2290
	11/17/21		<b>8.21</b>		292		160		0.181 J		5.85		1470		2600
AXMW-2	10/03/17	3.62	2.14	943	644	391	207	1.88	<0.1	4.6 7.63	5.93	3040	1990	4940	3640
	03/21/18		2.64		628		218		1.18		5.80		2280		4050
	10/09/18		1.47		562		179		0.84		6.66		1960		3280
	06/27/19		1.75		578		203		1.39		5.87		1720		3280
	11/12/19		0.88		483		147		0.228 J		6.14		1160		2480
	05/19/20		0.74		396		143		<0.100		6.19		1150		2490
	11/11/20		0.67		539		180		<0.100		6.35		1240		2610
	06/07/21		0.58		449		131		<0.100		6.28		1180		2550
	11/17/21		0.622		423		118		0.224 J		6.44		1160		2620
AX-23	10/03/17	1.10	0.31	475	316	313	184	0.40	<0.1	3.24 7.95	6.43	1030	631	3090	1620
	03/23/18		0.31		309		193		<b>0.77</b>		6.09		655		1730
	10/09/18		0.38		305		210		<b>0.45</b>		7.00		636		1700
	06/27/19		0.31		335		224		<b>0.49</b>		6.19		652		1760
	11/12/19		0.34		304		183		0.186 J		6.28		590		1640
	05/19/20		0.35		277		232		<0.100		6.14		641		1750
	11/11/20		0.35		357		256		0.105 J		6.40		677		1800
	06/09/21		0.335		318		238		0.368 J		6.17		655		1720
	11/17/21		0.278		300		248		0.259 J		6.35		651		1860

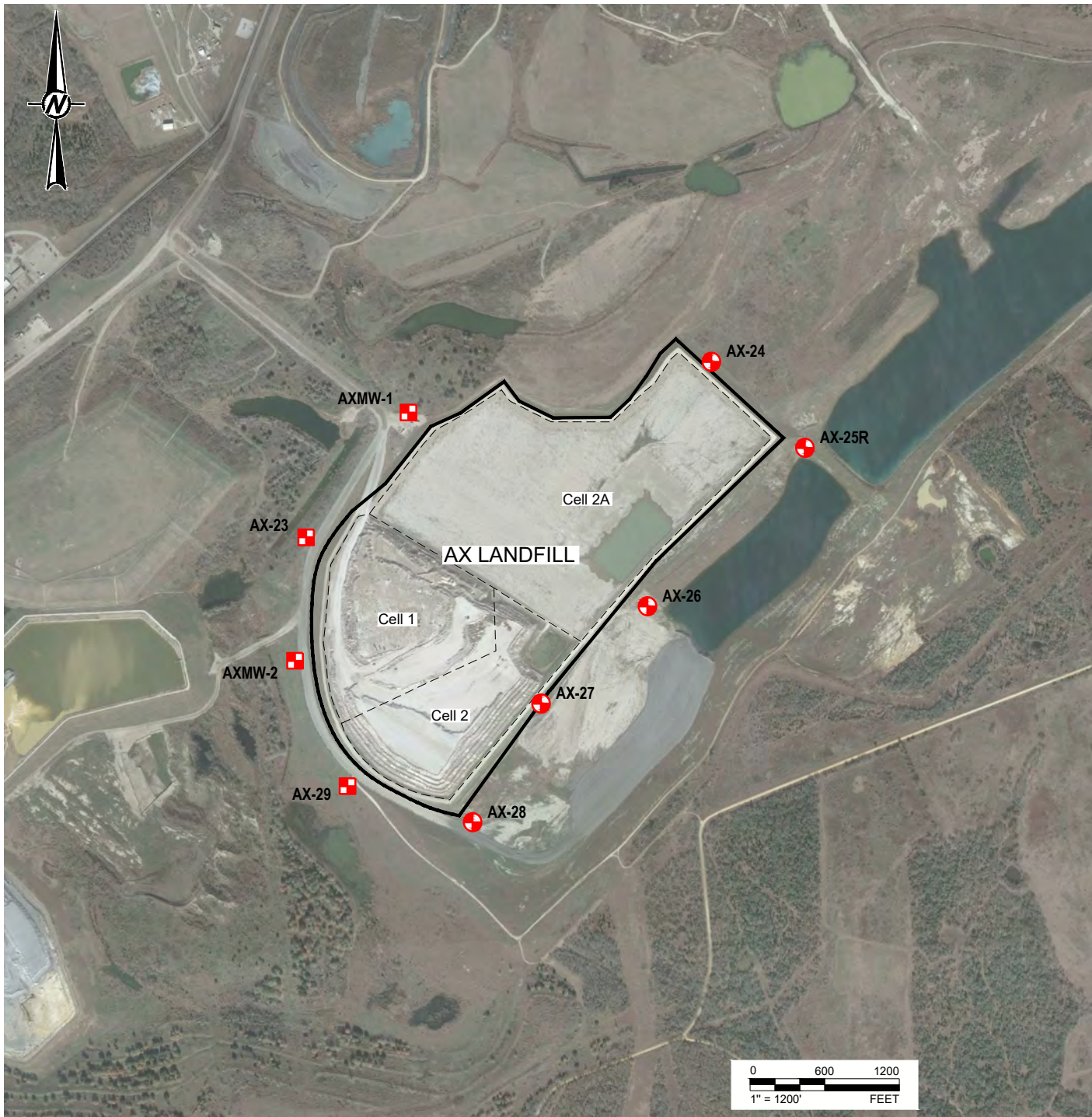
**Table 1**  
**Appendix III Analytical Results**  
**Sandow Steam Electric Station AX Landfill**

Sample Location	Date Sampled	B		Ca		Cl		F		Field pH		SO <sub>4</sub>		TDS	
		Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
AX-29	10/03/17	0.43	0.32	791	392	306	276	0.40	<0.1	2.73 7.01	6.20	1440	1110	3370	2480
	03/23/18		0.30		356		285		<b>0.81</b>		5.89		1160		2450
	10/09/18		0.36		339		274		<b>0.45</b>		6.99		1060		2390
	06/27/19		0.31		352		275		<1.00		5.85		1110		2460
	11/13/19		<b>0.47</b>		449		281		<0.100		5.80		1210		2850
	05/19/20		0.37		308		261		<0.100		5.85		1050		2560
	11/11/20		0.39		429		<b>320</b>		<0.100		5.96		1190		2700
	06/10/21		0.37		365		245		<0.100		6.17		1090		2580
	11/16/21		0.341		339		297		0.201 J		5.90		1120		2630
<b>Downgradient Wells</b>															
AX-24	10/02/17	0.31	0.13	273	252	580	307	0.40	<0.1	3.89 9.38	6.12	1010	632	2520	1810
	03/26/18		0.13		254		309		0.279 J		5.82		762		1880
	10/08/18		0.18		260		283		<b>0.59</b>		6.82		759		1840
	07/02/19		0.14		<b>325</b>		244		<b>0.49</b>		5.80		887		2060
	11/13/19		0.20		<b>319</b>		226		<0.100		5.91		752		2040
	05/19/20		0.19		271		256		<0.100		5.87		800		2080
	11/12/20		0.17		<b>368</b>		300		<0.100		5.98		947		2180
	06/09/21		0.166		<b>339</b>		201		<0.100		5.86		<b>1040</b>		2240
	11/18/21		0.153		<b>333</b>		179		0.138 J		6.00		<b>1070</b>		2390
AX-25	10/03/17	0.30	0.21	262	<b>325</b>	1140	586	0.51	<0.1	4.69 9.20	6.37	795	504	3980	2400
	3/16/2018 resample		--		<b>302</b>		--		--		--		--		--
	03/26/18		0.20		<b>281</b>		583		<b>0.75</b>		6.38		526		2420
	10/08/18		0.23		<b>324</b>		586		<b>1.01</b>		7.09		492		2360
	07/02/19		0.20		<b>384</b>		616		<b>0.87</b>		6.26		608		2590
	11/12/19		Well Damaged												
05/07/20	Well Plugged and Abandoned (replaced by AX-25R)														
AX-25R	05/19/20	0.30	0.28	262	218	1140	573	0.51	0.269 J	4.69 9.20	6.25	795	592	3980	2470
	11/11/20		0.23		<b>264</b>		515		0.270 J		6.38		524		2210
	06/07/21		0.213		228		355		0.42		6.36		475		2020
	11/16/21		0.197		210		400		0.493		6.50		492		2120

**Table 1**  
**Appendix III Analytical Results**  
**Sandow Steam Electric Station AX Landfill**

Sample Location	Date Sampled	B		Ca		Cl		F		Field pH		SO <sub>4</sub>		TDS	
		Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
AX-26	10/02/17	0.45	0.35	915	666	3040	1100	0.40	<0.1	5.07 8.14	6.38	1200	945	8300	3740
	03/26/18		0.34		912		1820		<0.1		6.41		<b>1300</b>		4980
	10/08/18		0.40		905		1720		<0.1		7.09		<b>1220</b>		4680
	07/02/19		0.36		409		465		<b>0.45</b>		6.14		643		2380
	11/13/19		0.39		651		1010		<0.100		5.91		853		3350
	05/19/20		0.38		617		1240		<0.100		6.20		838		3830
	11/12/20		0.40		<b>980</b>		2060		<0.100		6.29		<b>1240</b>		5110
	06/09/21		0.383		<b>896</b>		1790		<0.100		5.95		1120		4800
	11/18/21		0.360		<b>939</b>		2230		<0.100		6.13		<b>1280</b>		5930
AX-27	10/02/17	0.28	0.21	366	<b>462</b>	1020	652	0.40	<0.1	6.08 7.3	6.19	478	<b>569</b>	3620	2490
	3/16/2018 resample		--		<b>453</b>		--		--		--		<b>659</b>		--
	3/16/2018 dup		--		<b>456</b>		--		--		--		<b>648</b>		--
	03/26/18		0.21		<b>438</b>		584		<0.1		6.29		<b>661</b>		2350
	10/08/18		0.25		<b>422</b>		540		0.14		7.17		<b>554</b>		2220
	07/02/19		0.21		<b>379</b>		459		<b>0.59</b>		6.05		<b>520</b>		2090
	11/13/19		0.26		<b>395</b>		465		<0.100		6.05		<b>480</b>		2050
	05/19/20		<b>0.30</b>		329		479		<0.100		6.20		450		1930
	11/12/20		<b>0.29</b>		<b>432</b>		569		<0.100		6.47		<b>522</b>		2080
	06/09/21		<b>0.307</b>		<b>384</b>		464		<0.100		<b>6.03</b>		<b>535</b>		1980
11/18/21	0.249	<b>390</b>	461	0.204 J	6.47	419	1980								
AX-28	10/02/17	0.39	0.21	633	<b>664</b>	756	384	0.40	<0.1	4.67 8.55	6.25	2280	1670	3790	3350
	3/16/2018 resample		--		<b>634</b>		--		--		--		--		--
	03/23/18		0.20		621		354		<0.1		6.17		1720		3430
	10/08/18		0.31		578		230		<b>0.47</b>		6.87		1710		3300
	10/8/18 dup		0.32		577		233		<b>0.51</b>		6.87		1780		3370
	06/27/19		0.30		585		146		0.15		5.87		1870		3320
	11/13/19		0.23		616		235		<0.100		5.57		1820		3560
	05/19/20		0.23		492		153		<0.100		5.97		1870		3250
	11/11/20		0.21		577		126		<0.100		6.09		1810		3200
	06/09/21		0.188		461		80.2		<0.100		5.91		1610		2810
11/16/21	0.256	466	61.9	0.198 J	5.99	1760	3040								

- Notes:
- Abbreviations: mg/L - milligram per liter; s.u. - standard units.
  - J - concentration is below method quantitation limit; result is an estimate.
  - Highlighted sample results exceed the prediction limit.



Last Edited By: adiamond Date: 2020-01-23 Time: 8:16:05 AM | Printed By: adiamond Date: 2020-01-23 Time: 9:26:26 AM  
 Path: \\sawtooth\data\Projects - Round Rock\_2019\19122262 - Luminant(G) - Sandow | File Name: FIG 1 - Detailed Site Plan (AX Landfill).dwg

**LEGEND**

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

**NOTE(S)**

**REFERENCE(S)**

BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY DATED 1/7/18.

CLIENT  
**LUMINANT**

PROJECT  
**SANDOW 5 GENERATING PLANT  
ROCKDALE, TEXAS**

TITLE  
**DETAILED SITE PLAN - AX LANDFILL**

CONSULTANT



YYYY-MM-DD      2020-01-23

DESIGNED      AJD

PREPARED      AJD

REVIEWED      WFV

APPROVED      WFV

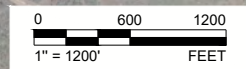
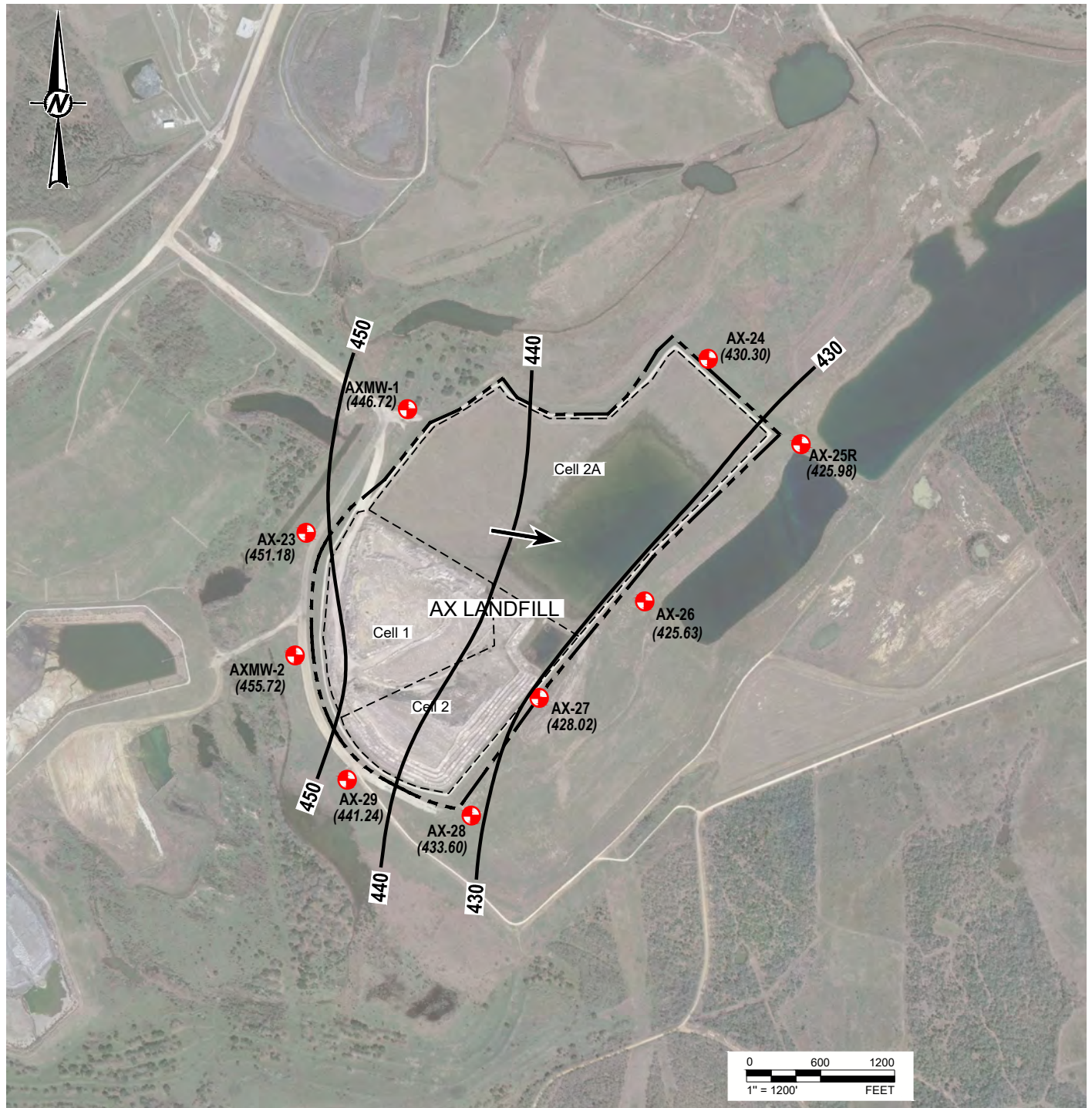
PROJECT NO.  
**19122262**

REV.  
**0**




FIGURE  
**1**

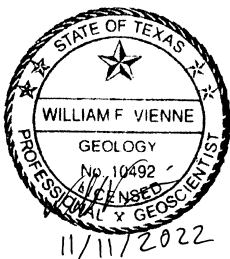
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

**ATTACHMENT 2**  
**GROUNDWATER POTENTIOMETRIC**  
**SURFACE MAPS**



**LEGEND**

-  CCR MONITORING WELL
- (414.49)** GROUNDWATER POTENTIOMETRIC SURFACE (FT MSL)
-  GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (C.I. = 10 FT)
-  INFERRED GROUNDWATER FLOW DIRECTION



**REFERENCE(S)**

BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY MARCH 2022.

CLIENT  
**LUMINANT**

PROJECT  
**SANDOW 5 GENERATING PLANT  
ROCKDALE, TEXAS**

TITLE  
**AX LANDFILL  
POTENTIOMETRIC SURFACE MAP  
JUNE 7, 2021**

CONSULTANT

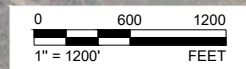
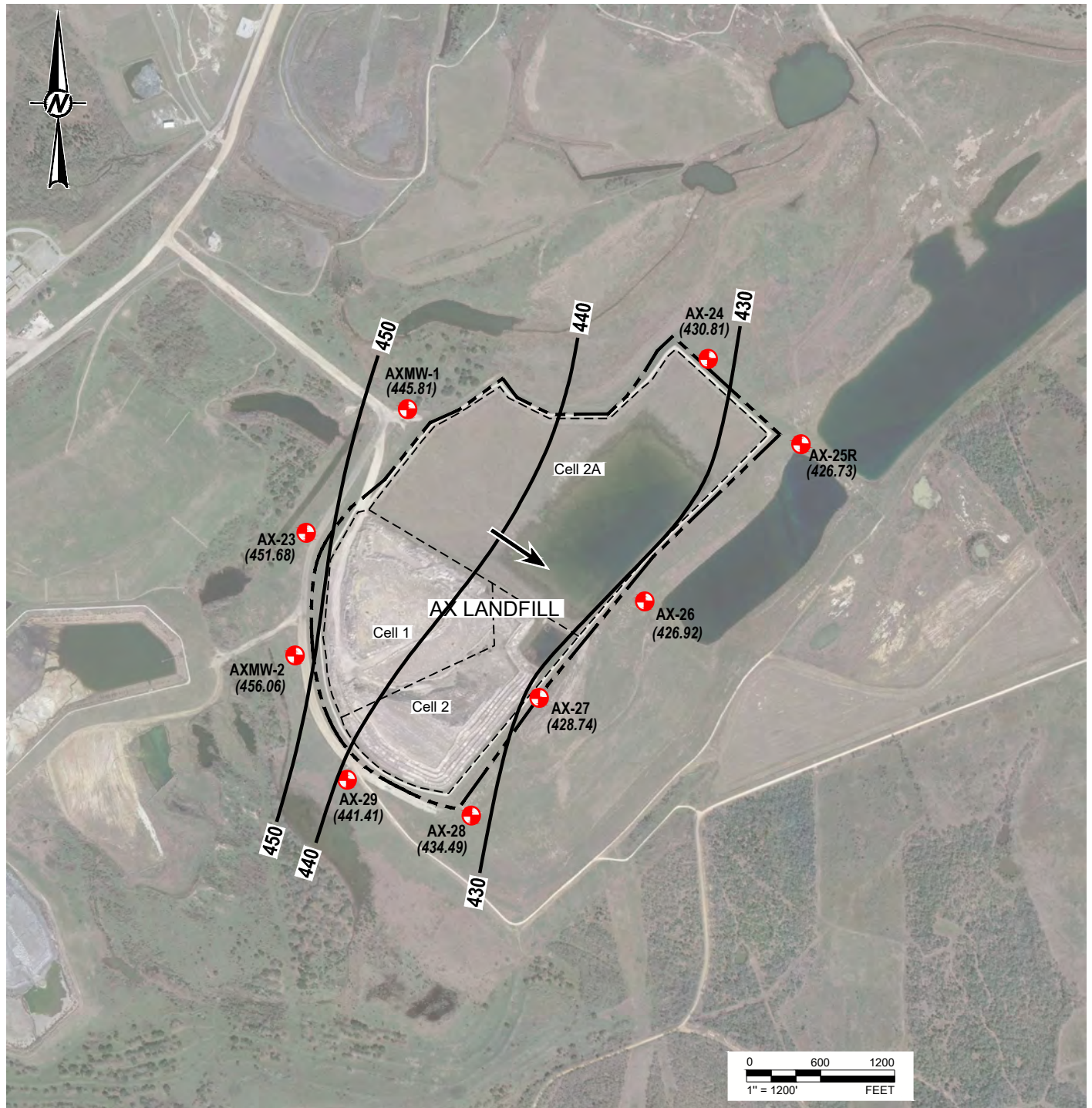


YYYY-MM-DD	2022-11-08
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WV
APPROVED	WV



PROJECT NO.  
**31404097.004**

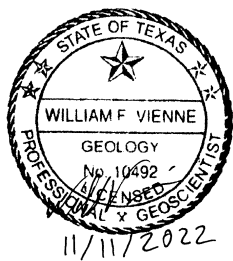
REV.  
**0**

FIGURE  
**A-1**



**LEGEND**

-  CCR MONITORING WELL
- (414.49)** GROUNDWATER POTENTIOMETRIC SURFACE (FT MSL)
- 400** GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (C.I. = 10 FT)
-  INFERRED GROUNDWATER FLOW DIRECTION



**REFERENCE(S)**

BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY DATED MARCH 2022.

CLIENT  
**LUMINANT**

PROJECT  
**SANDOW 5 GENERATING PLANT  
ROCKDALE, TEXAS**

TITLE  
**AX LANDFILL  
POTENTIOMETRIC SURFACE MAP  
NOVEMBER 17, 2021**

CONSULTANT



YYYY-MM-DD 2022-11-08

DESIGNED AJD

PREPARED AJD

REVIEWED WFV

APPROVED WFV

PROJECT NO.  
**31404097.004**

REV.  
**0**

FIGURE  
**A-2**



**ATTACHMENT 3**  
**LABORATORY ANALYTICAL**  
**REPORTS**



June 18, 2021

Will Vienne  
Golder  
2201 Double Creek Dr #4004  
Round Rock, Texas 78664  
TEL: (512) 671-3434  
FAX (512) 671-3446  
RE: Sandow CCR

Order No.: 2106088

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 6/10/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

  
John DuPort  
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27



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**A1 Landfill – PO# 19122450 – boron, selenium, sulfate – use filter for boron and selenium**

Well ID	Top of Screen	Bottom of Screen	Total Depth	Depth to water	pump	dedicated tubing?	Analysis
LMW-1	20	30	30	18.48	peri	yes	B, Se, SO4
LMW-2	23	33	33	21.91	peri	yes	B, Se, SO4
LMW-3	17	32	32	12.68	peri	yes	B, Se, SO4
LMW-4	41	61	61	16.33	peri	yes	B, Se, SO4
LMW-5	15	30	30	7.66	peri	yes	B, Se, SO4
LMW-6R	20	35	35	3.77	peri	yes	B, Se, SO4
LMW-7R	25	40	40	20.45	peri	yes	B, Se, SO4
LMW-8R	20	30	30	19.65	peri	yes	B, Se, SO4
LMW-9	20	30	30	12.31	peri	yes	B, Se, SO4
PC-MW-8	16.7	26.7	27	12.67	peri	yes	B, Se, SO4

**AX Landfill – Multiple POs, multiple analyses – don’t use filter for Appendix III, use filter for boron and selenium**

Well ID	Top of Screen	Bottom of Screen	Total Depth	pump	dedicated tubing?	Analysis	PO
AX-23	65	85	85	bladder	yes	App III	19122262
AX-24	60	80	80	bladder	yes	App III	19122262
AX-25R	60	70	70	peri	yes	App III	19122262
AX-26	55	75	75	bladder	yes	App III	19122262
AX-27	78	98	98	bladder	yes	App III	19122262
AX-28	25	45	45	bladder	yes	App III	19122262
AX-29	45	65	65	bladder	yes	App III	19122262
AXMW-1	33	53	53	bladder	yes	App III	19122262
						B, Se, SO4	19122450
AXMW-2	43	63	63	bladder	yes	App III	19122262
						B, Se, SO4	19122450
AX-16	122	142	142	?	?	B, Se, SO4	19122450
AX-22	115	135	135	?	?	B, Se, SO4	19122450

\*Appendix III – boron, calcium, chloride, fluoride, sulfate, TDS

**SO2 Ponds – PO# 19122450 – boron, selenium, sulfate – use filter for boron and selenium**

Well ID	Top of Screen	Bottom of Screen	Total Depth	Depth to Water	pump	Tubing Intake	dedicated tubing?	Analysis
CSL-MW-13R	44.7	54.7	55	31.93	sub	50	no	B, Se, SO4
CSL-MW-18	34	44	50.5	32.18	sub	40	no	B, Se, SO4
CSL-MW-19	46	56	58	55.97	sub	50	no	B, Se, SO4
CSL-MW-20	49	59	60	54.88	sub	45	no	B, Se, SO4
CSL-MW-21	48	58	59.5	47.82	sub	63	no	B, Se, SO4
CSL-MW-23	35.8	55.8	56	32.57	sub	45	no	B, Se, SO4
CSL-MW-26R	85	90	95	30.69	sub	92	no	B, Se, SO4
CSL-MW-31	44.5	54.5	55	46.38	sub	50	no	B, Se, SO4
CSL-MW-34	141.5	151.5	152	122.98	sub	146	no	B, Se, SO4
CSL-MW-35	139.5	149.5	150	121.54	sub	145	no	B, Se, SO4
C-1	34.8	44.8	45	17.95	peri	40	?	B, Se, SO4
C-2	49.8	59.8	60	12.95	peri	55	?	B, Se, SO4
C-3	52.8	62.8	63	34.14	sub	58	no	B, Se, SO4
CL2-MW-4	14.5	24.5	25	8.86	peri	20	?	B, Se, SO4
CL2-MW-5	9.5	19.5	20	4.93	peri	15	?	B, Se, SO4
CL2-MW-6	39.5	49.5	50	28.54	sub	45	no	B, Se, SO4
PC-MW-2	25	35	35	22.84	peri	30	?	B, Se, SO4
PC-MW-4	148.1	158.1	160	136.89	sub	153	no	B, Se, SO4


Sample Receipt Checklist

Client Name **Golder**

Date Received: **6/11/2021**

Work Order Number **2106088**

Received by: **RA**

Checklist completed by:  6/11/2021  
Signature Date

Reviewed by:  6/11/2021  
Initials Date

Carrier name: Hand Delivered

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present
- Custody seals intact on sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Container/Temp Blank temperature in compliance? Yes  No  **3.4 °C**
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH<2 acceptable upon receipt? Yes  No  NA  LOT # 13171
- Adjusted? no Checked by EL
- Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt? Yes  No  NA  LOT #
- Adjusted? \_\_\_\_\_ Checked by \_\_\_\_\_

Any No response must be detailed in the comments section below.

Client contacted: \_\_\_\_\_ Date contacted: \_\_\_\_\_ Person contacted \_\_\_\_\_

Contacted by: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments: \_\_\_\_\_

Corrective Action: \_\_\_\_\_

<b>Laboratory Name: DHL Analytical, Inc.</b>							
<b>Laboratory Review Checklist: Reportable Data</b>							
<b>Project Name:</b> Sandow CCR				<b>LRC Date:</b> 6/18/21			
<b>Reviewer Name:</b> Carlos Castro				<b>Laboratory Work Order:</b> 2106088			
<b>Prep Batch Number(s):</b> See Prep Dates Report				<b>Run Batch:</b> See Analytical Dates Report			
# <sup>1</sup>	A <sup>2</sup>	Description	Yes	No	NA <sup>3</sup>	NR <sup>4</sup>	ER# <sup>5</sup>
		<b>Chain-of-Custody (C-O-C)</b>					
<b>R1</b>	OI	<b>1) Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?</b>	X				<b>R1-01</b>
		<b>2) Were all departures from standard conditions described in an exception report?</b>			X		
<b>R2</b>	OI	<b>Sample and Quality Control (QC) Identification</b>					
		<b>1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?</b>	X				
		<b>2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?</b>	X				
<b>R3</b>	OI	<b>Test Reports</b>					
		<b>1) Were all samples prepared and analyzed within holding times?</b>	X				
		<b>2) Other than those results &lt; MQL, were all other raw values bracketed by calibration standards?</b>	X				
		<b>3) Were calculations checked by a peer or supervisor?</b>	X				
		<b>4) Were all analyte identifications checked by a peer or supervisor?</b>	X				
		<b>5) Were sample detection limits reported for all analytes not detected?</b>	X				
		<b>6) Were all results for soil and sediment samples reported on a dry weight basis?</b>			X		
		<b>7) Were % moisture (or solids) reported for all soil and sediment samples?</b>			X		
		<b>8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?</b>			X		
		<b>9) If required for the project, TICs reported?</b>			X		
<b>R4</b>	O	<b>Surrogate Recovery Data</b>					
		<b>1) Were surrogates added prior to extraction?</b>	X				
		<b>2) Were surrogate percent recoveries in all samples within the laboratory QC limits?</b>	X				
<b>R5</b>	OI	<b>Test Reports/Summary Forms for Blank Samples</b>					
		<b>1) Were appropriate type(s) of blanks analyzed?</b>	X				
		<b>2) Were blanks analyzed at the appropriate frequency?</b>	X				
		<b>3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?</b>	X				
		<b>4) Were blank concentrations &lt; MDL?</b>	X				
		<b>5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, <b>greater</b> than 10 times the concentration in the blank sample?</b>			X		
<b>R6</b>	OI	<b>Laboratory Control Samples (LCS):</b>					
		<b>1) Were all COCs included in the LCS?</b>	X				
		<b>2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?</b>	X				
		<b>3) Were LCSs analyzed at the required frequency?</b>	X				
		<b>4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?</b>	X				
		<b>5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?</b>	X				
		<b>6) Was the LCSD RPD within QC limits (if applicable)?</b>	X				
<b>R7</b>	OI	<b>Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data</b>					
		<b>1) Were the project/method specified analytes included in the MS and MSD?</b>	X				
		<b>2) Were MS/MSD analyzed at the appropriate frequency?</b>	X				
		<b>3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?</b>		X			<b>R7-03</b>
		<b>4) Were MS/MSD RPDs within laboratory QC limits?</b>	X				
<b>R8</b>	OI	<b>Analytical Duplicate Data</b>					
		<b>1) Were appropriate analytical duplicates analyzed for each matrix?</b>	X				
		<b>2) Were analytical duplicates analyzed at the appropriate frequency?</b>	X				
		<b>3) Were RPDs or relative standard deviations within the laboratory QC limits?</b>	X				
<b>R9</b>	OI	<b>Method Quantitation Limits (MQLs):</b>					
		<b>1) Are the MQLs for each method analyte included in the laboratory data package?</b>	X				
		<b>2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?</b>	X				
		<b>3) Are unadjusted MQLs and DCSs included in the laboratory data package?</b>	X				
<b>R10</b>	OI	<b>Other Problems/Anomalies</b>					
		<b>1) Are all known problems/anomalies/special conditions noted in this LRC and ER?</b>	X				
		<b>2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?</b>	X				
		<b>3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?</b>	X				



<b>Laboratory Name: DHL Analytical, Inc.</b>							
<b>Laboratory Review Checklist (continued): Supporting Data</b>							
<b>Project Name:</b> Sandow CCR				<b>LRC Date:</b> 6/18/21			
<b>Reviewer Name:</b> Carlos Castro				<b>Laboratory Work Order:</b> 2106088			
<b>Prep Batch Number(s):</b> See Prep Dates Report				<b>Run Batch:</b> See Analytical Dates Report			
# <sup>1</sup>	A <sup>2</sup>	Description	Yes	No	NA <sup>3</sup>	NR <sup>4</sup>	ER# <sup>5</sup>
<b>S1</b>	OI	<b>Initial Calibration (ICAL)</b>					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
<b>S2</b>	OI	<b>Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):</b>					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
<b>S3</b>	O	<b>Mass Spectral Tuning:</b>					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
<b>S4</b>	O	<b>Internal Standards (IS):</b>					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
<b>S5</b>	OI	<b>Raw Data (NELAC Section 5.5.10)</b>					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
<b>S6</b>	O	<b>Dual Column Confirmation</b>					
		1) Did dual column confirmation results meet the method-required QC?			X		
<b>S7</b>	O	<b>Tentatively Identified Compounds (TICs):</b>					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
<b>S8</b>	I	<b>Interference Check Sample (ICS) Results:</b>					
		1) Were percent recoveries within method QC limits?	X				
<b>S9</b>	I	<b>Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions</b>					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			S9-01
<b>S10</b>	OI	<b>Method Detection Limit (MDL) Studies</b>					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
<b>S11</b>	OI	<b>Proficiency Test Reports:</b>					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
<b>S12</b>	OI	<b>Standards Documentation</b>					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
<b>S13</b>	OI	<b>Compound/Analyte Identification Procedures</b>					
		1) Are the procedures for compound/analyte identification documented?	X				
<b>S14</b>	OI	<b>Demonstration of Analyst Competency (DOC)</b>					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
<b>S15</b>	OI	<b>Verification/Validation Documentation for Methods (NELAC Chapter 5)</b>					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
<b>S16</b>	OI	<b>Laboratory Standard Operating Procedures (SOPs):</b>					
		1) Are laboratory SOPs current and on file for each method performed?	X				

- 1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
- 2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
- 3 NA = Not applicable.
- 4 NR = Not Reviewed.
- 5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

# Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

- R1 Field chain-of-custody documentation;
- R2 Sample identification cross-reference;
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC Chapter 5,
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- R5 Test reports/summary forms for blank samples;
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 23-26, 2021. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont  
Official Title: General Manager

Name: Dr. Derhsing Luu  
Official Title: Technical Director

  
Signature

6/18/2021  
Date

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**CLIENT:** Golder  
**Project:** Sandow CCR  
**Lab Order:** 2106088

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**CASE NARRATIVE**

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis  
Method E300 - Anions Analysis  
Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 6/10/21. A total of 8 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions analysis performed on 6/14/21 (batch 100908) the matrix spikes and/or matrix spike duplicate recoveries (2106039-11 MSD & 2106088-01 MS/MSD) were out of control limits for Fluoride or Sulfate. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate (2106039-11 MS/MSD) was not from this work order. The sample selected for the matrix spike and matrix spike duplicate (2106088-01 MS/MSD) was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 6/15/21 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium. This is flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Exception Report S9-01

For Metals analysis performed on 6/15/21 the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly in the QC summary report. The PDS was within control limits for this analyte. No further corrective actions were taken.

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**CLIENT:** Golder  
**Project:** Sandow CCR  
**Lab Order:** 2106088

**Work Order Sample Summary**

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<b>Lab Smp ID</b>	<b>Client Sample ID</b>	<b>Tag Number</b>	<b>Date Collected</b>	<b>Date Recved</b>
2106088-01	AX-25R		06/07/21 02:15 PM	6/10/2021
2106088-02	AXMW-2		06/07/21 03:02 PM	6/10/2021
2106088-03	AXMW-1		06/07/21 03:35 PM	6/10/2021
2106088-04	AX-23		06/09/21 09:45 AM	6/10/2021
2106088-05	AX-24		06/09/21 10:33 AM	6/10/2021
2106088-06	AX-26		06/09/21 11:07 AM	6/10/2021
2106088-07	AX-27		06/09/21 11:50 AM	6/10/2021
2106088-08	AX-28		06/09/21 01:10 PM	6/10/2021

Lab Order: 2106088  
 Client: Golder  
 Project: Sandow CCR

**PREP DATES REPORT**

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106088-01A	AX-25R	06/07/21 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-25R	06/07/21 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-25R	06/07/21 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
2106088-01B	AX-25R	06/07/21 02:15 PM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AX-25R	06/07/21 02:15 PM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AX-25R	06/07/21 02:15 PM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106088-02A	AXMW-2	06/07/21 03:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AXMW-2	06/07/21 03:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AXMW-2	06/07/21 03:02 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
2106088-02B	AXMW-2	06/07/21 03:02 PM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AXMW-2	06/07/21 03:02 PM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AXMW-2	06/07/21 03:02 PM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106088-03A	AXMW-1	06/07/21 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AXMW-1	06/07/21 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AXMW-1	06/07/21 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
2106088-03B	AXMW-1	06/07/21 03:35 PM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AXMW-1	06/07/21 03:35 PM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AXMW-1	06/07/21 03:35 PM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106088-04A	AX-23	06/09/21 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-23	06/09/21 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-23	06/09/21 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
2106088-04B	AX-23	06/09/21 09:45 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AX-23	06/09/21 09:45 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AX-23	06/09/21 09:45 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106088-05A	AX-24	06/09/21 10:33 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-24	06/09/21 10:33 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-24	06/09/21 10:33 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
2106088-05B	AX-24	06/09/21 10:33 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908

Lab Order: 2106088  
 Client: Golder  
 Project: Sandow CCR

## PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106088-05B	AX-24	06/09/21 10:33 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AX-24	06/09/21 10:33 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106088-06A	AX-26	06/09/21 11:07 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-26	06/09/21 11:07 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-26	06/09/21 11:07 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
2106088-06B	AX-26	06/09/21 11:07 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AX-26	06/09/21 11:07 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AX-26	06/09/21 11:07 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106088-07A	AX-27	06/09/21 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-27	06/09/21 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-27	06/09/21 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
2106088-07B	AX-27	06/09/21 11:50 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AX-27	06/09/21 11:50 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AX-27	06/09/21 11:50 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106088-08A	AX-28	06/09/21 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-28	06/09/21 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
	AX-28	06/09/21 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/14/21 09:08 AM	100906
2106088-08B	AX-28	06/09/21 01:10 PM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AX-28	06/09/21 01:10 PM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	AX-28	06/09/21 01:10 PM	Aqueous	E300	Anion Preparation	06/15/21 11:00 AM	100919
	AX-28	06/09/21 01:10 PM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893

Lab Order: 2106088  
 Client: Golder  
 Project: Sandow CCR

**ANALYTICAL DATES REPORT**

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106088-01A	AX-25R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	1	06/15/21 02:08 PM	ICP-MS5_210615A
	AX-25R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	50	06/15/21 04:00 PM	ICP-MS5_210615A
	AX-25R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	1	06/15/21 02:54 PM	ICP-MS4_210615A
2106088-01B	AX-25R	Aqueous	E300	Anions by IC method - Water	100908	100	06/14/21 04:26 PM	IC2_210614A
	AX-25R	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 02:02 AM	IC2_210614A
	AX-25R	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106088-02A	AXMW-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	2	06/15/21 02:56 PM	ICP-MS4_210615A
	AXMW-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	1	06/15/21 02:11 PM	ICP-MS5_210615A
	AXMW-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	50	06/15/21 04:02 PM	ICP-MS5_210615A
2106088-02B	AXMW-2	Aqueous	E300	Anions by IC method - Water	100908	100	06/14/21 05:14 PM	IC2_210614A
	AXMW-2	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 02:18 AM	IC2_210614A
	AXMW-2	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106088-03A	AXMW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	50	06/15/21 04:05 PM	ICP-MS5_210615A
	AXMW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	50	06/15/21 02:58 PM	ICP-MS4_210615A
	AXMW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	1	06/15/21 02:13 PM	ICP-MS5_210615A
2106088-03B	AXMW-1	Aqueous	E300	Anions by IC method - Water	100908	100	06/14/21 05:30 PM	IC2_210614A
	AXMW-1	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 02:34 AM	IC2_210614A
	AXMW-1	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106088-04A	AX-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	2	06/15/21 03:00 PM	ICP-MS4_210615A
	AX-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	1	06/15/21 02:16 PM	ICP-MS5_210615A
	AX-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	50	06/15/21 04:08 PM	ICP-MS5_210615A
2106088-04B	AX-23	Aqueous	E300	Anions by IC method - Water	100908	10	06/14/21 10:18 PM	IC2_210614A
	AX-23	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 02:50 AM	IC2_210614A
	AX-23	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106088-05A	AX-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	50	06/15/21 04:10 PM	ICP-MS5_210615A
	AX-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	1	06/15/21 02:19 PM	ICP-MS5_210615A
	AX-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	1	06/15/21 03:02 PM	ICP-MS4_210615A
2106088-05B	AX-24	Aqueous	E300	Anions by IC method - Water	100908	100	06/14/21 05:46 PM	IC2_210614A

Lab Order: 2106088  
 Client: Golder  
 Project: Sandow CCR

**ANALYTICAL DATES REPORT**

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106088-05B	AX-24	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 03:06 AM	IC2_210614A
	AX-24	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106088-06A	AX-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	2	06/15/21 03:04 PM	ICP-MS4_210615A
	AX-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	1	06/15/21 02:21 PM	ICP-MS5_210615A
	AX-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	50	06/15/21 04:13 PM	ICP-MS5_210615A
2106088-06B	AX-26	Aqueous	E300	Anions by IC method - Water	100908	100	06/14/21 06:02 PM	IC2_210614A
	AX-26	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 04:42 AM	IC2_210614A
	AX-26	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106088-07A	AX-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	50	06/15/21 04:15 PM	ICP-MS5_210615A
	AX-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	2	06/15/21 03:06 PM	ICP-MS4_210615A
	AX-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	1	06/15/21 02:24 PM	ICP-MS5_210615A
2106088-07B	AX-27	Aqueous	E300	Anions by IC method - Water	100908	100	06/14/21 06:18 PM	IC2_210614A
	AX-27	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 04:58 AM	IC2_210614A
	AX-27	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106088-08A	AX-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	1	06/15/21 02:50 PM	ICP-MS4_210615A
	AX-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	1	06/15/21 02:03 PM	ICP-MS5_210615A
	AX-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100906	50	06/15/21 03:55 PM	ICP-MS5_210615A
2106088-08B	AX-28	Aqueous	E300	Anions by IC method - Water	100908	100	06/14/21 06:34 PM	IC2_210614A
	AX-28	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 05:14 AM	IC2_210614A
	AX-28	Aqueous	E300	Anions by IC method - Water	100919	10	06/16/21 02:06 AM	IC2_210615A
	AX-28	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B



**DHL Analytical, Inc.**

**Date:** 18-Jun-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2106088

**Client Sample ID:** AX-25R  
**Lab ID:** 2106088-01  
**Collection Date:** 06/07/21 02:15 PM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.213	0.0100	0.0300		mg/L	1	06/15/21 02:54 PM
Calcium	228	5.00	15.0		mg/L	50	06/15/21 04:00 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	355	30.0	100		mg/L	100	06/14/21 04:26 PM
Fluoride	0.420	0.100	0.400		mg/L	1	06/15/21 02:02 AM
Sulfate	475	100	300		mg/L	100	06/14/21 04:26 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	2020	50.0	50.0		mg/L	1	06/14/21 12:10 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 18-Jun-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2106088

**Client Sample ID:** AXMW-2  
**Lab ID:** 2106088-02  
**Collection Date:** 06/07/21 03:02 PM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.580	0.0200	0.0600		mg/L	2	06/15/21 02:56 PM
Calcium	449	5.00	15.0		mg/L	50	06/15/21 04:02 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	131	30.0	100		mg/L	100	06/14/21 05:14 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/21 02:18 AM
Sulfate	1180	100	300		mg/L	100	06/14/21 05:14 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	2550	50.0	50.0		mg/L	1	06/14/21 12:10 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 18-Jun-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2106088

**Client Sample ID:** AXMW-1  
**Lab ID:** 2106088-03  
**Collection Date:** 06/07/21 03:35 PM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	5.43	0.500	1.50		mg/L	50	06/15/21 02:58 PM
Calcium	293	5.00	15.0		mg/L	50	06/15/21 04:05 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	146	30.0	100		mg/L	100	06/14/21 05:30 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/21 02:34 AM
Sulfate	1360	100	300		mg/L	100	06/14/21 05:30 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	2290	50.0	50.0		mg/L	1	06/14/21 12:10 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 18-Jun-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2106088

**Client Sample ID:** AX-23  
**Lab ID:** 2106088-04  
**Collection Date:** 06/09/21 09:45 AM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.335	0.0200	0.0600		mg/L	2	06/15/21 03:00 PM
Calcium	318	5.00	15.0		mg/L	50	06/15/21 04:08 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	238	3.00	10.0		mg/L	10	06/14/21 10:18 PM
Fluoride	0.368	0.100	0.400	J	mg/L	1	06/15/21 02:50 AM
Sulfate	655	10.0	30.0		mg/L	10	06/14/21 10:18 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	1720	50.0	50.0		mg/L	1	06/14/21 12:10 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 18-Jun-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2106088

**Client Sample ID:** AX-24  
**Lab ID:** 2106088-05  
**Collection Date:** 06/09/21 10:33 AM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.166	0.0100	0.0300		mg/L	1	06/15/21 03:02 PM
Calcium	339	5.00	15.0		mg/L	50	06/15/21 04:10 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	201	30.0	100		mg/L	100	06/14/21 05:46 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/21 03:06 AM
Sulfate	1040	100	300		mg/L	100	06/14/21 05:46 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	2240	50.0	50.0		mg/L	1	06/14/21 12:10 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 18-Jun-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2106088

**Client Sample ID:** AX-26  
**Lab ID:** 2106088-06  
**Collection Date:** 06/09/21 11:07 AM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.383	0.0200	0.0600		mg/L	2	06/15/21 03:04 PM
Calcium	896	5.00	15.0		mg/L	50	06/15/21 04:13 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	1790	30.0	100		mg/L	100	06/14/21 06:02 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/21 04:42 AM
Sulfate	1120	100	300		mg/L	100	06/14/21 06:02 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	4800	50.0	50.0		mg/L	1	06/14/21 12:10 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 18-Jun-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2106088

**Client Sample ID:** AX-27  
**Lab ID:** 2106088-07  
**Collection Date:** 06/09/21 11:50 AM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.307	0.0200	0.0600		mg/L	2	06/15/21 03:06 PM
Calcium	384	5.00	15.0		mg/L	50	06/15/21 04:15 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	464	30.0	100		mg/L	100	06/14/21 06:18 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/21 04:58 AM
Sulfate	535	100	300		mg/L	100	06/14/21 06:18 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	1980	50.0	50.0		mg/L	1	06/14/21 12:10 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 18-Jun-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2106088

**Client Sample ID:** AX-28  
**Lab ID:** 2106088-08  
**Collection Date:** 06/09/21 01:10 PM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.188	0.0100	0.0300		mg/L	1	06/15/21 02:50 PM
Calcium	461	5.00	15.0		mg/L	50	06/15/21 03:55 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	80.2	3.00	10.0		mg/L	10	06/16/21 02:06 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/21 05:14 AM
Sulfate	1610	100	300		mg/L	100	06/14/21 06:34 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	2810	50.0	50.0		mg/L	1	06/14/21 12:10 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern



**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

**ANALYTICAL QC SUMMARY REPORT**

**RunID: ICP-MS4\_210428A**

Sample ID: <b>DCS4-100323</b>	Batch ID: <b>100323</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>DCS4</b>	Run ID: <b>ICP-MS4_210428A</b>	Analysis Date: <b>4/28/2021 10:39:00 AM</b>	Prep Date: <b>4/27/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0310	0.0300	0.0300	0	103	70	130	0	0	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4\_210615A**

The QC data in batch 100906 applies to the following samples: 2106088-01A, 2106088-02A, 2106088-03A, 2106088-04A, 2106088-05A, 2106088-06A, 2106088-07A, 2106088-08A

Sample ID: <b>MB-100906</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>MBLK</b>	Run ID: <b>ICP-MS4_210615A</b>	Analysis Date: <b>6/15/2021 2:42:00 PM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: <b>LCS-100906</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>LCS</b>	Run ID: <b>ICP-MS4_210615A</b>	Analysis Date: <b>6/15/2021 2:44:00 PM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.201	0.0300	0.200	0	101	80	120			

Sample ID: <b>LCSD-100906</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>LCSD</b>	Run ID: <b>ICP-MS4_210615A</b>	Analysis Date: <b>6/15/2021 2:46:00 PM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.206	0.0300	0.200	0	103	80	120	2.50	15	

Sample ID: <b>2106088-08A SD</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>SD</b>	Run ID: <b>ICP-MS4_210615A</b>	Analysis Date: <b>6/15/2021 2:52:00 PM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.235	0.150	0	0.188				21.9	20	R

Sample ID: <b>2106088-08A PDS</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>PDS</b>	Run ID: <b>ICP-MS4_210615A</b>	Analysis Date: <b>6/15/2021 3:12:00 PM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.351	0.0300	0.200	0.188	81.0	75	125			

Sample ID: <b>2106088-08A MS</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>MS</b>	Run ID: <b>ICP-MS4_210615A</b>	Analysis Date: <b>6/15/2021 3:15:00 PM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.382	0.0300	0.200	0.188	97.0	75	125			

Sample ID: <b>2106088-08A MSD</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>MSD</b>	Run ID: <b>ICP-MS4_210615A</b>	Analysis Date: <b>6/15/2021 3:17:00 PM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.370	0.0300	0.200	0.188	90.9	75	125	3.25	15	

<p><b>Qualifiers:</b></p> <p>B Analyte detected in the associated Method Blank</p> <p>J Analyte detected between MDL and RL</p> <p>ND Not Detected at the Method Detection Limit</p> <p>RL Reporting Limit</p> <p>J Analyte detected between SDL and RL</p>	<p>DF Dilution Factor</p> <p>MDL Method Detection Limit</p> <p>R RPD outside accepted control limits</p> <p>S Spike Recovery outside control limits</p> <p>N Parameter not NELAP certified</p>
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**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4\_210615A**

Sample ID: <b>ICV-210615</b>	Batch ID: <b>R115818</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>ICV</b>	Run ID: <b>ICP-MS4_210615A</b>	Analysis Date: <b>6/15/2021 11:39:00 AM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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Boron	0.104	0.0300	0.100	0	104	90	110			
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Sample ID: <b>LCVL-210615</b>	Batch ID: <b>R115818</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>LCVL</b>	Run ID: <b>ICP-MS4_210615A</b>	Analysis Date: <b>6/15/2021 11:49:00 AM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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Boron	0.0224	0.0300	0.0200	0	112	80	120			
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Sample ID: <b>CCV3-210615</b>	Batch ID: <b>R115818</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>ICP-MS4_210615A</b>	Analysis Date: <b>6/15/2021 2:09:00 PM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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Boron	0.200	0.0300	0.200	0	100	90	110			
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Sample ID: <b>CCV4-210615</b>	Batch ID: <b>R115818</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>ICP-MS4_210615A</b>	Analysis Date: <b>6/15/2021 3:23:00 PM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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Boron	0.203	0.0300	0.200	0	102	90	110			
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<b>Qualifiers:</b> B Analyte detected in the associated Method Blank J Analyte detected between MDL and RL ND Not Detected at the Method Detection Limit RL Reporting Limit J Analyte detected between SDL and RL	DF Dilution Factor MDL Method Detection Limit R RPD outside accepted control limits S Spike Recovery outside control limits N Parameter not NELAP certified
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**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS5\_210428A**

Sample ID: <b>DCS2-100323</b>	Batch ID: <b>100323</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>DCS2</b>	Run ID: <b>ICP-MS5_210428A</b>	Analysis Date: <b>4/28/2021 10:53:00 AM</b>	Prep Date: <b>4/27/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.302	0.300	0.300	0	101	70	130	0	0	

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<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank	DF Dilution Factor
	J Analyte detected between MDL and RL	MDL Method Detection Limit
	ND Not Detected at the Method Detection Limit	R RPD outside accepted control limits
	RL Reporting Limit	S Spike Recovery outside control limits
	J Analyte detected between SDL and RL	N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS5\_210615A**

The QC data in batch 100906 applies to the following samples: 2106088-01A, 2106088-02A, 2106088-03A, 2106088-04A, 2106088-05A, 2106088-06A, 2106088-07A, 2106088-08A

Sample ID: <b>MB-100906</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MBLK</b>	Run ID: <b>ICP-MS5_210615A</b>	Analysis Date: <b>6/15/2021 3:44:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	<0.100	0.300								

Sample ID: <b>LCS-100906</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCS</b>	Run ID: <b>ICP-MS5_210615A</b>	Analysis Date: <b>6/15/2021 3:47:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.47	0.300	5.00	0	89.4	80	120			

Sample ID: <b>LCSD-100906</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCSD</b>	Run ID: <b>ICP-MS5_210615A</b>	Analysis Date: <b>6/15/2021 3:49:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.67	0.300	5.00	0	93.5	80	120	4.47	15	

Sample ID: <b>2106088-08A SD</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>SD</b>	Run ID: <b>ICP-MS5_210615A</b>	Analysis Date: <b>6/15/2021 3:57:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	481	75.0	0	461				4.20	20	

Sample ID: <b>2106088-08A PDS</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>PDS</b>	Run ID: <b>ICP-MS5_210615A</b>	Analysis Date: <b>6/15/2021 4:18:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	752	15.0	250	461	116	75	125			

Sample ID: <b>2106088-08A MS</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>ICP-MS5_210615A</b>	Analysis Date: <b>6/15/2021 4:21:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	463	15.0	5.00	461	39.7	75	125			S

Sample ID: <b>2106088-08A MSD</b>	Batch ID: <b>100906</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MSD</b>	Run ID: <b>ICP-MS5_210615A</b>	Analysis Date: <b>6/15/2021 4:23:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	460	15.0	5.00	461	-36.5	75	125	0.825	15	S

**Qualifiers:** B Analyte detected in the associated Method Blank      DF Dilution Factor  
J Analyte detected between MDL and RL      MDL Method Detection Limit  
ND Not Detected at the Method Detection Limit      R RPD outside accepted control limits  
RL Reporting Limit      S Spike Recovery outside control limits  
J Analyte detected between SDL and RL      N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS5\_210615A**

Sample ID: <b>ICV-210615</b>	Batch ID: <b>R115817</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>ICV</b>	Run ID: <b>ICP-MS5_210615A</b>	Analysis Date: <b>6/15/2021 10:48:00 AM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	2.45	0.300	2.50	0	97.9	90	110			
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Sample ID: <b>LCVL-210615</b>	Batch ID: <b>R115817</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCVL</b>	Run ID: <b>ICP-MS5_210615A</b>	Analysis Date: <b>6/15/2021 10:54:00 AM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.109	0.300	0.100	0	109	80	120			
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Sample ID: <b>CCV4-210615</b>	Batch ID: <b>R115817</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS5_210615A</b>	Analysis Date: <b>6/15/2021 3:28:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	5.05	0.300	5.00	0	101	90	110			
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Sample ID: <b>CCV5-210615</b>	Batch ID: <b>R115817</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS5_210615A</b>	Analysis Date: <b>6/15/2021 4:26:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	5.14	0.300	5.00	0	103	90	110			
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**Qualifiers:**

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_210527A**

Sample ID: <b>DCS3-100738</b>	Batch ID: <b>100738</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>DCS3</b>	Run ID: <b>IC2_210527A</b>	Analysis Date: <b>5/27/2021 4:13:05 PM</b>	Prep Date: <b>5/27/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1.25	1.00	1.000	0	125	70	130	0	0	
Fluoride	0.408	0.400	0.4000	0	102	70	130	0	0	
Sulfate	3.03	3.00	3.000	0	101	70	130	0	0	

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank J Analyte detected between MDL and RL ND Not Detected at the Method Detection Limit RL Reporting Limit J Analyte detected between SDL and RL	DF Dilution Factor MDL Method Detection Limit R RPD outside accepted control limits S Spike Recovery outside control limits N Parameter not NELAP certified	
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**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_210614A**

The QC data in batch 100908 applies to the following samples: 2106088-01B, 2106088-02B, 2106088-03B, 2106088-04B, 2106088-05B, 2106088-06B, 2106088-07B, 2106088-08B

Sample ID: <b>MB-100908</b>	Batch ID: <b>100908</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>MBLK</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/14/2021 11:51:44 AM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: <b>LCS-100908</b>	Batch ID: <b>100908</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>LCS</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/14/2021 12:07:44 PM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.25	1.00	10.00	0	92.5	90	110			
Fluoride	3.91	0.400	4.000	0	97.6	90	110			
Sulfate	29.7	3.00	30.00	0	99.0	90	110			

Sample ID: <b>LCS-100908</b>	Batch ID: <b>100908</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>LCS</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/14/2021 12:23:44 PM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.26	1.00	10.00	0	92.6	90	110	0.117	20	
Fluoride	3.89	0.400	4.000	0	97.2	90	110	0.418	20	
Sulfate	29.6	3.00	30.00	0	98.5	90	110	0.489	20	

Sample ID: <b>2106039-11AMS</b>	Batch ID: <b>100908</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>MS</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/14/2021 3:54:01 PM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2410	100	2000	226.9	109	90	110			
Fluoride	2200	40.0	2000	0	110	90	110			
Sulfate	4550	300	2000	2758	89.7	90	110			

Sample ID: <b>2106039-11AMSD</b>	Batch ID: <b>100908</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>MSD</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/14/2021 4:10:01 PM</b>	Prep Date: <b>6/14/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2420	100	2000	226.9	109	90	110	0.456	20	
Fluoride	2210	40.0	2000	0	111	90	110	0.356	20	S
Sulfate	4560	300	2000	2758	90.0	90	110	0.115	20	

<p><b>Qualifiers:</b></p> <p>B Analyte detected in the associated Method Blank</p> <p>J Analyte detected between MDL and RL</p> <p>ND Not Detected at the Method Detection Limit</p> <p>RL Reporting Limit</p> <p>J Analyte detected between SDL and RL</p>	<p>DF Dilution Factor</p> <p>MDL Method Detection Limit</p> <p>R RPD outside accepted control limits</p> <p>S Spike Recovery outside control limits</p> <p>N Parameter not NELAP certified</p>
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**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_210614A**

Sample ID: <b>2106088-01BMS</b>	Batch ID: <b>100908</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/14/2021 4:42:02 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2320	100	2000	354.9	98.4	90	110			
Fluoride	1990	40.0	2000	0	99.3	90	110			
Sulfate	2210	300	2000	475.1	86.9	90	110			S

Sample ID: <b>2106088-01BMSD</b>	Batch ID: <b>100908</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MSD</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/14/2021 4:58:02 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2330	100	2000	354.9	98.7	90	110	0.286	20	
Fluoride	1990	40.0	2000	0	99.4	90	110	0.120	20	
Sulfate	2210	300	2000	475.1	86.5	90	110	0.329	20	S

**Qualifiers:** B Analyte detected in the associated Method Blank      DF Dilution Factor  
                   J Analyte detected between MDL and RL                      MDL Method Detection Limit  
                   ND Not Detected at the Method Detection Limit              R RPD outside accepted control limits  
                   RL Reporting Limit    S Spike Recovery outside control limits  
                   J Analyte detected between SDL and RL                              N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_210614A**

Sample ID: <b>ICV-210614</b>	Batch ID: <b>R115795</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>ICV</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/14/2021 11:19:44 AM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.7	1.00	25.00	0	98.7	90	110			
Fluoride	10.1	0.400	10.00	0	101	90	110			
Sulfate	77.8	3.00	75.00	0	104	90	110			

Sample ID: <b>CCV1-210614</b>	Batch ID: <b>R115795</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/14/2021 8:10:01 PM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.33	1.00	10.00	0	93.3	90	110			
Fluoride	4.03	0.400	4.000	0	101	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID: <b>CCV2-210614</b>	Batch ID: <b>R115795</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/15/2021 12:10:01 AM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.29	1.00	10.00	0	92.9	90	110			
Fluoride	3.97	0.400	4.000	0	99.3	90	110			
Sulfate	29.8	3.00	30.00	0	99.2	90	110			

Sample ID: <b>CCV3-210614</b>	Batch ID: <b>R115795</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/15/2021 4:10:01 AM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.00	0.400	4.000	0	100	90	110			

Sample ID: <b>CCV4-210614</b>	Batch ID: <b>R115795</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>IC2_210614A</b>	Analysis Date: <b>6/15/2021 6:18:01 AM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.04	0.400	4.000	0	101	90	110			

**Qualifiers:** B Analyte detected in the associated Method Blank      DF Dilution Factor  
 J Analyte detected between MDL and RL                                      MDL Method Detection Limit  
 ND Not Detected at the Method Detection Limit                              R RPD outside accepted control limits  
 RL Reporting Limit    S Spike Recovery outside control limits  
 J Analyte detected between SDL and RL                                      N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_210615A**

The QC data in batch 100919 applies to the following samples: 2106088-08B

Sample ID: <b>MB-100919</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MBLK</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 7:42:19 PM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	<0.300	1.00								
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Sample ID: <b>LCS-100919</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>LCS</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 7:58:19 PM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	9.06	1.00	10.00	0	90.6	90	110			
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Sample ID: <b>LCSD-100919</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>LCSD</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 8:14:20 PM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	9.03	1.00	10.00	0	90.3	90	110	0.309	20	
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Sample ID: <b>2106090-01BMS</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 8:46:20 PM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	2060	100	2000	152.3	95.4	90	110			
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Sample ID: <b>2106090-01BMSD</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MSD</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 9:02:19 PM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	2010	100	2000	152.3	92.9	90	110	2.42	20	
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Sample ID: <b>2106091-01BMS</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/16/2021 1:34:19 AM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	2130	100	2000	244.6	94.4	90	110			
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Sample ID: <b>2106091-01BMSD</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MSD</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/16/2021 1:50:19 AM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	2130	100	2000	244.6	94.1	90	110	0.354	20	
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**Qualifiers:** B Analyte detected in the associated Method Blank      DF Dilution Factor  
 J Analyte detected between MDL and RL      MDL Method Detection Limit  
 ND Not Detected at the Method Detection Limit      R RPD outside accepted control limits  
 RL Reporting Limit      S Spike Recovery outside control limits  
 J Analyte detected between SDL and RL      N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_210615A**

Sample ID: <b>ICV-210615</b>	Batch ID: <b>R115816</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>ICV</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 7:10:19 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	24.3	1.00	25.00	0	97.4	90	110			
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Sample ID: <b>CCV1-210615</b>	Batch ID: <b>R115816</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/16/2021 12:30:19 AM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	9.16	1.00	10.00	0	91.6	90	110			
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Sample ID: <b>CCV2-210615</b>	Batch ID: <b>R115816</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/16/2021 5:02:19 AM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	9.25	1.00	10.00	0	92.5	90	110			
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<b>Qualifiers:</b> B Analyte detected in the associated Method Blank J Analyte detected between MDL and RL ND Not Detected at the Method Detection Limit RL Reporting Limit J Analyte detected between SDL and RL	DF Dilution Factor MDL Method Detection Limit R RPD outside accepted control limits S Spike Recovery outside control limits N Parameter not NELAP certified
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**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: WC\_210614B**

The QC data in batch 100893 applies to the following samples: 2106088-01B, 2106088-02B, 2106088-03B, 2106088-04B, 2106088-05B, 2106088-06B, 2106088-07B, 2106088-08B

Sample ID: <b>MB-100893</b>	Batch ID: <b>100893</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>								
SampType: <b>MBLK</b>	Run ID: <b>WC_210614B</b>	Analysis Date: <b>6/14/2021 12:10:00 PM</b>	Prep Date: <b>6/14/2021</b>								
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filtera		<10.0	10.0								

Sample ID: <b>LCS-100893</b>	Batch ID: <b>100893</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>							
SampType: <b>LCS</b>	Run ID: <b>WC_210614B</b>	Analysis Date: <b>6/14/2021 12:10:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		759	10.0	745.6	0	102	90	113		

Sample ID: <b>2106088-01B-DUP</b>	Batch ID: <b>100893</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>							
SampType: <b>DUP</b>	Run ID: <b>WC_210614B</b>	Analysis Date: <b>6/14/2021 12:10:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		2010	50.0	0	2015			0.248	5	

Sample ID: <b>2106088-02B-DUP</b>	Batch ID: <b>100893</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>							
SampType: <b>DUP</b>	Run ID: <b>WC_210614B</b>	Analysis Date: <b>6/14/2021 12:10:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		2460	50.0	0	2550			3.59	5	

<b>Qualifiers:</b> B Analyte detected in the associated Method Blank J Analyte detected between MDL and RL ND Not Detected at the Method Detection Limit RL Reporting Limit J Analyte detected between SDL and RL	DF Dilution Factor MDL Method Detection Limit R RPD outside accepted control limits S Spike Recovery outside control limits N Parameter not NELAP certified
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**CLIENT:** Golder  
**Work Order:** 2106088  
**Project:** Sandow CCR

**SQL SUMMARY REPORT**

<b>TestNo: E300</b>	<b>MDL</b>	<b>SQL</b>
<b>Analyte</b>	<b>mg/L</b>	<b>mg/L</b>
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

<b>TestNo: SW6020B</b>	<b>MDL</b>	<b>SQL</b>
<b>Analyte</b>	<b>mg/L</b>	<b>mg/L</b>
Boron	0.0100	0.0300
Calcium	0.100	0.300

<b>TestNo: M2540C</b>	<b>MDL</b>	<b>SQL</b>
<b>Analyte</b>	<b>mg/L</b>	<b>mg/L</b>
Total Dissolved Solids (Residue, Filt	10.0	10.0

**Qualifiers:** SQL -Method Quantitation Limit as defined by TRRP  
 MDL -Method Detection Limit as defined by TRRP



June 21, 2021

Will Vienne  
Golder  
2201 Double Creek Dr #4004  
Round Rock, Texas 78664  
TEL: (512) 671-3434  
FAX (512) 671-3446  
RE: Sandow CCR

Order No.: 2106091

Dear Will Vienne:

DHL Analytical, Inc. received 1 sample(s) on 6/11/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

A handwritten signature in red ink, appearing to read 'John DuPont', written in a cursive style.

John DuPont  
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27



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 Phone (512) 388-8222 ■ FAX (512) 388-8229  
 Web: [www.dhlanalytical.com](http://www.dhlanalytical.com)  
 E-Mail: [login@dhlanalytical.com](mailto:login@dhlanalytical.com)



No 69776  
**CHAIN-OF-CUSTODY**

CLIENT: *Goldier Associates*  
 ADDRESS: *2201 Double Creek Dr.*  
 PHONE: *512 671 3434* FAX/E-MAIL:  
 DATA REPORTED TO: *W. Vienne, J. Jarvis*  
 ADDITIONAL REPORT COPIES TO:

DATE: *6/11/21* PAGE 1 OF 1  
 PO #: [ ] DHL WORK ORDER #: *2106091*  
 PROJECT LOCATION OR NAME: *Sandow CER*  
 CLIENT PROJECT #: *19122262* COLLECTOR: *J. Jarvis*

Authorize 5% surcharge for TRRP Report? <input type="checkbox"/> Yes <input type="checkbox"/> No	S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT		P=PAINT SL=SLUDGE O=OTHER SO=SOLID		PRESERVATION	# of Containers	ANALYSES <input type="checkbox"/> BTEX <input type="checkbox"/> MTBE <input type="checkbox"/> [METHOD 8021] <input type="checkbox"/> <input type="checkbox"/> TPH 1005 <input type="checkbox"/> TPH 1006 <input type="checkbox"/> HOLD 1006 <input type="checkbox"/> <input type="checkbox"/> GRO [METHOD 8015] <input type="checkbox"/> DRO [METHOD 8105] <input type="checkbox"/> <input type="checkbox"/> VOC 8260 <input type="checkbox"/> VOC 624 <input type="checkbox"/> VOC 8260/5035 <input type="checkbox"/> <input type="checkbox"/> SVOC 8270 <input type="checkbox"/> PAH 8270 <input type="checkbox"/> HOLD PAH <input type="checkbox"/> SVOC 625 <input type="checkbox"/> <input type="checkbox"/> 8270 PEST <input type="checkbox"/> 8082 PCB <input type="checkbox"/> 808 PCB <input type="checkbox"/> <input type="checkbox"/> 8521 HERB <input type="checkbox"/> T PHOS AMMONIA <input type="checkbox"/> <input type="checkbox"/> METALS 6020 <input type="checkbox"/> METALS 2008 <input type="checkbox"/> DBS METALS <input type="checkbox"/> <input type="checkbox"/> PH <input type="checkbox"/> HEX CHROM <input type="checkbox"/> ALKALINITY <input type="checkbox"/> COD <input type="checkbox"/> <input type="checkbox"/> TCLP SVOC <input type="checkbox"/> ANIONS <input type="checkbox"/> <input type="checkbox"/> TCLP METALS <input type="checkbox"/> VOC <input type="checkbox"/> PEST <input type="checkbox"/> HERB <input type="checkbox"/> <input type="checkbox"/> RCRA <input type="checkbox"/> FLASHPOINT <input type="checkbox"/> TX-11 <input type="checkbox"/> Pb <input type="checkbox"/> <input type="checkbox"/> TDS <input type="checkbox"/> TSS <input type="checkbox"/> % MOISTURE <input type="checkbox"/> CYANIDE <input type="checkbox"/>					FIELD NOTES
	Field Sample I.D.	DHL Lab #	Date	Time			Matrix	Container Type	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
<i>Ax-29</i>	<i>01</i>	<i>6/11/21</i>	<i>1130</i>	<i>W</i>	<i>P</i>	<i>2</i>	<i>1</i>	<i>X</i>					<i>X</i>

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE/TIME <i>6/11/21 0947</i>	RECEIVED BY: (Signature) <i>[Signature]</i>	<b>TURN AROUND TIME</b> RUSH <input type="checkbox"/> CALL FIRST 1 DAY <input type="checkbox"/> CALL FIRST 2 DAY <input type="checkbox"/> NORMAL <input checked="" type="checkbox"/> OTHER <input type="checkbox"/>	<b>LABORATORY USE ONLY:</b> RECEIVING TEMP: <i>5.2</i> °C THERM #: <i>78</i> CUSTODY SEALS: <input type="checkbox"/> BROKEN <input type="checkbox"/> INTACT <input checked="" type="checkbox"/> NOT USED CARRIER: <input type="checkbox"/> LONE STAR <input type="checkbox"/> FEDEX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER <input type="checkbox"/> COURIER DELIVERY <input checked="" type="checkbox"/> HAND DELIVERED
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)		
<input type="checkbox"/> DHL DISPOSAL @ \$5.00 each <input type="checkbox"/> Return			3	

**A1 Landfill – PO# 19122450 – boron, selenium, sulfate – use filter for boron and selenium**

Well ID	Top of Screen	Bottom of Screen	Total Depth	Depth to water	pump	dedicated tubing?	Analysis
LMW-1	20	30	30	18.48	peri	yes	B, Se, SO4
LMW-2	23	33	33	21.91	peri	yes	B, Se, SO4
LMW-3	17	32	32	12.68	peri	yes	B, Se, SO4
LMW-4	41	61	61	16.33	peri	yes	B, Se, SO4
LMW-5	15	30	30	7.66	peri	yes	B, Se, SO4
LMW-6R	20	35	35	3.77	peri	yes	B, Se, SO4
LMW-7R	25	40	40	20.45	peri	yes	B, Se, SO4
LMW-8R	20	30	30	19.65	peri	yes	B, Se, SO4
LMW-9	20	30	30	12.31	peri	yes	B, Se, SO4
PC-MW-8	16.7	26.7	27	12.67	peri	yes	B, Se, SO4

**AX Landfill – Multiple POs, multiple analyses – don’t use filter for Appendix III, use filter for boron and selenium**

Well ID	Top of Screen	Bottom of Screen	Total Depth	pump	dedicated tubing?	Analysis	PO
AX-23	65	85	85	bladder	yes	App III	19122262
AX-24	60	80	80	bladder	yes	App III	19122262
AX-25R	60	70	70	peri	yes	App III	19122262
AX-26	55	75	75	bladder	yes	App III	19122262
AX-27	78	98	98	bladder	yes	App III	19122262
AX-28	25	45	45	bladder	yes	App III	19122262
AX-29	45	65	65	bladder	yes	App III	19122262
AXMW-1	33	53	53	bladder	yes	App III	19122262
						B, Se, SO4	19122450
AXMW-2	43	63	63	bladder	yes	App III	19122262
						B, Se, SO4	19122450
AX-16	122	142	142	?	?	B, Se, SO4	19122450
AX-22	115	135	135	?	?	B, Se, SO4	19122450

\*Appendix III – boron, calcium, chloride, fluoride, sulfate, TDS

**SO2 Ponds – PO# 19122450 – boron, selenium, sulfate – use filter for boron and selenium**

Well ID	Top of Screen	Bottom of Screen	Total Depth	Depth to Water	pump	Tubing Intake	dedicated tubing?	Analysis
CSL-MW-13R	44.7	54.7	55	31.93	sub	50	no	B, Se, SO4
CSL-MW-18	34	44	50.5	32.18	sub	40	no	B, Se, SO4
CSL-MW-19	46	56	58	55.97	sub	50	no	B, Se, SO4
CSL-MW-20	49	59	60	54.88	sub	45	no	B, Se, SO4
CSL-MW-21	48	58	59.5	47.82	sub	63	no	B, Se, SO4
CSL-MW-23	35.8	55.8	56	32.57	sub	45	no	B, Se, SO4
CSL-MW-26R	85	90	95	30.69	sub	92	no	B, Se, SO4
CSL-MW-31	44.5	54.5	55	46.38	sub	50	no	B, Se, SO4
CSL-MW-34	141.5	151.5	152	122.98	sub	146	no	B, Se, SO4
CSL-MW-35	139.5	149.5	150	121.54	sub	145	no	B, Se, SO4
C-1	34.8	44.8	45	17.95	peri	40	?	B, Se, SO4
C-2	49.8	59.8	60	12.95	peri	55	?	B, Se, SO4
C-3	52.8	62.8	63	34.14	sub	58	no	B, Se, SO4
CL2-MW-4	14.5	24.5	25	8.86	peri	20	?	B, Se, SO4
CL2-MW-5	9.5	19.5	20	4.93	peri	15	?	B, Se, SO4
CL2-MW-6	39.5	49.5	50	28.54	sub	45	no	B, Se, SO4
PC-MW-2	25	35	35	22.84	peri	30	?	B, Se, SO4
PC-MW-4	148.1	158.1	160	136.89	sub	153	no	B, Se, SO4


Sample Receipt Checklist

Client Name **Golder**

Date Received: **6/11/2021**


Work Order Number **2106091**

Received by: **RA**

Checklist completed by:  6/11/2021  
Signature Date

Reviewed by  6/11/2021  
Initials Date

Carrier name: Hand Delivered

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present
- Custody seals intact on sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Container/Temp Blank temperature in compliance? Yes  No  **5.2 °C**
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH<2 acceptable upon receipt? Yes  No  NA  LOT # 13171
- Adjusted? no Checked by 
- Water - pH>9 (S) or pH>10 (CN) acceptable upon receipt? Yes  No  NA  LOT #
- Adjusted? \_\_\_\_\_ Checked by \_\_\_\_\_

Any No response must be detailed in the comments section below.

Client contacted: \_\_\_\_\_ Date contacted: \_\_\_\_\_ Person contacted \_\_\_\_\_

Contacted by: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments: \_\_\_\_\_

Corrective Action: \_\_\_\_\_

<b>Laboratory Name: DHL Analytical, Inc.</b>							
<b>Laboratory Review Checklist: Reportable Data</b>							
<b>Project Name:</b> Sandow CCR				<b>LRC Date:</b> 6/21/21			
<b>Reviewer Name:</b> Carlos Castro				<b>Laboratory Work Order:</b> 2106091			
<b>Prep Batch Number(s):</b> See Prep Dates Report				<b>Run Batch:</b> See Analytical Dates Report			
# <sup>1</sup>	A <sup>2</sup>	Description	Yes	No	NA <sup>3</sup>	NR <sup>4</sup>	ER# <sup>5</sup>
		<b>Chain-of-Custody (C-O-C)</b>					
<b>R1</b>	OI	1) Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				<b>R1-01</b>
		2) Were all departures from standard conditions described in an exception report?			X		
<b>R2</b>	OI	<b>Sample and Quality Control (QC) Identification</b>					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
<b>R3</b>	OI	<b>Test Reports</b>					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
<b>R4</b>	O	<b>Surrogate Recovery Data</b>					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
<b>R5</b>	OI	<b>Test Reports/Summary Forms for Blank Samples</b>					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, <b>greater</b> than 10 times the concentration in the blank sample?			X		
<b>R6</b>	OI	<b>Laboratory Control Samples (LCS):</b>					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
<b>R7</b>	OI	<b>Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data</b>					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			<b>R7-03</b>
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
<b>R8</b>	OI	<b>Analytical Duplicate Data</b>					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
<b>R9</b>	OI	<b>Method Quantitation Limits (MQLs):</b>					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
<b>R10</b>	OI	<b>Other Problems/Anomalies</b>					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

<b>Laboratory Name: DHL Analytical, Inc.</b>							
<b>Laboratory Review Checklist (continued): Supporting Data</b>							
<b>Project Name:</b> Sandow CCR				<b>LRC Date:</b> 6/21/21			
<b>Reviewer Name:</b> Carlos Castro				<b>Laboratory Work Order:</b> 2106091			
<b>Prep Batch Number(s):</b> See Prep Dates Report				<b>Run Batch:</b> See Analytical Dates Report			
# <sup>1</sup>	A <sup>2</sup>	Description	Yes	No	NA <sup>3</sup>	NR <sup>4</sup>	ER# <sup>5</sup>
<b>S1</b>	OI	<b>Initial Calibration (ICAL)</b>					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
<b>S2</b>	OI	<b>Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):</b>					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
<b>S3</b>	O	<b>Mass Spectral Tuning:</b>					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
<b>S4</b>	O	<b>Internal Standards (IS):</b>					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
<b>S5</b>	OI	<b>Raw Data (NELAC Section 5.5.10)</b>					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
<b>S6</b>	O	<b>Dual Column Confirmation</b>					
		1) Did dual column confirmation results meet the method-required QC?			X		
<b>S7</b>	O	<b>Tentatively Identified Compounds (TICs):</b>					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
<b>S8</b>	I	<b>Interference Check Sample (ICS) Results:</b>					
		1) Were percent recoveries within method QC limits?	X				
<b>S9</b>	I	<b>Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions</b>					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			S9-01
<b>S10</b>	OI	<b>Method Detection Limit (MDL) Studies</b>					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
<b>S11</b>	OI	<b>Proficiency Test Reports:</b>					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
<b>S12</b>	OI	<b>Standards Documentation</b>					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
<b>S13</b>	OI	<b>Compound/Analyte Identification Procedures</b>					
		1) Are the procedures for compound/analyte identification documented?	X				
<b>S14</b>	OI	<b>Demonstration of Analyst Competency (DOC)</b>					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
<b>S15</b>	OI	<b>Verification/Validation Documentation for Methods (NELAC Chapter 5)</b>					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
<b>S16</b>	OI	<b>Laboratory Standard Operating Procedures (SOPs):</b>					
		1) Are laboratory SOPs current and on file for each method performed?	X				

- 1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
- 2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
- 3 NA = Not applicable.
- 4 NR = Not Reviewed.
- 5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

# Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

- R1 Field chain-of-custody documentation;
- R2 Sample identification cross-reference;
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC Chapter 5,
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- R5 Test reports/summary forms for blank samples;
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 23-26, 2021. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont  
Official Title: General Manager

  
Signature

06/21/21  
Date

Name: Dr. Derhsing Luu  
Official Title: Technical Director

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Lab Order:** 2106091

**CASE NARRATIVE**

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis  
Method E300 - Anions Analysis  
Method M2540C - TDS Analysis

**Exception Report R1-01**

The sample was received and log-in performed on 6/11/21. A total of 1 sample was received. The sample arrived in good condition and was properly packaged.

**Exception Report R7-03**

For Anions analysis performed on 6/15/21 the matrix spikes and matrix spike duplicate recoveries (2106090-01 MSD & 2106091-01 MS/MSD) were slightly below control limits for Sulfate. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate (2106090-01 MS/MSD) was not from this work order. The sample selected for the matrix spike and matrix spike duplicate (2106091-01 MS/MSD) was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 6/17/21 the matrix spike and matrix spike duplicate recoveries were below control limits for Calcium. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

**Exception Report S9-01**

For Metals analysis performed on 6/17/21 the PDS recovery was below control limits for Calcium. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.



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**CLIENT:** Golder  
**Project:** Sandow CCR  
**Lab Order:** 2106091

**Work Order Sample Summary**

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<b>Lab Smp ID</b>	<b>Client Sample ID</b>	<b>Tag Number</b>	<b>Date Collected</b>	<b>Date Recved</b>
2106091-01	AX-29		06/10/21 11:30 AM	6/11/2021

Lab Order: 2106091  
 Client: Golder  
 Project: Sandow CCR

**PREP DATES REPORT**

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106091-01A	AX-29	06/10/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/21 08:43 AM	100923
	AX-29	06/10/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/21 08:43 AM	100923
	AX-29	06/10/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/21 08:43 AM	100923
2106091-01B	AX-29	06/10/21 11:30 AM	Aqueous	E300	Anion Preparation	06/15/21 11:00 AM	100919
	AX-29	06/10/21 11:30 AM	Aqueous	E300	Anion Preparation	06/15/21 11:00 AM	100919
	AX-29	06/10/21 11:30 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893

**Lab Order:** 2106091  
**Client:** Golder  
**Project:** Sandow CCR

**ANALYTICAL DATES REPORT**

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106091-01A	AX-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100923	50	06/17/21 01:59 PM	ICP-MS5_210617B
	AX-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100923	1	06/17/21 11:16 AM	ICP-MS5_210617B
	AX-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100923	1	06/17/21 02:25 PM	ICP-MS4_210617D
2106091-01B	AX-29	Aqueous	E300	Anions by IC method - Water	100919	1	06/16/21 05:34 AM	IC2_210615A
	AX-29	Aqueous	E300	Anions by IC method - Water	100919	100	06/16/21 01:18 AM	IC2_210615A
	AX-29	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B

**DHL Analytical, Inc.**

**Date:** 21-Jun-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2106091

**Client Sample ID:** AX-29  
**Lab ID:** 2106091-01  
**Collection Date:** 06/10/21 11:30 AM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.370	0.0100	0.0300		mg/L	1	06/17/21 02:25 PM
Calcium	365	5.00	15.0		mg/L	50	06/17/21 01:59 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	245	30.0	100		mg/L	100	06/16/21 01:18 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/16/21 05:34 AM
Sulfate	1090	100	300		mg/L	100	06/16/21 01:18 AM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	2580	50.0	50.0		mg/L	1	06/14/21 12:10 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

**ANALYTICAL QC SUMMARY REPORT**

**RunID: ICP-MS4\_210428A**

Sample ID: <b>DCS4-100323</b>	Batch ID: <b>100323</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>DCS4</b>	Run ID: <b>ICP-MS4_210428A</b>	Analysis Date: <b>4/28/2021 10:39:00 AM</b>	Prep Date: <b>4/27/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0310	0.0300	0.0300	0	103	70	130	0	0	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 J Analyte detected between MDL and RL  
 ND Not Detected at the Method Detection Limit  
 RL Reporting Limit  
 J Analyte detected between SDL and RL

DF Dilution Factor  
 MDL Method Detection Limit  
 R RPD outside accepted control limits  
 S Spike Recovery outside control limits  
 N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4\_210617D**

The QC data in batch 100923 applies to the following samples: 2106091-01A

Sample ID: <b>MB-100923</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MBLK</b>	Run ID: <b>ICP-MS4_210617D</b>	Analysis Date: <b>6/17/2021 2:13:00 PM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	<0.0100	0.0300								
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Sample ID: <b>LCS-100923</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCS</b>	Run ID: <b>ICP-MS4_210617D</b>	Analysis Date: <b>6/17/2021 2:15:00 PM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.200	0.0300	0.200	0	100	80	120			
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Sample ID: <b>LCSD-100923</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCSD</b>	Run ID: <b>ICP-MS4_210617D</b>	Analysis Date: <b>6/17/2021 2:17:00 PM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.191	0.0300	0.200	0	95.7	80	120	4.33	15	
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Sample ID: <b>2106093-04E SD</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>SD</b>	Run ID: <b>ICP-MS4_210617D</b>	Analysis Date: <b>6/17/2021 2:23:00 PM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.139	0.150	0	0.117				17.2	20	
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Sample ID: <b>2106093-04E PDS</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>PDS</b>	Run ID: <b>ICP-MS4_210617D</b>	Analysis Date: <b>6/17/2021 2:27:00 PM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.302	0.0300	0.200	0.117	92.3	75	125			
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Sample ID: <b>2106093-04E MS</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>ICP-MS4_210617D</b>	Analysis Date: <b>6/17/2021 2:31:00 PM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.308	0.0300	0.200	0.117	95.6	75	125			
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Sample ID: <b>2106093-04E MSD</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MSD</b>	Run ID: <b>ICP-MS4_210617D</b>	Analysis Date: <b>6/17/2021 2:32:00 PM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.306	0.0300	0.200	0.117	94.2	75	125	0.939	15	
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<b>Qualifiers:</b>	<p>B Analyte detected in the associated Method Blank</p> <p>J Analyte detected between MDL and RL</p> <p>ND Not Detected at the Method Detection Limit</p> <p>RL Reporting Limit</p> <p>J Analyte detected between SDL and RL</p>	<p>DF Dilution Factor</p> <p>MDL Method Detection Limit</p> <p>R RPD outside accepted control limits</p> <p>S Spike Recovery outside control limits</p> <p>N Parameter not NELAP certified</p>
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**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4\_210617D**

Sample ID: <b>ICV-210617</b>	Batch ID: <b>R115846</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>ICV</b>	Run ID: <b>ICP-MS4_210617D</b>	Analysis Date: <b>6/17/2021 10:50:00 AM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.0960	0.0300	0.100	0	96.0	90	110			
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Sample ID: <b>LCVL-210617</b>	Batch ID: <b>R115846</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCVL</b>	Run ID: <b>ICP-MS4_210617D</b>	Analysis Date: <b>6/17/2021 11:01:00 AM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.0203	0.0300	0.0200	0	102	80	120			
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Sample ID: <b>CCV3-210617</b>	Batch ID: <b>R115846</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS4_210617D</b>	Analysis Date: <b>6/17/2021 2:08:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.203	0.0300	0.200	0	102	90	110			
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Sample ID: <b>CCV4-210617</b>	Batch ID: <b>R115846</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS4_210617D</b>	Analysis Date: <b>6/17/2021 2:37:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.213	0.0300	0.200	0	107	90	110			
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**Qualifiers:** B Analyte detected in the associated Method Blank  
 J Analyte detected between MDL and RL  
 ND Not Detected at the Method Detection Limit  
 RL Reporting Limit  
 J Analyte detected between SDL and RL  
 DF Dilution Factor  
 MDL Method Detection Limit  
 R RPD outside accepted control limits  
 S Spike Recovery outside control limits  
 N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS5\_210428A**

Sample ID: <b>DCS2-100323</b>	Batch ID: <b>100323</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>DCS2</b>	Run ID: <b>ICP-MS5_210428A</b>	Analysis Date: <b>4/28/2021 10:53:00 AM</b>	Prep Date: <b>4/27/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.302	0.300	0.300	0	101	70	130	0	0	

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank J Analyte detected between MDL and RL ND Not Detected at the Method Detection Limit RL Reporting Limit J Analyte detected between SDL and RL	DF Dilution Factor MDL Method Detection Limit R RPD outside accepted control limits S Spike Recovery outside control limits N Parameter not NELAP certified
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**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS5\_210617B**

The QC data in batch 100923 applies to the following samples: 2106091-01A

Sample ID: <b>MB-100923</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MBLK</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 10:57:00 AM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	<0.100	0.300								
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Sample ID: <b>LCS-100923</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCS</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 11:00:00 AM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.93	0.300	5.00	0	98.5	80	120			
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Sample ID: <b>LCSD-100923</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCSD</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 11:03:00 AM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.78	0.300	5.00	0	95.6	80	120	3.06	15	
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Sample ID: <b>2106093-04E SD</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>SD</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 11:10:00 AM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	94.7	1.50	0	93.8				0.914	20	
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Sample ID: <b>2106093-04E PDS</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>PDS</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 11:36:00 AM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	94.6	0.300	5.00	93.8	14.4	75	125			S
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Sample ID: <b>2106093-04E MS</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 11:41:00 AM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	97.1	0.300	5.00	93.8	64.8	75	125			S
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Sample ID: <b>2106093-04E MSD</b>	Batch ID: <b>100923</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MSD</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 11:48:00 AM</b>	Prep Date: <b>6/16/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	95.7	0.300	5.00	93.8	37.7	75	125	1.41	15	S
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**Qualifiers:** B Analyte detected in the associated Method Blank      DF Dilution Factor  
 J Analyte detected between MDL and RL                                      MDL Method Detection Limit  
 ND Not Detected at the Method Detection Limit                              R RPD outside accepted control limits  
 RL Reporting Limit    S Spike Recovery outside control limits  
 J Analyte detected between SDL and RL    N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS5\_210617B**

Sample ID: <b>ICV-210617</b>	Batch ID: <b>R115845</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>ICV</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 10:41:00 AM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	2.43	0.300	2.50	0	97.0	90	110			
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Sample ID: <b>LCVL-210617</b>	Batch ID: <b>R115845</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCVL</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 10:49:00 AM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.0853	0.300	0.100	0	85.3	80	120			
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Sample ID: <b>CCV1-210617</b>	Batch ID: <b>R115845</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 11:52:00 AM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.99	0.300	5.00	0	99.7	90	110			
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Sample ID: <b>CCV2-210617</b>	Batch ID: <b>R115845</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 12:44:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	5.10	0.300	5.00	0	102	90	110			
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Sample ID: <b>CCV3-210617</b>	Batch ID: <b>R115845</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS5_210617B</b>	Analysis Date: <b>6/17/2021 2:31:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.85	0.300	5.00	0	97.0	90	110			
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**Qualifiers:**

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_210527A**

Sample ID: <b>DCS3-100738</b>	Batch ID: <b>100738</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>DCS3</b>	Run ID: <b>IC2_210527A</b>	Analysis Date: <b>5/27/2021 4:13:05 PM</b>	Prep Date: <b>5/27/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1.25	1.00	1.000	0	125	70	130	0	0	
Fluoride	0.408	0.400	0.4000	0	102	70	130	0	0	
Sulfate	3.03	3.00	3.000	0	101	70	130	0	0	

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank J Analyte detected between MDL and RL ND Not Detected at the Method Detection Limit RL Reporting Limit J Analyte detected between SDL and RL	DF Dilution Factor MDL Method Detection Limit R RPD outside accepted control limits S Spike Recovery outside control limits N Parameter not NELAP certified	
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**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_210615A**

The QC data in batch 100919 applies to the following samples: 2106091-01B

Sample ID: <b>MB-100919</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MBLK</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 7:42:19 PM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: <b>LCS-100919</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>LCS</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 7:58:19 PM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.06	1.00	10.00	0	90.6	90	110			
Fluoride	3.74	0.400	4.000	0	93.6	90	110			
Sulfate	29.0	3.00	30.00	0	96.8	90	110			

Sample ID: <b>LCSD-100919</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>LCSD</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 8:14:20 PM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.03	1.00	10.00	0	90.3	90	110	0.309	20	
Fluoride	3.76	0.400	4.000	0	93.9	90	110	0.347	20	
Sulfate	29.0	3.00	30.00	0	96.6	90	110	0.145	20	

Sample ID: <b>2106090-01BMS</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 8:46:20 PM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2060	100	2000	152.3	95.4	90	110			
Fluoride	1960	40.0	2000	0	98.1	90	110			
Sulfate	3140	300	2000	1355	89.1	90	110			S

Sample ID: <b>2106090-01BMSD</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MSD</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 9:02:19 PM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2010	100	2000	152.3	92.9	90	110	2.42	20	
Fluoride	1940	40.0	2000	0	96.8	90	110	1.33	20	
Sulfate	3090	300	2000	1355	86.7	90	110	1.52	20	S

Sample ID: <b>2106091-01BMS</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/16/2021 1:34:19 AM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

**Qualifiers:**

B Analyte detected in the associated Method Blank	DF Dilution Factor
J Analyte detected between MDL and RL	MDL Method Detection Limit
ND Not Detected at the Method Detection Limit	R RPD outside accepted control limits
RL Reporting Limit	S Spike Recovery outside control limits
J Analyte detected between SDL and RL	N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_210615A**

Sample ID: <b>2106091-01BMS</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/16/2021 1:34:19 AM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2130	100	2000	244.6	94.4	90	110			
Fluoride	1960	40.0	2000	0	98.1	90	110			
Sulfate	2810	300	2000	1093	85.7	90	110			S

Sample ID: <b>2106091-01BMSD</b>	Batch ID: <b>100919</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>							
SampType: <b>MSD</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/16/2021 1:50:19 AM</b>	Prep Date: <b>6/15/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2130	100	2000	244.6	94.1	90	110	0.354	20	
Fluoride	1970	40.0	2000	0	98.5	90	110	0.386	20	
Sulfate	2810	300	2000	1093	85.9	90	110	0.148	20	S

<b>Qualifiers:</b> B Analyte detected in the associated Method Blank J Analyte detected between MDL and RL ND Not Detected at the Method Detection Limit RL Reporting Limit J Analyte detected between SDL and RL	DF Dilution Factor MDL Method Detection Limit R RPD outside accepted control limits S Spike Recovery outside control limits N Parameter not NELAP certified
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**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_210615A**

Sample ID: <b>ICV-210615</b>	Batch ID: <b>R115816</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>ICV</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/15/2021 7:10:19 PM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.3	1.00	25.00	0	97.4	90	110			
Fluoride	9.96	0.400	10.00	0	99.6	90	110			
Sulfate	77.2	3.00	75.00	0	103	90	110			

Sample ID: <b>CCV1-210615</b>	Batch ID: <b>R115816</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/16/2021 12:30:19 AM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.16	1.00	10.00	0	91.6	90	110			
Fluoride	3.95	0.400	4.000	0	98.7	90	110			
Sulfate	29.3	3.00	30.00	0	97.8	90	110			

Sample ID: <b>CCV2-210615</b>	Batch ID: <b>R115816</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/16/2021 5:02:19 AM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.25	1.00	10.00	0	92.5	90	110			
Fluoride	3.99	0.400	4.000	0	99.8	90	110			
Sulfate	29.4	3.00	30.00	0	98.0	90	110			

Sample ID: <b>CCV3-210615</b>	Batch ID: <b>R115816</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>IC2_210615A</b>	Analysis Date: <b>6/16/2021 6:38:19 AM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.98	0.400	4.000	0	99.6	90	110			

**Qualifiers:**

B Analyte detected in the associated Method Blank	DF Dilution Factor
J Analyte detected between MDL and RL	MDL Method Detection Limit
ND Not Detected at the Method Detection Limit	R RPD outside accepted control limits
RL Reporting Limit	S Spike Recovery outside control limits
J Analyte detected between SDL and RL	N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: WC\_210614B**

The QC data in batch 100893 applies to the following samples: 2106091-01B

Sample ID: <b>MB-100893</b>	Batch ID: <b>100893</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>							
SampType: <b>MBLK</b>	Run ID: <b>WC_210614B</b>	Analysis Date: <b>6/14/2021 12:10:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera <10.0 10.0

Sample ID: <b>LCS-100893</b>	Batch ID: <b>100893</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>							
SampType: <b>LCS</b>	Run ID: <b>WC_210614B</b>	Analysis Date: <b>6/14/2021 12:10:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 759 10.0 745.6 0 102 90 113

Sample ID: <b>2106088-01B-DUP</b>	Batch ID: <b>100893</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>							
SampType: <b>DUP</b>	Run ID: <b>WC_210614B</b>	Analysis Date: <b>6/14/2021 12:10:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 2010 50.0 0 2015 0.248 5

Sample ID: <b>2106088-02B-DUP</b>	Batch ID: <b>100893</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>							
SampType: <b>DUP</b>	Run ID: <b>WC_210614B</b>	Analysis Date: <b>6/14/2021 12:10:00 PM</b>	Prep Date: <b>6/14/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 2460 50.0 0 2550 3.59 5

- |  |   |
|--|---|
| <b>Qualifiers:</b><br>B Analyte detected in the associated Method Blank<br>J Analyte detected between MDL and RL<br>ND Not Detected at the Method Detection Limit<br>RL Reporting Limit<br>J Analyte detected between SDL and RL | DF Dilution Factor<br>MDL Method Detection Limit<br>R RPD outside accepted control limits<br>S Spike Recovery outside control limits<br>N Parameter not NELAP certified |
|--|---|

**CLIENT:** Golder  
**Work Order:** 2106091  
**Project:** Sandow CCR

## MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	mg/L	mg/L
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	mg/L	mg/L
Boron	0.0100	0.0300
Calcium	0.100	0.300

TestNo: M2540C	MDL	MQL
Analyte	mg/L	mg/L
Total Dissolved Solids (Residue, Filt	10.0	10.0





December 01, 2021

Will Vienne  
Golder  
2201 Double Creek Dr #4004  
Round Rock, Texas 78664  
TEL: (512) 671-3434  
FAX: (512) 671-3446  
RE: Sandow CCR

Order No.: 2111158

Dear Will Vienne:

DHL Analytical, Inc. received 9 sample(s) on 11/19/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

A handwritten signature in red ink, appearing to read 'John DuPont', written in a cursive style.

John DuPont  
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27



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Sample Receipt Checklist

Client Name Golder

Date Received: 11/19/2021

Work Order Number 2111158

Received by: RA

Checklist completed by: [Signature] 11/22/2021  
Signature Date

Reviewed by SH 11/22/2021  
Initials Date

Carrier name: Hand Delivered

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present
- Custody seals intact on sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Container/Temp Blank temperature in compliance? Yes  No  1.2 °C / 1.1 °C
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH<2 acceptable upon receipt? Yes  No  NA  LOT # 13171
- Adjusted? No Checked by R.A.
- Water - pH>9 (S) or pH>10 (CN) acceptable upon receipt? Yes  No  NA  LOT #  
Adjusted? \_\_\_\_\_ Checked by \_\_\_\_\_

Any No response must be detailed in the comments section below.

Client contacted: Golder Date contacted: 11/22/21 Person contacted Jacob J.

Contacted by: Ryan A. Regarding: Collection Time

Comments: Sample AXMW-1 had a collection time of 09:30 recorded on the CoC, but the sample label has a collection time of 10:30

Corrective Action: Per Jacob J. DHL will use the collection time written on the label. (10:30)

<b>Laboratory Name: DHL Analytical, Inc.</b>							
<b>Laboratory Review Checklist: Reportable Data</b>							
<b>Project Name:</b> Sandow CCR				<b>LRC Date:</b> 12/1/2021			
<b>Reviewer Name:</b> Angie O'Donnell				<b>Laboratory Work Order:</b> 2111158			
<b>Prep Batch Number(s):</b> See Prep Dates Report				<b>Run Batch:</b> See Analytical Dates Report			
# <sup>1</sup>	A <sup>2</sup>	Description	Yes	No	NA <sup>3</sup>	NR <sup>4</sup>	ER# <sup>5</sup>
		<b>Chain-of-Custody (C-O-C)</b>					
<b>R1</b>	OI	1) Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				<b>R1-01</b>
		2) Were all departures from standard conditions described in an exception report?	X				
<b>R2</b>	OI	<b>Sample and Quality Control (QC) Identification</b>					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
<b>R3</b>	OI	<b>Test Reports</b>					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
<b>R4</b>	O	<b>Surrogate Recovery Data</b>					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
<b>R5</b>	OI	<b>Test Reports/Summary Forms for Blank Samples</b>					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, <b>greater</b> than 10 times the concentration in the blank sample?			X		
<b>R6</b>	OI	<b>Laboratory Control Samples (LCS):</b>					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
<b>R7</b>	OI	<b>Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data</b>					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			<b>R7-03</b>
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
<b>R8</b>	OI	<b>Analytical Duplicate Data</b>					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
<b>R9</b>	OI	<b>Method Quantitation Limits (MQLs):</b>					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
<b>R10</b>	OI	<b>Other Problems/Anomalies</b>					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

<b>Laboratory Name: DHL Analytical, Inc.</b>							
<b>Laboratory Review Checklist (continued): Supporting Data</b>							
<b>Project Name:</b> Sandow CCR			<b>LRC Date:</b> 12/1/2021				
<b>Reviewer Name:</b> Angie O'Donnell			<b>Laboratory Work Order:</b> 2111158				
<b>Prep Batch Number(s):</b> See Prep Dates Report			<b>Run Batch:</b> See Analytical Dates Report				
# <sup>1</sup>	A <sup>2</sup>	Description	Yes	No	NA <sup>3</sup>	NR <sup>4</sup>	ER# <sup>5</sup>
S1	OI	<b>Initial Calibration (ICAL)</b>					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	<b>Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):</b>					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	<b>Mass Spectral Tuning:</b>					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	<b>Internal Standards (IS):</b>					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	<b>Raw Data (NELAC Section 5.5.10)</b>					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	<b>Dual Column Confirmation</b>					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	<b>Tentatively Identified Compounds (TICs):</b>					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	<b>Interference Check Sample (ICS) Results:</b>					
		1) Were percent recoveries within method QC limits?	X				
S9	I	<b>Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions</b>					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			S9-01
S10	OI	<b>Method Detection Limit (MDL) Studies</b>					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	<b>Proficiency Test Reports:</b>					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	<b>Standards Documentation</b>					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	<b>Compound/Analyte Identification Procedures</b>					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	<b>Demonstration of Analyst Competency (DOC)</b>					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	<b>Verification/Validation Documentation for Methods (NELAC Chapter 5)</b>					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	<b>Laboratory Standard Operating Procedures (SOPs):</b>					
		1) Are laboratory SOPs current and on file for each method performed?	X				

- 1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
- 2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
- 3 NA = Not applicable.
- 4 NR = Not Reviewed.
- 5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

# Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:


- R1 Field chain-of-custody documentation;
- R2 Sample identification cross-reference;
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC Chapter 5,
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- R5 Test reports/summary forms for blank samples;
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 23-26, 2021. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont  
Official Title: General Manager

  
Signature

12/01/21  
Date

Name: Dr. Derhsing Luu  
Official Title: Technical Director

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Lab Order:** 2111158

**CASE NARRATIVE**

Samples were analyzed using the methods outlined in the following references:

- Method SW6020B - Metals Analysis
- Method E300 - Anions Analysis
- Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 11/19/2021. A total of 9 samples were received and analyzed. The samples arrived in good condition and were properly packaged. See details regarding the time of collection for one sample in the Sample Receipt Checklist.

Exception Report R7-03

For Metals Analysis, for Batch 102952, the recovery of Calcium for the Matrix Spike and Matrix Spike Duplicate (2111159-21 MS/MSD) was above the method control limits. This is flagged accordingly in the QC Summary Report. This analyte was within method control limits in the associated LCS. No further corrective action was taken.

Exception Report S9-01

For Metals Analysis, for Batch 102952, the recovery of Calcium for the Post Digestion Spike (2111159-21 PDS) was outside of the method control limits. This is flagged accordingly in the QC Summary Report. This analyte was within method control limits in the associated Serial Dilution. No further corrective action was taken.



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**CLIENT:** Golder  
**Project:** Sandow CCR  
**Lab Order:** 2111158

**Work Order Sample Summary**

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<b>Lab Smp ID</b>	<b>Client Sample ID</b>	<b>Tag Number</b>	<b>Date Collected</b>	<b>Date Recved</b>
2111158-01	AX-25R		11/16/21 09:05 AM	11/19/2021
2111158-02	AX-28		11/16/21 11:30 AM	11/19/2021
2111158-03	AX-29		11/16/21 12:15 PM	11/19/2021
2111158-04	AX-23		11/17/21 09:55 AM	11/19/2021
2111158-05	AXMW-1		11/17/21 10:30 AM	11/19/2021
2111158-06	AXMW-2		11/17/21 11:58 AM	11/19/2021
2111158-07	AX-24		11/18/21 04:10 PM	11/19/2021
2111158-08	AX-26		11/18/21 04:45 PM	11/19/2021
2111158-09	AX-27		11/18/21 05:25 PM	11/19/2021

Lab Order: 2111158  
 Client: Golder  
 Project: Sandow CCR

**PREP DATES REPORT**

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2111158-01A	AX-25R	11/16/21 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
	AX-25R	11/16/21 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
2111158-01B	AX-25R	11/16/21 09:05 AM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-25R	11/16/21 09:05 AM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-25R	11/16/21 09:05 AM	Aqueous	M2540C	TDS Preparation	11/22/21 10:59 AM	102939
2111158-02A	AX-28	11/16/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
	AX-28	11/16/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
2111158-02B	AX-28	11/16/21 11:30 AM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-28	11/16/21 11:30 AM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-28	11/16/21 11:30 AM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-28	11/16/21 11:30 AM	Aqueous	M2540C	TDS Preparation	11/22/21 10:59 AM	102939
2111158-03A	AX-29	11/16/21 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
	AX-29	11/16/21 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
2111158-03B	AX-29	11/16/21 12:15 PM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-29	11/16/21 12:15 PM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-29	11/16/21 12:15 PM	Aqueous	M2540C	TDS Preparation	11/22/21 10:59 AM	102939
2111158-04A	AX-23	11/17/21 09:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
	AX-23	11/17/21 09:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
2111158-04B	AX-23	11/17/21 09:55 AM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-23	11/17/21 09:55 AM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-23	11/17/21 09:55 AM	Aqueous	M2540C	TDS Preparation	11/22/21 10:59 AM	102939
2111158-05A	AXMW-1	11/17/21 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
	AXMW-1	11/17/21 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
2111158-05B	AXMW-1	11/17/21 10:30 AM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AXMW-1	11/17/21 10:30 AM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AXMW-1	11/17/21 10:30 AM	Aqueous	M2540C	TDS Preparation	11/22/21 10:59 AM	102939
2111158-06A	AXMW-2	11/17/21 11:58 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
	AXMW-2	11/17/21 11:58 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952

Lab Order: 2111158  
 Client: Golder  
 Project: Sandow CCR

**PREP DATES REPORT**

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2111158-06B	AXMW-2	11/17/21 11:58 AM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AXMW-2	11/17/21 11:58 AM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AXMW-2	11/17/21 11:58 AM	Aqueous	M2540C	TDS Preparation	11/22/21 10:59 AM	102939
2111158-07A	AX-24	11/18/21 04:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
	AX-24	11/18/21 04:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
2111158-07B	AX-24	11/18/21 04:10 PM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-24	11/18/21 04:10 PM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-24	11/18/21 04:10 PM	Aqueous	M2540C	TDS Preparation	11/22/21 10:59 AM	102939
2111158-08A	AX-26	11/18/21 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
	AX-26	11/18/21 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/23/21 08:18 AM	102952
2111158-08B	AX-26	11/18/21 04:45 PM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-26	11/18/21 04:45 PM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-26	11/18/21 04:45 PM	Aqueous	M2540C	TDS Preparation	11/22/21 10:59 AM	102939
2111158-09A	AX-27	11/18/21 05:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/24/21 08:48 AM	102970
	AX-27	11/18/21 05:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/24/21 08:48 AM	102970
2111158-09B	AX-27	11/18/21 05:25 PM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-27	11/18/21 05:25 PM	Aqueous	E300	Anion Preparation	11/23/21 02:34 PM	102961
	AX-27	11/18/21 05:25 PM	Aqueous	M2540C	TDS Preparation	11/22/21 10:59 AM	102939

Lab Order: 2111158  
 Client: Golder  
 Project: Sandow CCR

**ANALYTICAL DATES REPORT**

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2111158-01A	AX-25R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	50	11/24/21 02:30 PM	ICP-MS5_211124B
	AX-25R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	1	11/24/21 03:14 PM	ICP-MS4_211124D
2111158-01B	AX-25R	Aqueous	E300	Anions by IC method - Water	102961	100	11/23/21 05:26 PM	IC2_211123A
	AX-25R	Aqueous	E300	Anions by IC method - Water	102961	1	11/24/21 02:30 AM	IC2_211123A
	AX-25R	Aqueous	M2540C	Total Dissolved Solids	102939	1	11/22/21 04:45 PM	WC_211122B
2111158-02A	AX-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	1	11/24/21 03:16 PM	ICP-MS4_211124D
	AX-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	50	11/24/21 02:32 PM	ICP-MS5_211124B
2111158-02B	AX-28	Aqueous	E300	Anions by IC method - Water	102961	100	11/23/21 05:43 PM	IC2_211123A
	AX-28	Aqueous	E300	Anions by IC method - Water	102961	10	11/23/21 11:57 PM	IC2_211123A
	AX-28	Aqueous	E300	Anions by IC method - Water	102961	1	11/24/21 02:47 AM	IC2_211123A
	AX-28	Aqueous	M2540C	Total Dissolved Solids	102939	1	11/22/21 04:45 PM	WC_211122B
2111158-03A	AX-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	1	11/24/21 03:18 PM	ICP-MS4_211124D
	AX-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	50	11/24/21 02:35 PM	ICP-MS5_211124B
2111158-03B	AX-29	Aqueous	E300	Anions by IC method - Water	102961	100	11/23/21 06:34 PM	IC2_211123A
	AX-29	Aqueous	E300	Anions by IC method - Water	102961	1	11/24/21 03:04 AM	IC2_211123A
	AX-29	Aqueous	M2540C	Total Dissolved Solids	102939	1	11/22/21 04:45 PM	WC_211122B
2111158-04A	AX-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	1	11/24/21 03:20 PM	ICP-MS4_211124D
	AX-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	50	11/24/21 02:38 PM	ICP-MS5_211124B
2111158-04B	AX-23	Aqueous	E300	Anions by IC method - Water	102961	10	11/24/21 12:14 AM	IC2_211123A
	AX-23	Aqueous	E300	Anions by IC method - Water	102961	1	11/24/21 03:21 AM	IC2_211123A
	AX-23	Aqueous	M2540C	Total Dissolved Solids	102939	1	11/22/21 04:45 PM	WC_211122B
2111158-05A	AXMW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	20	11/24/21 03:22 PM	ICP-MS4_211124D
	AXMW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	50	11/24/21 02:40 PM	ICP-MS5_211124B
2111158-05B	AXMW-1	Aqueous	E300	Anions by IC method - Water	102961	1	11/24/21 03:38 AM	IC2_211123A
	AXMW-1	Aqueous	E300	Anions by IC method - Water	102961	100	11/23/21 07:25 PM	IC2_211123A
	AXMW-1	Aqueous	M2540C	Total Dissolved Solids	102939	1	11/22/21 04:45 PM	WC_211122B
2111158-06A	AXMW-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	2	11/24/21 03:24 PM	ICP-MS4_211124D
	AXMW-2	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	50	11/24/21 02:43 PM	ICP-MS5_211124B

Lab Order: 2111158  
 Client: Golder  
 Project: Sandow CCR

**ANALYTICAL DATES REPORT**

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2111158-06B	AXMW-2	Aqueous	E300	Anions by IC method - Water	102961	100	11/23/21 07:42 PM	IC2_211123A
	AXMW-2	Aqueous	E300	Anions by IC method - Water	102961	1	11/24/21 03:55 AM	IC2_211123A
	AXMW-2	Aqueous	M2540C	Total Dissolved Solids	102939	1	11/22/21 04:45 PM	WC_211122B
2111158-07A	AX-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	1	11/24/21 03:26 PM	ICP-MS4_211124D
	AX-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	50	11/24/21 02:45 PM	ICP-MS5_211124B
2111158-07B	AX-24	Aqueous	E300	Anions by IC method - Water	102961	100	11/23/21 07:59 PM	IC2_211123A
	AX-24	Aqueous	E300	Anions by IC method - Water	102961	1	11/24/21 04:12 AM	IC2_211123A
	AX-24	Aqueous	M2540C	Total Dissolved Solids	102939	1	11/22/21 04:45 PM	WC_211122B
2111158-08A	AX-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	1	11/24/21 03:28 PM	ICP-MS4_211124D
	AX-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102952	50	11/24/21 02:48 PM	ICP-MS5_211124B
2111158-08B	AX-26	Aqueous	E300	Anions by IC method - Water	102961	100	11/23/21 08:16 PM	IC2_211123A
	AX-26	Aqueous	E300	Anions by IC method - Water	102961	1	11/24/21 04:29 AM	IC2_211123A
	AX-26	Aqueous	M2540C	Total Dissolved Solids	102939	1	11/22/21 04:45 PM	WC_211122B
2111158-09A	AX-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102970	50	11/29/21 01:51 PM	ICP-MS4_211129B
	AX-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102970	1	11/29/21 12:28 PM	ICP-MS5_211129A
2111158-09B	AX-27	Aqueous	E300	Anions by IC method - Water	102961	100	11/23/21 08:33 PM	IC2_211123A
	AX-27	Aqueous	E300	Anions by IC method - Water	102961	1	11/24/21 04:46 AM	IC2_211123A
	AX-27	Aqueous	M2540C	Total Dissolved Solids	102939	1	11/22/21 04:45 PM	WC_211122B

**DHL Analytical, Inc.**

**Date:** 01-Dec-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2111158

**Client Sample ID:** AX-25R  
**Lab ID:** 2111158-01  
**Collection Date:** 11/16/21 09:05 AM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.197	0.0100	0.0300		mg/L	1	11/24/21 03:14 PM
Calcium	210	5.00	15.0		mg/L	50	11/24/21 02:30 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	400	30.0	100		mg/L	100	11/23/21 05:26 PM
Fluoride	0.493	0.100	0.400		mg/L	1	11/24/21 02:30 AM
Sulfate	492	100	300		mg/L	100	11/23/21 05:26 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	2120	50.0	50.0		mg/L	1	11/22/21 04:45 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 01-Dec-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2111158

**Client Sample ID:** AX-28  
**Lab ID:** 2111158-02  
**Collection Date:** 11/16/21 11:30 AM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.256	0.0100	0.0300		mg/L	1	11/24/21 03:16 PM
Calcium	466	5.00	15.0		mg/L	50	11/24/21 02:32 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	61.9	3.00	10.0		mg/L	10	11/23/21 11:57 PM
Fluoride	0.198	0.100	0.400	J	mg/L	1	11/24/21 02:47 AM
Sulfate	1760	100	300		mg/L	100	11/23/21 05:43 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	3040	50.0	50.0		mg/L	1	11/22/21 04:45 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 01-Dec-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2111158

**Client Sample ID:** AX-29  
**Lab ID:** 2111158-03  
**Collection Date:** 11/16/21 12:15 PM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.341	0.0100	0.0300		mg/L	1	11/24/21 03:18 PM
Calcium	339	5.00	15.0		mg/L	50	11/24/21 02:35 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	297	30.0	100		mg/L	100	11/23/21 06:34 PM
Fluoride	0.201	0.100	0.400	J	mg/L	1	11/24/21 03:04 AM
Sulfate	1120	100	300		mg/L	100	11/23/21 06:34 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	2630	50.0	50.0		mg/L	1	11/22/21 04:45 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern



**DHL Analytical, Inc.**

**Date:** 01-Dec-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2111158

**Client Sample ID:** AX-23  
**Lab ID:** 2111158-04  
**Collection Date:** 11/17/21 09:55 AM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.278	0.0100	0.0300		mg/L	1	11/24/21 03:20 PM
Calcium	300	5.00	15.0		mg/L	50	11/24/21 02:38 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	248	3.00	10.0		mg/L	10	11/24/21 12:14 AM
Fluoride	0.259	0.100	0.400	J	mg/L	1	11/24/21 03:21 AM
Sulfate	651	10.0	30.0		mg/L	10	11/24/21 12:14 AM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	1860	50.0	50.0		mg/L	1	11/22/21 04:45 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 01-Dec-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2111158

**Client Sample ID:** AXMW-1  
**Lab ID:** 2111158-05  
**Collection Date:** 11/17/21 10:30 AM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	8.21	0.200	0.600		mg/L	20	11/24/21 03:22 PM
Calcium	292	5.00	15.0		mg/L	50	11/24/21 02:40 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	160	30.0	100		mg/L	100	11/23/21 07:25 PM
Fluoride	0.181	0.100	0.400	J	mg/L	1	11/24/21 03:38 AM
Sulfate	1470	100	300		mg/L	100	11/23/21 07:25 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	2600	50.0	50.0		mg/L	1	11/22/21 04:45 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 01-Dec-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2111158

**Client Sample ID:** AXMW-2  
**Lab ID:** 2111158-06  
**Collection Date:** 11/17/21 11:58 AM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.622	0.0200	0.0600		mg/L	2	11/24/21 03:24 PM
Calcium	423	5.00	15.0		mg/L	50	11/24/21 02:43 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	118	30.0	100		mg/L	100	11/23/21 07:42 PM
Fluoride	0.224	0.100	0.400	J	mg/L	1	11/24/21 03:55 AM
Sulfate	1160	100	300		mg/L	100	11/23/21 07:42 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	2620	50.0	50.0		mg/L	1	11/22/21 04:45 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 01-Dec-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2111158

**Client Sample ID:** AX-24  
**Lab ID:** 2111158-07  
**Collection Date:** 11/18/21 04:10 PM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.153	0.0100	0.0300		mg/L	1	11/24/21 03:26 PM
Calcium	333	5.00	15.0		mg/L	50	11/24/21 02:45 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	179	30.0	100		mg/L	100	11/23/21 07:59 PM
Fluoride	0.138	0.100	0.400	J	mg/L	1	11/24/21 04:12 AM
Sulfate	1070	100	300		mg/L	100	11/23/21 07:59 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	2390	50.0	50.0		mg/L	1	11/22/21 04:45 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 01-Dec-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2111158

**Client Sample ID:** AX-26  
**Lab ID:** 2111158-08  
**Collection Date:** 11/18/21 04:45 PM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.360	0.0100	0.0300		mg/L	1	11/24/21 03:28 PM
Calcium	939	5.00	15.0		mg/L	50	11/24/21 02:48 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	2230	30.0	100		mg/L	100	11/23/21 08:16 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/24/21 04:29 AM
Sulfate	1280	100	300		mg/L	100	11/23/21 08:16 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	5930	50.0	50.0		mg/L	1	11/22/21 04:45 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**DHL Analytical, Inc.**

**Date:** 01-Dec-21

**CLIENT:** Golder  
**Project:** Sandow CCR  
**Project No:** 19122262  
**Lab Order:** 2111158

**Client Sample ID:** AX-27  
**Lab ID:** 2111158-09  
**Collection Date:** 11/18/21 05:25 PM  
**Matrix:** AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
<b>TRACE METALS: ICP-MS - WATER</b>		<b>SW6020B</b>		Analyst: <b>SP</b>			
Boron	0.249	0.0100	0.0300		mg/L	1	11/29/21 12:28 PM
Calcium	390	5.00	15.0		mg/L	50	11/29/21 01:51 PM
<b>ANIONS BY IC METHOD - WATER</b>		<b>E300</b>		Analyst: <b>BM</b>			
Chloride	461	30.0	100		mg/L	100	11/23/21 08:33 PM
Fluoride	0.204	0.100	0.400	J	mg/L	1	11/24/21 04:46 AM
Sulfate	419	100	300		mg/L	100	11/23/21 08:33 PM
<b>TOTAL DISSOLVED SOLIDS</b>		<b>M2540C</b>		Analyst: <b>JS</b>			
Total Dissolved Solids (Residue, Filterable)	1980	50.0	50.0		mg/L	1	11/22/21 04:45 PM

**Qualifiers:** ND - Not Detected at the SDL  
 J - Analyte detected between SDL and RL  
 B - Analyte detected in the associated Method Blank  
 DF- Dilution Factor  
 N - Parameter not NELAP certified  
 See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits  
 C - Sample Result or QC discussed in Case Narrative  
 RL - Reporting Limit (MQL adjusted for moisture and sample size)  
 SDL - Sample Detection Limit  
 E - TPH pattern not Gas or Diesel Range Pattern

**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

**ANALYTICAL QC SUMMARY REPORT**

**RunID: ICP-MS4\_211104B**

Sample ID: <b>DCS2-102615</b>	Batch ID: <b>102615</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>DCS2</b>	Run ID: <b>ICP-MS4_211104B</b>	Analysis Date: <b>11/4/2021 10:47:00 AM</b>	Prep Date: <b>10/29/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.300	0.300	0.300	0	100	70	130	0	0	

Sample ID: <b>DCS4-102615</b>	Batch ID: <b>102615</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>DCS4</b>	Run ID: <b>ICP-MS4_211104B</b>	Analysis Date: <b>11/4/2021 10:52:00 AM</b>	Prep Date: <b>10/29/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0317	0.0300	0.0300	0	106	70	130	0	0	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 J Analyte detected between MDL and RL  
 ND Not Detected at the Method Detection Limit  
 RL Reporting Limit  
 J Analyte detected between SDL and RL  
 DF Dilution Factor  
 MDL Method Detection Limit  
 R RPD outside accepted control limits  
 S Spike Recovery outside control limits  
 N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4\_211124D**

The QC data in batch 102952 applies to the following samples: 2111158-01A, 2111158-02A, 2111158-03A, 2111158-04A, 2111158-05A, 2111158-06A, 2111158-07A, 2111158-08A

Sample ID: <b>MB-102952</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MBLK</b>	Run ID: <b>ICP-MS4_211124D</b>	Analysis Date: <b>11/24/2021 3:02:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron <0.0100 0.0300

Sample ID: <b>LCS-102952</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCS</b>	Run ID: <b>ICP-MS4_211124D</b>	Analysis Date: <b>11/24/2021 3:04:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron 0.186 0.0300 0.200 0 93.2 80 120

Sample ID: <b>LCSD-102952</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCSD</b>	Run ID: <b>ICP-MS4_211124D</b>	Analysis Date: <b>11/24/2021 3:06:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron 0.193 0.0300 0.200 0 96.3 80 120 3.25 15

Sample ID: <b>2111159-21A SD</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>SD</b>	Run ID: <b>ICP-MS4_211124D</b>	Analysis Date: <b>11/24/2021 3:12:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron 0.318 0.150 0 0.290 9.33 20

Sample ID: <b>2111159-21A PDS</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>PDS</b>	Run ID: <b>ICP-MS4_211124D</b>	Analysis Date: <b>11/24/2021 3:32:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron 0.463 0.0300 0.200 0.290 86.7 75 125

Sample ID: <b>2111159-21A MS</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>ICP-MS4_211124D</b>	Analysis Date: <b>11/24/2021 3:34:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron 0.475 0.0300 0.200 0.290 92.8 75 125

Sample ID: <b>2111159-21A MSD</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MSD</b>	Run ID: <b>ICP-MS4_211124D</b>	Analysis Date: <b>11/24/2021 3:36:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron 0.501 0.0300 0.200 0.290 106 75 125 5.25 15

<b>Qualifiers:</b> B Analyte detected in the associated Method Blank J Analyte detected between MDL and RL ND Not Detected at the Method Detection Limit RL Reporting Limit J Analyte detected between SDL and RL	DF Dilution Factor MDL Method Detection Limit R RPD outside accepted control limits S Spike Recovery outside control limits N Parameter not NELAP certified
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**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4\_211124D**

Sample ID: <b>ICV-211124</b>	Batch ID: <b>R118212</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>ICV</b>	Run ID: <b>ICP-MS4_211124D</b>	Analysis Date: <b>11/24/2021 10:08:00 A</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.100	0.0300	0.100	0	100	90	110			
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Sample ID: <b>LCVL-211124</b>	Batch ID: <b>R118212</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCVL</b>	Run ID: <b>ICP-MS4_211124D</b>	Analysis Date: <b>11/24/2021 10:22:00 A</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.0168	0.0300	0.0200	0	83.9	80	120			
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Sample ID: <b>CCV7-211124</b>	Batch ID: <b>R118212</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS4_211124D</b>	Analysis Date: <b>11/24/2021 2:52:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.198	0.0300	0.200	0	98.8	90	110			
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Sample ID: <b>CCV8-211124</b>	Batch ID: <b>R118212</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS4_211124D</b>	Analysis Date: <b>11/24/2021 3:38:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.197	0.0300	0.200	0	98.7	90	110			
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<b>Qualifiers:</b> B Analyte detected in the associated Method Blank J Analyte detected between MDL and RL ND Not Detected at the Method Detection Limit RL Reporting Limit J Analyte detected between SDL and RL	DF Dilution Factor MDL Method Detection Limit R RPD outside accepted control limits S Spike Recovery outside control limits N Parameter not NELAP certified
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**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4\_211129B**

Sample ID: <b>ICV-211129</b>	Batch ID: <b>R118221</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>ICV</b>	Run ID: <b>ICP-MS4_211129B</b>	Analysis Date: <b>11/29/2021 10:42:00 A</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	2.56	0.300	2.50	0	103	90	110
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Sample ID: <b>LCVL-211129</b>	Batch ID: <b>R118221</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCVL</b>	Run ID: <b>ICP-MS4_211129B</b>	Analysis Date: <b>11/29/2021 10:49:00 A</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.105	0.300	0.100	0	105	80	120
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Sample ID: <b>CCV4-211129</b>	Batch ID: <b>R118221</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS4_211129B</b>	Analysis Date: <b>11/29/2021 1:08:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	5.29	0.300	5.00	0	106	90	110
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Sample ID: <b>CCV5-211129</b>	Batch ID: <b>R118221</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS4_211129B</b>	Analysis Date: <b>11/29/2021 2:11:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	5.31	0.300	5.00	0	106	90	110
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<b>Qualifiers:</b>	<p>B Analyte detected in the associated Method Blank</p> <p>J Analyte detected between MDL and RL</p> <p>ND Not Detected at the Method Detection Limit</p> <p>RL Reporting Limit</p> <p>J Analyte detected between SDL and RL</p>	<p>DF Dilution Factor</p> <p>MDL Method Detection Limit</p> <p>R RPD outside accepted control limits</p> <p>S Spike Recovery outside control limits</p> <p>N Parameter not NELAP certified</p>
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**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS5\_211101A**

Sample ID: <b>DCS2-102615</b>	Batch ID: <b>102615</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>DCS2</b>	Run ID: <b>ICP-MS5_211101A</b>	Analysis Date: <b>11/1/2021 10:43:00 AM</b>	Prep Date: <b>10/29/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.314	0.300	0.300	0	105	70	130	0	0	

Sample ID: <b>DCS4-102615</b>	Batch ID: <b>102615</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>
SampType: <b>DCS4</b>	Run ID: <b>ICP-MS5_211101A</b>	Analysis Date: <b>11/1/2021 10:49:00 AM</b>	Prep Date: <b>10/29/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0373	0.0300	0.0300	0	124	70	130	0	0	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 J Analyte detected between MDL and RL  
 ND Not Detected at the Method Detection Limit  
 RL Reporting Limit  
 J Analyte detected between SDL and RL  
 DF Dilution Factor  
 MDL Method Detection Limit  
 R RPD outside accepted control limits  
 S Spike Recovery outside control limits  
 N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS5\_211124B**

The QC data in batch 102952 applies to the following samples: 2111158-01A, 2111158-02A, 2111158-03A, 2111158-04A, 2111158-05A, 2111158-06A, 2111158-07A, 2111158-08A

Sample ID: <b>MB-102952</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MBLK</b>	Run ID: <b>ICP-MS5_211124B</b>	Analysis Date: <b>11/24/2021 2:14:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	<0.100	0.300								

Sample ID: <b>LCS-102952</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCS</b>	Run ID: <b>ICP-MS5_211124B</b>	Analysis Date: <b>11/24/2021 2:17:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.61	0.300	5.00	0	92.2	80	120			

Sample ID: <b>LCSD-102952</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCSD</b>	Run ID: <b>ICP-MS5_211124B</b>	Analysis Date: <b>11/24/2021 2:20:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.50	0.300	5.00	0	90.0	80	120	2.52	15	

Sample ID: <b>2111159-21A SD</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>SD</b>	Run ID: <b>ICP-MS5_211124B</b>	Analysis Date: <b>11/24/2021 2:27:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	588	1.50	0	586				0.499	20	

Sample ID: <b>2111159-21A PDS</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>PDS</b>	Run ID: <b>ICP-MS5_211124B</b>	Analysis Date: <b>11/24/2021 2:53:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	561	0.300	5.00	586	-496	75	125			S

Sample ID: <b>2111159-21A MS</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>ICP-MS5_211124B</b>	Analysis Date: <b>11/24/2021 2:56:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	604	0.300	5.00	586	362	75	125			S

Sample ID: <b>2111159-21A MSD</b>	Batch ID: <b>102952</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MSD</b>	Run ID: <b>ICP-MS5_211124B</b>	Analysis Date: <b>11/24/2021 2:58:00 PM</b>	Prep Date: <b>11/23/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	606	0.300	5.00	586	409	75	125	0.393	15	S

**Qualifiers:** B Analyte detected in the associated Method Blank      DF Dilution Factor  
J Analyte detected between MDL and RL      MDL Method Detection Limit  
ND Not Detected at the Method Detection Limit      R RPD outside accepted control limits  
RL Reporting Limit      S Spike Recovery outside control limits  
J Analyte detected between SDL and RL      N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS5\_211124B**

Sample ID: <b>ICV-211124</b>	Batch ID: <b>R118201</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>ICV</b>	Run ID: <b>ICP-MS5_211124B</b>	Analysis Date: <b>11/24/2021 10:12:00 A</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	2.39	0.300	2.50	0	95.5	90	110			
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Sample ID: <b>LCVL-211124</b>	Batch ID: <b>R118201</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCVL</b>	Run ID: <b>ICP-MS5_211124B</b>	Analysis Date: <b>11/24/2021 10:21:00 A</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	0.105	0.300	0.100	0	105	80	120			
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Sample ID: <b>CCV5-211124</b>	Batch ID: <b>R118201</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS5_211124B</b>	Analysis Date: <b>11/24/2021 2:09:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.87	0.300	5.00	0	97.4	90	110			
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Sample ID: <b>CCV6-211124</b>	Batch ID: <b>R118201</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS5_211124B</b>	Analysis Date: <b>11/24/2021 3:01:00 PM</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.93	0.300	5.00	0	98.6	90	110			
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**Qualifiers:**

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder  
 Work Order: 2111158  
 Project: Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5\_211129A

The QC data in batch 102970 applies to the following samples: 2111158-09A

Sample ID: <b>MB-102970</b>	Batch ID: <b>102970</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MBLK</b>	Run ID: <b>ICP-MS5_211129A</b>	Analysis Date: <b>11/29/2021 12:07:00 P</b>	Prep Date: <b>11/24/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								
Calcium	<0.100	0.300								

Sample ID: <b>LCS-102970</b>	Batch ID: <b>102970</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCS</b>	Run ID: <b>ICP-MS5_211129A</b>	Analysis Date: <b>11/29/2021 12:10:00 P</b>	Prep Date: <b>11/24/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.178	0.0300	0.200	0	88.8	80	120			
Calcium	4.85	0.300	5.00	0	97.0	80	120			

Sample ID: <b>LCSD-102970</b>	Batch ID: <b>102970</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCSD</b>	Run ID: <b>ICP-MS5_211129A</b>	Analysis Date: <b>11/29/2021 12:13:00 P</b>	Prep Date: <b>11/24/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.184	0.0300	0.200	0	92.0	80	120	3.51	15	
Calcium	4.79	0.300	5.00	0	95.8	80	120	1.26	15	

Sample ID: <b>2111168-22C SD</b>	Batch ID: <b>102970</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>SD</b>	Run ID: <b>ICP-MS5_211129A</b>	Analysis Date: <b>11/29/2021 12:20:00 P</b>	Prep Date: <b>11/24/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0500	0.150	0	0				0	20	
Calcium	<0.500	1.50	0	0				0	20	

Sample ID: <b>2111168-22C PDS</b>	Batch ID: <b>102970</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>PDS</b>	Run ID: <b>ICP-MS5_211129A</b>	Analysis Date: <b>11/29/2021 12:46:00 P</b>	Prep Date: <b>11/24/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.7	75	125			
Calcium	4.72	0.300	5.00	0	94.4	75	125			

Sample ID: <b>2111168-22C MS</b>	Batch ID: <b>102970</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MS</b>	Run ID: <b>ICP-MS5_211129A</b>	Analysis Date: <b>11/29/2021 12:49:00 P</b>	Prep Date: <b>11/24/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.191	0.0300	0.200	0	95.6	75	125			
Calcium	4.82	0.300	5.00	0	96.5	75	125			

<b>Qualifiers:</b> B Analyte detected in the associated Method Blank J Analyte detected between MDL and RL ND Not Detected at the Method Detection Limit RL Reporting Limit J Analyte detected between SDL and RL	DF Dilution Factor MDL Method Detection Limit R RPD outside accepted control limits S Spike Recovery outside control limits N Parameter not NELAP certified
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**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID:** ICP-MS5\_211129A

Sample ID: <b>2111168-22C MSD</b>	Batch ID: <b>102970</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>MSD</b>	Run ID: <b>ICP-MS5_211129A</b>	Analysis Date: <b>11/29/2021 12:52:00 P</b>	Prep Date: <b>11/24/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.192	0.0300	0.200	0	95.8	75	125	0.188	15	
Calcium	4.82	0.300	5.00	0	96.4	75	125	0.026	15	

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**Qualifiers:**

B Analyte detected in the associated Method Blank	DF Dilution Factor
J Analyte detected between MDL and RL	MDL Method Detection Limit
ND Not Detected at the Method Detection Limit	R RPD outside accepted control limits
RL Reporting Limit	S Spike Recovery outside control limits
J Analyte detected between SDL and RL	N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS5\_211129A**

Sample ID: <b>ICV-211129</b>	Batch ID: <b>R118218</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>ICV</b>	Run ID: <b>ICP-MS5_211129A</b>	Analysis Date: <b>11/29/2021 11:54:00 A</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0979	0.0300	0.100	0	97.9	90	110			
Calcium	2.39	0.300	2.50	0	95.7	90	110			

Sample ID: <b>LCVL-211129</b>	Batch ID: <b>R118218</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>LCVL</b>	Run ID: <b>ICP-MS5_211129A</b>	Analysis Date: <b>11/29/2021 11:59:00 A</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0227	0.0300	0.0200	0	113	80	120			
Calcium	0.0947	0.300	0.100	0	94.7	80	120			

Sample ID: <b>CCV1-211129</b>	Batch ID: <b>R118218</b>	TestNo: <b>SW6020B</b>	Units: <b>mg/L</b>							
SampType: <b>CCV</b>	Run ID: <b>ICP-MS5_211129A</b>	Analysis Date: <b>11/29/2021 12:54:00 P</b>	Prep Date:							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.200	0.0300	0.200	0	100	90	110			
Calcium	5.01	0.300	5.00	0	100	90	110			

<p><b>Qualifiers:</b></p> <p>B Analyte detected in the associated Method Blank</p> <p>J Analyte detected between MDL and RL</p> <p>ND Not Detected at the Method Detection Limit</p> <p>RL Reporting Limit</p> <p>J Analyte detected between SDL and RL</p>	<p>DF Dilution Factor</p> <p>MDL Method Detection Limit</p> <p>R RPD outside accepted control limits</p> <p>S Spike Recovery outside control limits</p> <p>N Parameter not NELAP certified</p>
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**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_210928A**

Sample ID: <b>DCS2-102216</b>	Batch ID: <b>102216</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>DCS2</b>	Run ID: <b>IC2_210928A</b>	Analysis Date: <b>9/28/2021 1:38:01 PM</b>	Prep Date: <b>9/28/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.533	1.00	0.5000	0	107	70	130	0	0	
Fluoride	0.179	0.400	0.2000	0	89.5	70	130	0	0	
Sulfate	1.55	3.00	1.500	0	104	70	130	0	0	

**Qualifiers:** B Analyte detected in the associated Method Blank      DF Dilution Factor  
                   J Analyte detected between MDL and RL                    MDL Method Detection Limit  
                   ND Not Detected at the Method Detection Limit            R RPD outside accepted control limits  
                   RL Reporting Limit    S Spike Recovery outside control limits  
                   J Analyte detected between SDL and RL                        N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_211123A**

The QC data in batch 102961 applies to the following samples: 2111158-01B, 2111158-02B, 2111158-03B, 2111158-04B, 2111158-05B, 2111158-06B, 2111158-07B, 2111158-08B, 2111158-09B

Sample ID: <b>MB-102961</b>	Batch ID: <b>102961</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>MBLK</b>	Run ID: <b>IC2_211123A</b>	Analysis Date: <b>11/23/2021 3:35:17 PM</b>	Prep Date: <b>11/23/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: <b>LCS-102961</b>	Batch ID: <b>102961</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>LCS</b>	Run ID: <b>IC2_211123A</b>	Analysis Date: <b>11/23/2021 3:52:17 PM</b>	Prep Date: <b>11/23/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.03	0.400	4.000	0	101	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

Sample ID: <b>LCSD-102961</b>	Batch ID: <b>102961</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>LCSD</b>	Run ID: <b>IC2_211123A</b>	Analysis Date: <b>11/23/2021 4:09:17 PM</b>	Prep Date: <b>11/23/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.348	20	
Fluoride	4.01	0.400	4.000	0	100	90	110	0.435	20	
Sulfate	30.0	3.00	30.00	0	100	90	110	0.474	20	

Sample ID: <b>2111158-02BMS</b>	Batch ID: <b>102961</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>MS</b>	Run ID: <b>IC2_211123A</b>	Analysis Date: <b>11/23/2021 6:00:31 PM</b>	Prep Date: <b>11/23/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2020	100	2000	104.3	96.0	90	110			
Fluoride	1960	40.0	2000	0	97.8	90	110			
Sulfate	3580	300	2000	1758	91.2	90	110			

Sample ID: <b>2111158-02BMSD</b>	Batch ID: <b>102961</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>MSD</b>	Run ID: <b>IC2_211123A</b>	Analysis Date: <b>11/23/2021 6:17:31 PM</b>	Prep Date: <b>11/23/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2050	100	2000	104.3	97.1	90	110	1.05	20	
Fluoride	1980	40.0	2000	0	99.1	90	110	1.27	20	
Sulfate	3620	300	2000	1758	92.8	90	110	0.891	20	

**Qualifiers:**

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_211123A**

Sample ID: <b>2111158-03BMS</b>	Batch ID: <b>102961</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>MS</b>	Run ID: <b>IC2_211123A</b>	Analysis Date: <b>11/23/2021 6:51:31 PM</b>	Prep Date: <b>11/23/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2270	100	2000	296.9	98.8	90	110			
Fluoride	1960	40.0	2000	0	97.9	90	110			
Sulfate	3000	300	2000	1121	93.7	90	110			

Sample ID: <b>2111158-03BMSD</b>	Batch ID: <b>102961</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>MSD</b>	Run ID: <b>IC2_211123A</b>	Analysis Date: <b>11/23/2021 7:08:31 PM</b>	Prep Date: <b>11/23/2021</b>

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2280	100	2000	296.9	99.0	90	110	0.161	20	
Fluoride	1970	40.0	2000	0	98.4	90	110	0.517	20	
Sulfate	3000	300	2000	1121	93.8	90	110	0.074	20	

**Qualifiers:** B Analyte detected in the associated Method Blank      DF Dilution Factor  
 J Analyte detected between MDL and RL                                      MDL Method Detection Limit  
 ND Not Detected at the Method Detection Limit                              R RPD outside accepted control limits  
 RL Reporting Limit    S Spike Recovery outside control limits  
 J Analyte detected between SDL and RL    N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: IC2\_211123A**

Sample ID: <b>ICV-211123</b>	Batch ID: <b>R118166</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>ICV</b>	Run ID: <b>IC2_211123A</b>	Analysis Date: <b>11/23/2021 3:01:17 PM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.1	1.00	25.00	0	104	90	110			
Fluoride	10.2	0.400	10.00	0	102	90	110			
Sulfate	76.3	3.00	75.00	0	102	90	110			

Sample ID: <b>CCV1-211123</b>	Batch ID: <b>R118166</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>IC2_211123A</b>	Analysis Date: <b>11/23/2021 9:58:31 PM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Sample ID: <b>CCV2-211123</b>	Batch ID: <b>R118166</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>IC2_211123A</b>	Analysis Date: <b>11/24/2021 1:56:31 AM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.12	0.400	4.000	0	103	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

Sample ID: <b>CCV3-211123</b>	Batch ID: <b>R118166</b>	TestNo: <b>E300</b>	Units: <b>mg/L</b>
SampType: <b>CCV</b>	Run ID: <b>IC2_211123A</b>	Analysis Date: <b>11/24/2021 5:54:31 AM</b>	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.13	0.400	4.000	0	103	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

**Qualifiers:**

B Analyte detected in the associated Method Blank	DF Dilution Factor
J Analyte detected between MDL and RL	MDL Method Detection Limit
ND Not Detected at the Method Detection Limit	R RPD outside accepted control limits
RL Reporting Limit	S Spike Recovery outside control limits
J Analyte detected between SDL and RL	N Parameter not NELAP certified

**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## ANALYTICAL QC SUMMARY REPORT

**RunID: WC\_211122B**

The QC data in batch 102939 applies to the following samples: 2111158-01B, 2111158-02B, 2111158-03B, 2111158-04B, 2111158-05B, 2111158-06B, 2111158-07B, 2111158-08B, 2111158-09B

Sample ID: <b>MB-102939</b>	Batch ID: <b>102939</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>							
SampType: <b>MBLK</b>	Run ID: <b>WC_211122B</b>	Analysis Date: <b>11/22/2021 4:45:00 PM</b>	Prep Date: <b>11/22/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		<10.0	10.0							

Sample ID: <b>LCS-102939</b>	Batch ID: <b>102939</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>							
SampType: <b>LCS</b>	Run ID: <b>WC_211122B</b>	Analysis Date: <b>11/22/2021 4:45:00 PM</b>	Prep Date: <b>11/22/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		756	10.0	745.6	0	101	90	113		

Sample ID: <b>2111158-01B-DUP</b>	Batch ID: <b>102939</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>							
SampType: <b>DUP</b>	Run ID: <b>WC_211122B</b>	Analysis Date: <b>11/22/2021 4:45:00 PM</b>	Prep Date: <b>11/22/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		2110	50.0	0	2115			0.237	5	

Sample ID: <b>2111158-02B-DUP</b>	Batch ID: <b>102939</b>	TestNo: <b>M2540C</b>	Units: <b>mg/L</b>							
SampType: <b>DUP</b>	Run ID: <b>WC_211122B</b>	Analysis Date: <b>11/22/2021 4:45:00 PM</b>	Prep Date: <b>11/22/2021</b>							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		3060	50.0	0	3040			0.656	5	

<b>Qualifiers:</b>	<p>B Analyte detected in the associated Method Blank</p> <p>J Analyte detected between MDL and RL</p> <p>ND Not Detected at the Method Detection Limit</p> <p>RL Reporting Limit</p> <p>J Analyte detected between SDL and RL</p>	<p>DF Dilution Factor</p> <p>MDL Method Detection Limit</p> <p>R RPD outside accepted control limits</p> <p>S Spike Recovery outside control limits</p> <p>N Parameter not NELAP certified</p>
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**CLIENT:** Golder  
**Work Order:** 2111158  
**Project:** Sandow CCR

## MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	mg/L	mg/L
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	mg/L	mg/L
Boron	0.0100	0.0300
Calcium	0.100	0.300

TestNo: M2540C	MDL	MQL
Analyte	mg/L	mg/L
Total Dissolved Solids (Residue, Filt	10.0	10.0