Natural Soda LLC

2022 Project Status Report
&
Annual Plan of Development
January 2023

Please note CONFIDENTIAL data sections of this document

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Table of Contents

List of Figures

List of Tables (Not including tables in Vegetation Monitoring Report)

1.0 Introduction and Project Summary

This 2022 Project Status Report and Annual Plan of Development is submitted to fulfill the requirements of BLM sodium leases, COC-00118326, COC-00118327, COC-0119986, and COC-37474 as stated in Federal Regulations 43 CFR, Subpart 3591 and 3592 and the Project Record of Decision dated January 20, 1987. This report is also submitted to the Colorado Division of Reclamation Mining and Safety (DRMS) to meet the requirements for an Annual Report per State permit number M-1983-194, and in part to meet the requirements contained in the EPA UIC Class III Area Permits: CO30358-00000 and CO32169-00000.

This report summarizes the Natural Soda LLC (NS) 2022 process operations, production activities, reclamation status, geotechnical and environmental monitoring results, as well as the status of surface facilities and wells. Proposed operations for 2023 will be described in this report, including permitting two new production wells, 18H-1V and 18H-IR-W. In 2023, Plugging and Abandonment (P&A) operations will be undertaken on three production wells 14H-R(I), 15H-I, and 17H-I. NS will also P&A the Rock School Leases seven Groundwater Monitor Wells (GMWs) in 2023. GMWs and water supply wells (WSWs) will be maintained in 2023.

2.0 Description of Project Area

2.1 Location and Regional Setting

The four NS federal sodium leases are located in the Piceance Creek Basin in Rio Blanco County in northwestern Colorado (Figure 1 and Figure 2). The sodium leases are located primarily between the Yellow Creek and Piceance Creek drainages, approximately 41 miles from Meeker, Colorado and 53 miles from Rifle, Colorado. The climate is semi-arid with annual precipitation averaging 12-14 inches. Precipitation generally occurs as snow from November to March and as rain during the remainder of the year. The vegetation is predominantly pinyon pine, sagebrush, Utah juniper, western wheatgrass, and needle-and-thread grass. The total area contained within the four sodium leases is 8,379 acres more or less. The principal area of current of operations are located in and around Section 26, T1S, R98W, 6th Principal Meridian. Figure 1 shows the NS leases and regional setting. Figure 2 shows sodium leases within the Piceance Creek Basin. Figure 3 and Figure 4 show the NS well locations and proposed well locations.

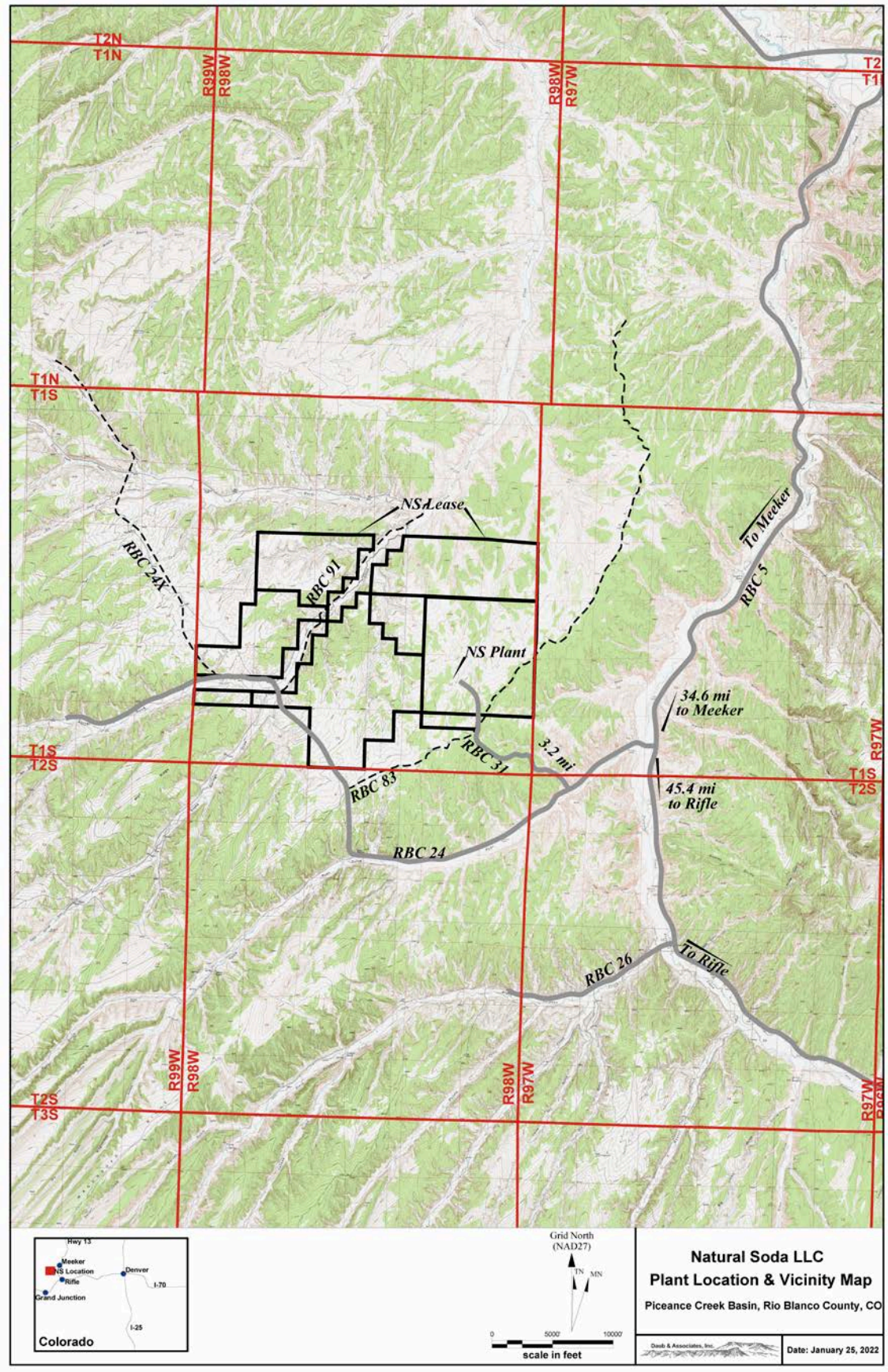


Figure 1: Natural Soda LLC Vicinity Map

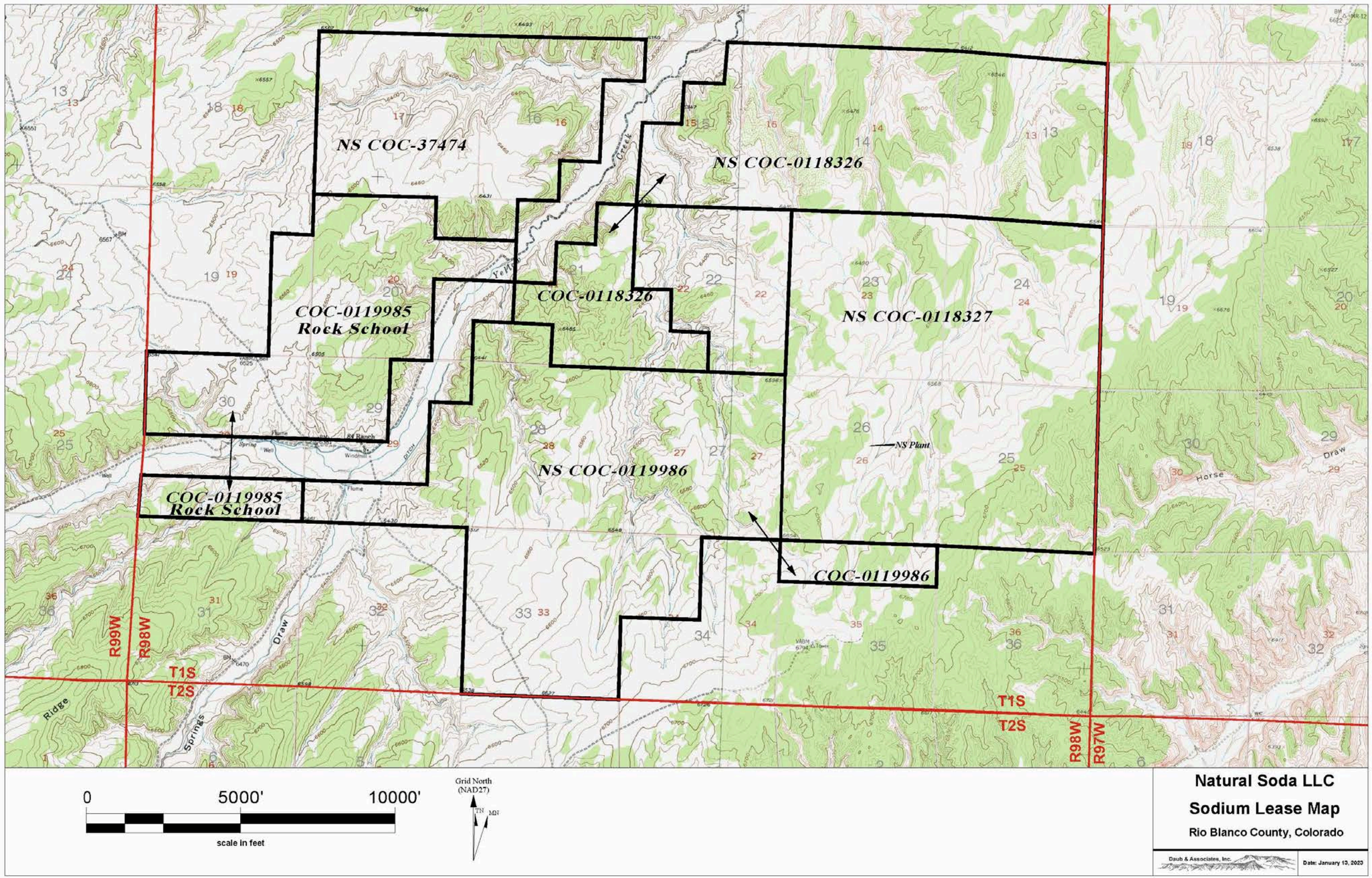


Figure 2: NS Sodium Leases Map

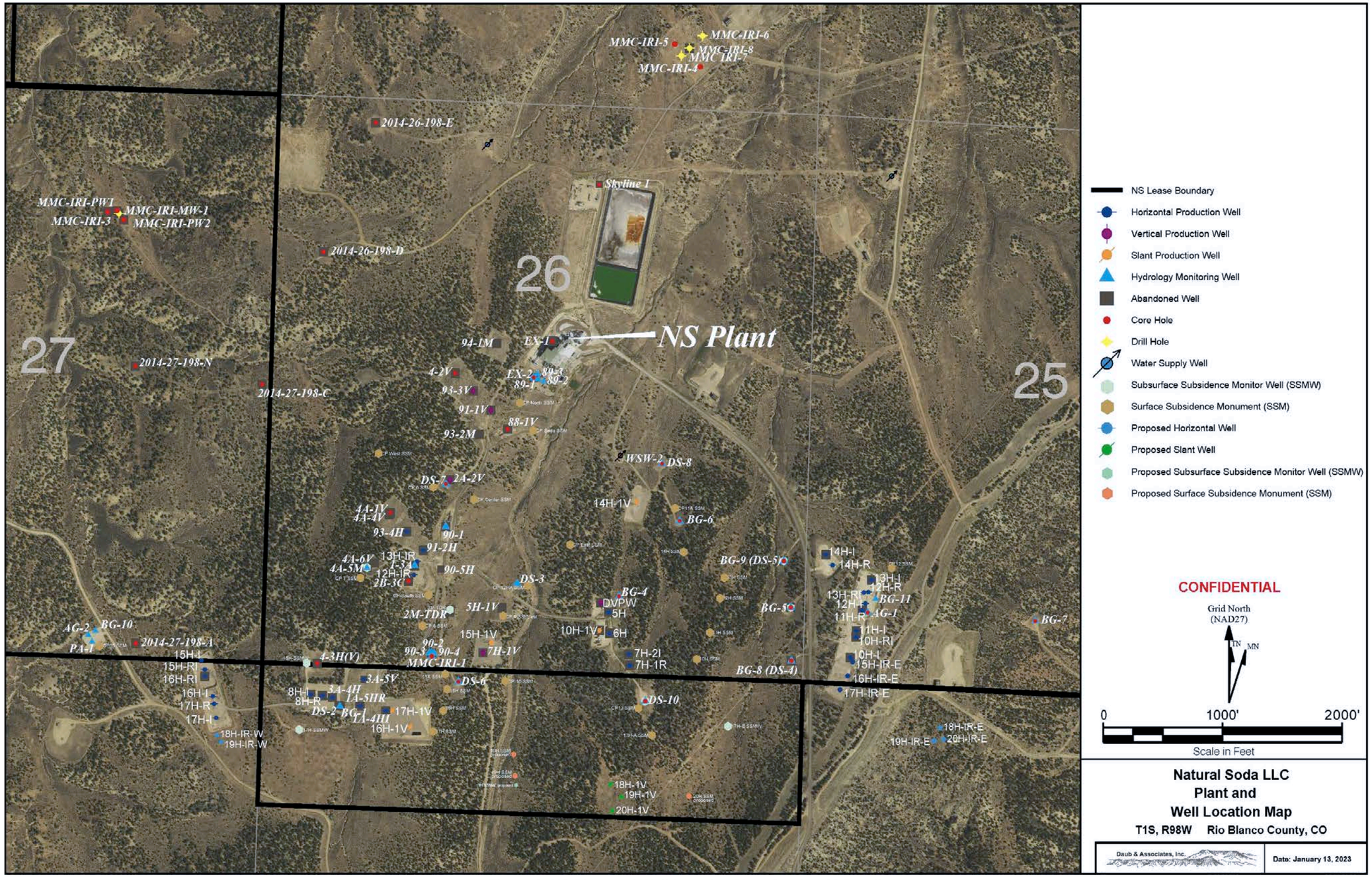


Figure 3: NS Plant and Well Location Map, Section 26 Detail.

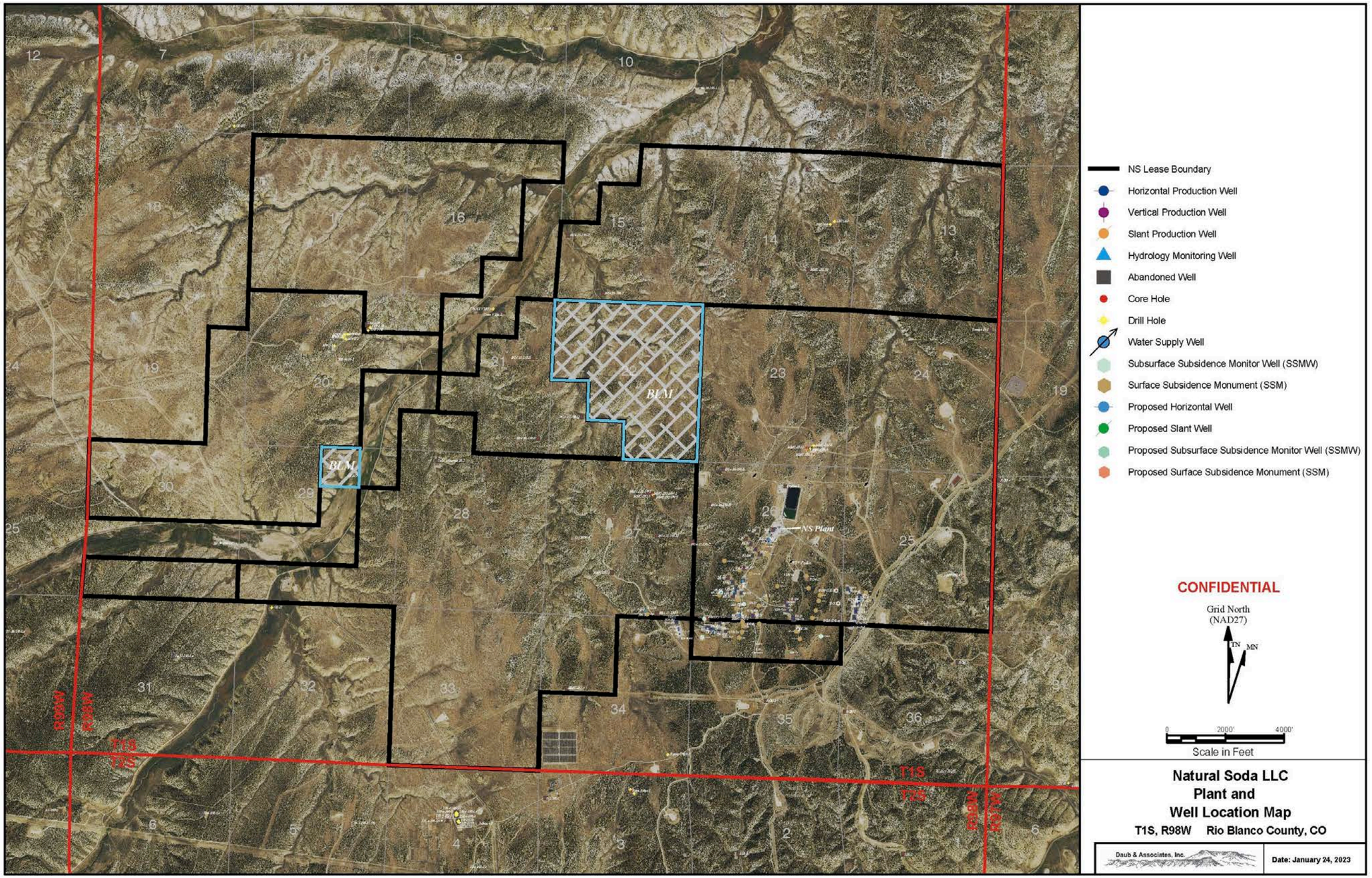


Figure 4: NS Plant and Well Location Map, Expanded View.

2.2 Leasehold Status

The original four sodium leases were renewed by the BLM in 2021 for a period of ten years. Annual rental and royalty payments have been submitted to the Mineral Management Service. The NS leases comprise approximately 8,379 acres. NS plans to renew the leases again in 2031 for an additional period of ten years.

3.0 Project Status

3.1 2022 Project Activities (Confidential)

(See Figure 3 & Figure 4: Plant and Well Location Maps)

In 2022 NS produced 253,476 tons of sodium bicarbonate. This product was produced from the 12H, 13H, 14H, 15H, 16H, and 17H mining intervals. Routine boil outs were performed in 2022. NS undertook a capital project (August 8th through 24th) to replace the original #4 crystallizer in Train #1 with a new stainless steel crystallizer. NS plans to continue to work on replacing other tanks with stainless steel over the next few years. NS also permitted with Rio Blanco County (RBC) for the installation of a new cyclone separator in Train #2. Various short shutdowns were required for routine maintenance, equipment repair and/or replacement throughout the year.

3.1.1 Items of Significance (Confidential)

- NS drilled and completed two new production wells to extend the 17H mining interval during the summer of 2022. The 17H-1V slant production well was drilled to intersect the existing 17H-I & R mining interval. The 17H-IR-E production well was drilled to the east of the existing 17H-I & R production wells intersecting the 17H mining interval near the end of the 17H-I production liner. The new wells started production operations in 2022.
- NS completed a successful pullback operation on the 12H-IR (Inj/Rec) production well on May 11, 2022. A Cast Iron Bridge Plug (CIBP) was set inside the 7.0-inch production liner at a depth of 2,642.0 feet MD GL. The 7.0-inch liner was subsequently perforated from 2,567 to 2,599 feet MD GL. This pullback operation moved the injection/recovery point back approximately 809.7 linear feet from the end of the 7.0-inch liner (at 3,376.7 feet MD GL) to 2,567.0 feet MD GL, increasing the production interval between the 12H-I and the 12H-IR by approximately 29%.
- NS drilled a new subsurface subsidence monitor well, 17H-E SSMW, on a new pad location during the fall of 2022 per EPA request. The 17H-E SSMW is sited above the east portion of the 17H mining interval and will be used to monitor potential subsurface subsidence near the current 17H-IR-E to 17H-1V and future 18H-IR-E to 18H-1V mining intervals (yet to be drilled).

- Plug & Abandonment (P&A) operations occurred during 2022 to reduce redundancy and remove older wells from the NS ground water monitoring program and included the 90-1, BG-1, and the DS-2 wells.
- The 14H mining interval was retired from operations in August 2022. The 14H-1V was converted to a SSMW by placing a CIBP at a depth of 1945 feet MD GL.
- The 4A-5M TDR and 3M-TDR subsurface subsidence monitoring wells were P&A'd during the 2nd and 4th quarters of 2022, respectively, after meeting the EPA SSMW monitoring requirements for their respective mining intervals.
- The DVPW-1 experimental production well and the 16H-R(I) production well were P&A'd in 2022.

3.1.2 Mining Interval Bicarbonate Production (Confidential)

Table 1 Mining Interval Annual and Lifetime Production (Confidential)

Tons Mined in 2022	Mining Interval 12H	Mining Interval 13H	Mining Interval 14H	Mining Interval 15H	Mining Interval 16H	Mining Interval 17H	Mining Interval DVPW-1
	41,930	15,838	35,766	63,207	71,389	25,347	0
Total Tons Mined as of Dec 31, 2022	320,470	245,294	355,462	340,480	265,437	153,373	1,349

3.1.3 2022 Monthly Bicarbonate Summary (Confidential)

Table 2: Monthly Production, Sales, and Inventory Summary in Tons (Confidential)

Month	Beginning Inventory	Production	Sales	Ending Inventory
January	**5,910**	**22,108**	**22,460**	**5,557**
February	**5,557**	**19,704**	**19,159**	**6,101**
March	**6,101**	**21,204**	**21,515**	**5,823**
April	**5,823**	**21,593**	**21,431**	**5,984**
May	**5,984**	**21,197**	**21,970**	**5,212**
June	**5,212**	**21,052**	**23,002**	**3,282**
July	**3,282**	**23,347**	**22,149**	**4,480**
August	**4,480**	**17,023**	**19,030**	**2,473**
September	**2,473**	**21,336**	**21,543**	**2,363**
October	**2,363**	**20,608**	**20,090**	**2,881**
November	**2,881**	**21,741**	**21,998**	**2,625**
December	**2,625**	**22,564**	**19,724**	**5,574**
TOTALS		**253,476**	**254,072**	

3.1.4 Regulatory Review (Confidential)

NS submitted routine Sundry Notices, monthly, quarterly, and annual reports to the appropriate agencies. The following summarizes other regulatory related activities:

Bureau of Land Management (BLM)

- NS submitted an updated Sampling and Analysis Plan (SAP) to the BLM January 13, 2022 that included changes generated from the DRMS 2021 TR-47. These updates added groundwater sampling and monitoring components for NS's newly constructed PA-1, AG-2, and BG-10 upgradient groundwater monitoring wells (GMWs) and changes from the current monitoring program.
- NS submitted an updated Environmental Monitoring Plan (EMP) to the BLM January 21, 2022. Revisions to the EMP include updates to reclamation monitoring protocols, the removal of the 3M-TDR subsurface subsidence monitoring well, and general figure and text updates.
- On January 10, 2022 NS filed for the replacement surety bond #SUR0070608 for $354,000. BLM accepted this replacement surety bond and released the original bond #2325001 for the same amount.
- NS filed a Notice of Intent (NOI) on March 8th for the plugging and abandonment of the 16H-R(I) production well, 90-1 GMW, BG-1 GMW, and the DS-2 GMW to be completed during the summer of 2022.
- NS filed a NOI on March 18th for the P&A of the DVPW-1 production well, the EPA was cc'd on this NOI, and the P&A operations were completed in summer of 2022.
- On March 22nd a pinhole leak was discovered on the east barren line near the 15H-IR-E well pad. A temporary patch was applied at the time and the leaking fitting was replaced on March 28th. NS reported the undesirable event to the BLM as required.
- BLM renewed the NS Right-of-way grant #COC-40613 on May 24, 2022.
- NS submitted a NOI to the BLM on August 15, 2022 for the drilling and completion of the 17H-E SSMW well required by the EPA. Required documents were submitted, the DRMS and EPA were cc'd on this submittal.
- APD documents for the 17H-E SSMW were sent to the BLM on August 25, 2022.
- Required 17H-IR-E and 17H-1V production well drilling and completion documents were submitted to the BLM on September 14, 2022.
- NS submitted P&A completion documentation for 90-1 GMW, BG-1 GMW, and DS-2 GMW on October 6th. The DRMS and EPA were cc'd on this P&A reporting.

- During October 2022, NS sent a Well Sundry Notice to the BLM for the proposed P&A operation of the retired 3M-TDR SSMW. The well was no longer needed as the mining intervals it monitored for subsurface subsidence had been retired for more than 3 years per EPA requirements. The DRMS and EPA were cc'd on this P&A submittal.
- BLM APD documents for the permitting of the proposed 18H-1V and 18H-IR-W production wells were submitted on November 21st, 2022.
- NS submitted BLM survey documentation for the addition of proposed pipelines to service the proposed 18H-IR-W and 18H-1V production wells on December 21st.

United States Environmental Protection Agency (EPA)

- NS notified the EPA on March 18th of the proposed P&A of the 16H-R(I) (EPA# CO30358-11924) production well during the summer of 2022.
- In April of 2022 the EPA approved the replacement of surety Bond #2325000 by NS, the replacement surety bond #SUR0070607 was submitted to the EPA in March 2022.
- NS sent the EPA an application to add the 17H-R (to be renamed 17H-R(I)) to the EPA UIC Area Permit CO30358-0000 as an Injection well on May 23rd. The 17H-R was originally drilled and completed in 2018. Required documentation was sent to the EPA for review. On May 19, 2022 NS conducted EPA mandated MIT Part 1 pressure testing which demonstrated good internal mechanical integrity of the 17H-R(I) production well. The MIT Part 1 testing completed the requirements for the EPA Authorization to Inject (ATI). The EPA approved the NS well name change and authorization to inject on June 16, 2022. The 17H-R(I) was assigned UIC #CO30358-12475. The BLM was cc'd on 17H-R(I) EPA submittals.
- EPA inspectors Nathan Wiser and Gary Wang performed and onsite inspection of NS operations on July 14th, the primary objective was to inspect the 14 EPA permitted Injection wells owned and operated by NS. No problems or violations were reported by the EPA.
- Following the completion of drilling operations for the 17H-IR-E well, NS submitted a request to the EPA for injection approval on July 28th. The BLM was cc'd on this correspondence.
- NS notified the EPA on August 18th, 2022 of the completed installation of the required Surface Subsidence Monument (SSM) over the newly drilled 17H-IR-E horizontal wellbore named 17HA SSM. In addition, NS also installed two new SSM's CP14 and CP15 located south and northwest respectively of the 17H mining interval. The BLM was cc'd on this correspondence.
- September 28th, NS provided notice to the EPA that the 3M-TDR and 4A-5M TDR SSMWs were to be decommissioned and abandoned because the associated mining intervals had been previously retired and were beyond the required 3 years of monitoring. The wells have been P&A'd and their respective locations are undergoing reclamation. The BLM was cc'd on this submittal.

- NS completed the P&A of the 16H-R(I) (EPA #CO30358-11924) and DVPW-1 (EPA #CO32169-08754) and submitted all required EPA documents on October 6, 2022.
- NS collected subsurface subsidence logs in the 14H-1V well on September 23, 2022. The 14H mining interval was retired on August 11, 2022. The 14H-1V well replaces the BG-9 (DS-5) SSMW which was plugged and abandoned. No indication of subsurface subsidence was identified in the 14H-1V CCL/GR log comparison. Required documentation was sent to the EPA on October 18th with the BLM cc'd.
- NS submitted an application to add the proposed 18H-IR-W production well to NS EPA UIC Area Permit #CO30358-0000 on November 7th. The BLM was cc'd on this submittal.
- NS conducted final SSMW logging in the experimental DVPW-1 production well on September 18, 2022. The DVPW-1 mining interval has been retired after a very limited solution mining production of 1,341 tons and was P&A'd on September 30, 2022. Baseline DVPW-1 SSMW CCL/GR logging occurred on Monday, December 5, 2011. Final SSMW CCL/GR logs were compared to the baseline SSMW logs; the comparison indicated no subsurface subsidence. NS submitted required documentation to the EPA on December 9, 2022, and cc'd the BLM on this submittal.
- NS conducted routine, EPA mandated, MIT Part 1 pressure testing and/or Part 2 temperature logging in the following injection wells on the indicated dates, no anomalies were detected during any testing or logging and NS submitted required documentation to the EPA. The BLM was cc'd on the EPA MIT reporting.
    - 12H-I MIT P1 (10-Year) February 10, 2022
    - 16H-I MIT P1 (5-Year) May 13, 2022
    - 16H-I MIT P2 (5-Year) May 5 - 9, 2022
    - 17H-R(I) MIT P1 (Initial) May 19, 2022
    - 17H-R(I) MIT P2 (Initial) September 19, 2022
    - 17H-IR-E MIT P1 (Initial) July 14, 2022

Colorado Division of Reclamation, Mining and Safety (DRMS)

- NS submitted required annual fees and reports for DRMS Permits M 1983-194 and M-1999-051 in January 2022.
- During January 2022, NS updated legal documents relating to the DRMS Financial Warranty and Performance Warranty for bonding both the NS and Rock School Leases.
- On January 25, 2022 DRMS approved a Technical Revision (TR-48) to drill the 17H-1V SSMW well on the existing 16-17H-1V location. This well was not drilled, and there are no plans to do so in the future.
- DRMS conducted an onsite inspection on March 17, 2022. DRMS observed wells (pad areas) that were scheduled to be drilled or abandoned summer 2022. No problems or violations were noted during this inspection.
- June 17, 2022, DRMS conducted an onsite inspection and observed the 17H-1V and 17H-IR-E production well and man camp locations, DRMS also reviewed NS's upcoming GMW and production well P&A program and plans for the August installation of a stainless steel crystallizer tank. No problems or violations were noted during this inspection.
- DRMS conducted an onsite inspection on September 20, 2022 to observe the TR-49 17H-E SSMW revised pad location and the status of reclaimed pads and associated roads that were undergoing final reclamation. DRMS noted that the MMC-IRI-2, R, P, Q, E, D, and 94-1M locations were successfully revegetated and demonstrated weed control. DRMS recommended a release request should be submitted under a separate TR request for this acreage recognition. No problems or violations were noted during the inspection.
- On September 22, 2022 DRMS approved TR-49 which allowed the 17H-E SSMW to be drilled and completed on a new pad.
- October 2022 the DRMS increased bonding for NS operations from $3.9 million to $4.4 million. NS submitted documents to comply with the DRMS bond increase.
- On November 3rd NS submitted a Memorandum of Understanding (MoU) to DRMS regarding updates to disturbed acreage and P&A wells. The MoU outlined that DRMS had inspected and recognizes that 5.483 acres from the reclamation of pads and roads for MMC-IRI-2, R, P, Q, E, D, and 94-1M location had been successfully reclaimed per DRMS requirements. NS will no longer be required to actively maintain these areas, and the acreage can be deducted from the total disturbance of the NS lease. NS also notified DRMS of the completion of P&A activities for the 90-1, BG-1, DS-2, DVPW-1(A&B), 16H-R(I) and the 3M-TDR and requested DRMS recalculate the CIRCES.

- On December 9th DRMS conducted the 4th quarter onsite inspection of the NS operation. This site visit was to observe the well locations, the P&A operations conducted over the summer/fall 2022, and look at reclamation required in the spring of 2023 for these locations. DRMS also visited the locations for the proposed future 18H-IR-W & 18H-1V production wells. No problems or violations were noted during this inspection.

Colorado Division of Water Resources (DWR)

- A senior water right holder placed a call on the White River effective December 1, 2022. NS initiated its augmentation plan (88CW420) on December 19th and began releasing water from the WSW-3 and WSW-4 to meet obligations for White River surface runoff requirements. NS will continue to release 0.74 acre ft (242,000 gallons) per month until the water rights call is released.
- NS notified DWR of the P&A completion for the 90-1 A-Groove Monitoring well on October 24, 2022. The 90-1 was the only GMW P&A'd in 2022 permitted with DWR.

Colorado Department of Public Health & Environment (CDPHE)

- NS has been an active part of the Industry Group during the CDPHE rulemaking process for GEMM Phase 2 during 2022. This is a Green House Gas emissions reduction based rule making group.
- On July 1, 2022, NS received a letter from the CDPHE informing NS that the annual storm water report had not been submitted for 2021. NS submitted the report within a week of receiving the notice.
- In 2022, NS complied with reporting requirements for CDPHE storm water and environmental emissions.

Rio Blanco County (RBC)

- RBC did not require amendments to the existing Special Use Permit (SUP) 12-04 for the 2022 P&A operations.
- A RBC building permit for the Train 2 Cyclone Installation Project was acquired by NS in September 2022.
- NS submitted required documentation to RBC in April of 2022 to amend the NS SUP #12-04 to include the drilling of the 17H-IR-E and 17H-1V production wells. RBC approved the amendment the same month as submitted.
- A Temporary Living Quarters (TLQ) permit was applied for by NS on June 2, 2022 for the man camp needed to house personnel required to drill the 17H-IR-E and 17H-1V production wells. Following an onsite inspection by RBC, the TLQ was approved on June 10th, 2022.
- NS submitted a Special Use/Building Permit (SUBP) to the RBC for drilling of the 17H-E SSMW October 20, 2022.

3.2 Proposed 2023 Activities and Schedule (Confidential)

3.2.1 Processing (Confidential)

NS anticipates sodium bicarbonate production of approximately 250,000 tons in 2023. Additionally, brief shut-downs for periodic boil-outs and routine maintenance activities will occur.

3.2.2 Well field (Confidential)

- NS will continue the permitting process for two new production wells during 2023. Specifically, the 18H-1V slant production well is proposed to be drilled as the first well of the 18H mining interval and the proposed 18H-IR-W production well will be drilled west of 18H-1V, with the goal of intersecting the 18H-1V well, forming the western portion of the new 18H mining interval.
- NS permitting of new pipelines to the new proposed 18H-1V and 18H-IR-W wells will continue in 2023.
- NS plans to P&A the production wells 14H-R(I), 15H-I and 17H-I during the spring/summer of 2023. The last injection into these wells was August 11th, July 12th and June 30th of 2022, respectively.
- The Rock School (RS) lease consists of 1,320.1 acres, permitted with the DRMS under permit # M-1999-051. In 2023 NS plans to P&A the 7 wells within the RS lease and interim reclaim the associated well pads. The RS lease wells are as follows; MWD-1 (1,731 ft. MD), MWU-2 (2,687 ft. MD), MWD-2 (1,703 ft. MD), MWA-2 (1,200 ft. MD), MWB-2 (1,398 ft. MD), AmerAlia RS-96-20-1 (1,717 ft. MD) and the AM-2 (88 ft. MD).

3.2.3 EPA Notification – Schedule of Planned Mechanical Integrity Test (MIT) (Confidential)

- Per EPA UIC Permit C030358-00000 requirements, the following routine injection well (initial, 5-year, or 10-year) MIT Part 1 pressure testing and MIT Part 2 temperature logging is planned for 2023 or the first quarter of 2024.
    - 12H-IR (5-year): MIT P1 and P2 testing/logging is planned to occur in 2023.
    - 12H-I (10-Year): MIT P1 is planned to occur during the third or fourth quarter of 2023.
    - 13H-RI (5-year): MIT P1 and P2 testing/logging is planned to occur during the first and second quarters of 2024.
    - If the 18H-IR-W is drilled and completed MIT P1 will be conducted, as appropriate, during well construction in 2023.
    - If the 18H-IR-W is drilled and completed: MIT P2 baseline temp log will be run, as appropriate, during well construction, MIT P2 initial logs are required 60-90 days post EPA ATI.

3.2.4 EPA Notification – Schedule of Planned SSM Survey (Confidential)

- NS will collect biennial surface subsidence monument surveys in 2023, in accordance with UIC Permit C030358-00000 requirements.

3.2.5 EPA Notification – Schedule of Planned SSMW Logging (GR/CCL) (Confidential)

- Per EPA UIC Permit C030358-00000 requirements; routine subsurface subsidence monitor well (SSMW) logging (GR/CCL) is planned for 2023 or the first quarter of 2024:

4.0 2022 Project Activities

4.1 On-Site Facilities and Process Description

4.1.1 General Arrangement

Figure 5 provides an overview of the NS process flow.

4.1.2 Lab Operation / Sanitation / ISO

In 2022, activities continued in the NS laboratory to provide analysis for process control, quality assurance, and regulatory requirements.

- Plant operators performed process control analyses.
- Chloride levels were monitored by both operations and laboratory personnel on USP grades to ensure USP standards were met.
- The USP test for insoluble materials was conducted on a per lot basis by laboratory personnel and a filter test for insoluble materials was conducted on the dry product once per shift by NS operators.
- Pests were controlled with the use of two UV bug lights and rodent traps around the interior and exterior walls of the plant. Bait stations replaced external traps at the Rifle warehouse.
- GMP/ISO/Sanitation training was provided for employees as required.
- A food safety audit for FSSC 22000 was conducted for which NS maintained GFSI certification.
- CDPHE, NSF, OMRI, Kosher, Halal, Non-GMO, CleanGredients and ISO 9001 certifications were properly maintained.

4.1.3 Process, Utilities, Facilities

- NS undertook a capital project (August 8th through 24th) to replace the original #4 crystallizer in Train #1 with a new stainless steel crystallizer. NS plans to continue to work on replacing other tanks with stainless steel over the next few years. NS also permitted for the installation of a new cyclone separator in Train #2.

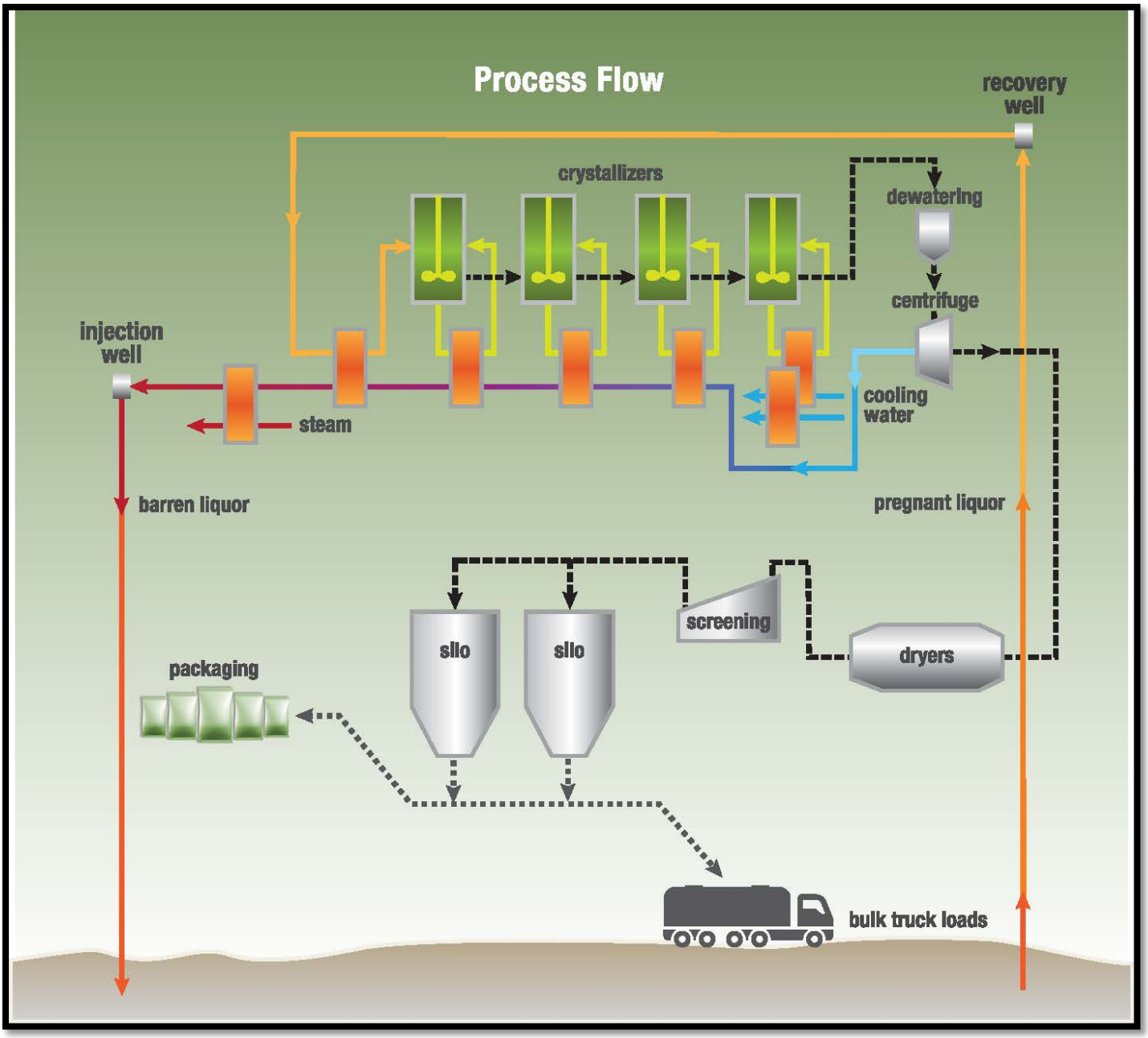


Figure 5: General Flow Process

4.1.4 Wells Associated with the NS Project (Confidential)

The following well-field related activities occurred in 2022: Refer *Figure 3 & Figure 4 Plant and Well Location Map.*

- On April 27th and April 28th Daub geologists removed the nitrogen lift pumps from the 90-1, DS-3, DS-6 and DS-7. The DS wells will be sampled annually via wireline truck to remain in compliance with NS's groundwater sampling program. The 90-1 was P&A'd in 2022.
- On April 26th Red Rock Well Service (RRWS) pulled the 12H-IR pump from the well. On April 30th RRWS lost 3 joints of tubing downhole, between the approximate depths of 2,942-3,040 feet MD GL. Fishing recovery attempts were unsuccessful and operations were put on hold. Following unsuccessful fishing attempts in the 12H-IR in April, a pullback operation was planned and completed on May 11th. A cast iron bridge plug with Viton seals was set at a depth of 2,642 feet MD GL. The 7.0-inch OD production casing was then perforated with 180 perforations (6 spf, 60-degree phasing, 0.58" diameter perforations). Following the pullback operations, production well 12H-IR has operated with no issues.
- The conductor holes for the 17H-1V and 17H-IR-E production wells were drilled, cased, and cemented on June 1st and June 2nd respectively.
- A Capstar drilling rig was mobilized to the 17H-1V location on June 18th and drilling operations began on the 17H-1V slant production well on June 20th at 18:00 hours. Intermediate casing was installed and cemented on June 26th. Drilling concluded in the 17H-1V slant recovery well on July 2nd and the liner and hanger were installed on July 13th. The new 17H-1V slant recovery well was brought online on August 17th.
- On July 2nd the Capstar drilling rig was mobilized to the 17H-IR-E location. The intermediate hole was spudded on July 4th and the well was completed on July 18th. Injection began in the 17H-IR-E production well on October 26th.
- The 14H mining interval was retired August 11, 2022. SSMW CCL/GR logging was performed in the 14H-1V production well on September 23, 2022 and a final log will be run in 2025. The 14H-1V well had a bridge plug installed in the liner to transition the well from production to SSMW.
- P&A operations on the 90-1 (A-Groove Aquifer Monitor Well) were conducted between August 10th to August 16th. The casing was cut off below ground level and a final P&A marker was installed in October 2022.
- P&A operations occurred on the DS-2 (DS Aquifer Monitor Well) August 16th through the 23rd. The casing was cut below ground level and a final P&A marker was installed in October 2022.
- P&A operations occurred on the BG-1 (B-Groove Aquifer Monitor Well) from August 31st to September 1st. The casing was cut below ground level and a final P&A marker was installed in October 2022.

- P&A operations occurred on the 16H-R(I) between September 12th through the 20th. The casing was cut below ground level and a final P&A marker was installed in October 2022.
- P&A operations occurred on the DVPW from September 16th through the 22nd. The casing was cut off below ground level and a final P&A marker was installed in October 2022.
- On November 28th, Himes Drilling moved onto the newly constructed 17H-E SSMW location. The new subsurface subsidence monitor well was spudded on November 29th and completed on December 8th. The well serves as a subsurface subsidence monitoring well for the existing eastern 17H mining interval and the future 18H mining interval.
- P&A operations occurred between December 8th and the 21st on the retired 3M-TDR well. The casing was cut off below ground level and a final P&A marker will be installed in the first quarter of 2023.

The current status of wells associated with the NS Project is indicated in Table 3*: List and Status of Wells Associated with NS*.

4.1.5 Other Activities

Continuous water level monitoring of proximal DS aquifer monitor wells, using fluid level indicators (pressure transducers), provided real time data for the management of active production mining interval operations. Throughout the year, injection and recovery rates were adjusted to maintain water levels of these monitoring wells near target zones.

Table 3: List and Status of Wells Associated with NS (CONFIDENTIAL)

Well Name	Initial Well Type	Current Well Status	Section	Town-ship	Range	Latitude (NAD 27)	Longitude (NAD 27)	Initial TD, (MD, ft)	Current TD, (MD, ft)	Comments
3M-TDR	Subsidence Monitoring	P&A'd 2022	26	1S	98W	39.928794934	108.362551397	1820	1820	No Longer Monitoring P&A'd Dec 2022
4A-5M	Hydrology/Subsidence Monitoring	P&A'd 2022	26	1S	98W	39.929813477	108.365383461	1830	0	No Longer Monitoring P&A'd Sept 2022
12H-I	Horizontal-Injection	Horizontal-Production	25	1S	98W	39.929304000	108.348621000	4189.0	4189	TVD TD=~1985'
12H-R	Horizontal-Recovery	Horizontal-Recovery	25	1S	98W	39.929598000	108.348538000	2623.0	2623	TVD TD=~2007'
12H-IR	Horizontal-Production (Inj/Rec)	Horizontal-Production	26	1S	98W	39.929667896	108.363801054	3464.7	3464.7	TVD TD=-1972'
13H-R(I)	Horizontal-Production (Inj/Rec)	Horizontal-Production	25	1S	98W	39.929583170	108.348684400	2549	2549	TVD TD=~2013'
13H-IR	Horizontal-Production (Inj/Rec)	Horizontal-Production	26	1S	98W	39.930014690	108.363712457	3423.7	3423.7	TVD TD=-1964'
14H-R(I)	Horizontal Production (Inj/Rec)	Horizontal-Production	25	1S	98W	39.930265288	108.349763798	2819	2819	TVD TD=~1983'
14H-1V	Slant Production (Rec)	Subsurface Subsidence Monitoring)	26	1S	98W	39.931733549	108.35641781	2095.5	2095.5	
15H-I	Horizontal Injection	Horizontal-Injection	27	1S	98W	39.927281590	108.370834800	5477	5477	TVD TD=~1877'
15H-R(I)	Horizontal Production (Inj/Rec)	Horizontal-Production	34	1S	98W	39.927050806	108.370714984	2698	2698	TVD TD=~1850'
15H-1V	Slant Production (Rec)	Slant Production (Rec)	26	1S	98W	39.92797980	108.36112812	2079.1	2079.1	TVD TD=~1922'
15H-IR-E	Horizontal Production (Inj/Rec)	Horizontal Production	25	1S	98W	39.92778393	108.34898748	4032.4	4032.4	TVD TD=~1960'
15H-SSMW	Subsurface Subsidence Monitoring	Subsurface Subsidence Monitoring	26	1S	98W	39.927297800	108.367304200	1760.5	1760.5	
16H-I	Horizontal Injection	Horizontal-Injection	34	1S	98W	39.926332533	108.371061443	5425	5425	TVD TD=~1910'
16H-R(I)	Horizontal Production (Inj/Rec)	P&A'd 2022	34	1S	98W	39.926848404	108.371348247	2451	2451	P&A'd Sept 2022
16H-1V	Slant Production (Rec)	Slant Production (Rec)	35	1S	98W	39.925742470	108.363769248	2086	2086	TVD TD= ~1945'
16H-IR-E	Horizontal Production (Inj/Rec)	Horizontal Production	25	1S	98W	39.927419470	108.349138051	4025	4011	TVD TD= ~1959'
17H-1V	Slant Production (Rec)	Slant Production (Rec)	35	1S	98W	2376.7	2376.7	2376.7	2376.7	TVD TD= ~1961'
17H-I	Horizontal-Injection	Horizontal-Injection	34	1S	98W	39.925807900	108.370279100	5378.9	5378.9	TVD TD=-1911'
17H-IR-E	Horizontal-Production (Inj/Rec)	Horizontal-Production (Inj/Rec)	36	1S	98W	39.9270577	108.349382	3994.7	3994.7	TVD TD=-1965'
17H-R(I)	Horizontal-Recovery	Horizontal-Recovery	34	1S	98W	39.926171184	108.370365216	2431.7	2431.7	TVD TD=-1872'
17H-E SSMW	Subsurface Subsidence Monitoring	Subsurface Subsidence Monitoring	35	1S	98W	39.92601271	108.3531506	1828	1828	
17H-SSMW	Subsurface Subsidence Monitoring	Subsurface Subsidence Monitoring	35	1S	98W	39.925620961	108.367424479	1731.0	1720.6	
89-1	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.934818008	108.359830288	1989	1570	
89-2	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.934771572	108.359655360	1409	1389	
89-3	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.934959857	108.359876003	400	390	Periodic sampling issues
90-1	Water Supply	P&A'd 2022	26	1S	98W	39.930942569	108.362786046	1451	1451	Converted to A-Grv MW August 2015
WSW-2 (2010-26-198-2C)	Core Hole	Water Supply	26	1S	98W	39.932913043	108.357000636	1964	1402	Cored July 2010
WSW-3	Water Supply	Water Supply	26	1S	98W	39.940837450	108.361799400	1440	1440	Drilled August 2014
WSW-4	Water Supply	Water Supply	26	1S	98W	39.940358200	108.348198508	1437	1437	Drilled August 2014
90-3	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.927659529	108.363196386	1577	1556	
90-4	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.927654857	108.363040763	1392	1371	Cleaned out to TD August 2021
AG-1	Core Hole 2014-25-198-J	Hydrology Monitoring Well	25	1S	98W	39.929116963	108.348465043	2061	1487	Cemented up to groundwater monitoring well level
AG-2	Hydrology Monitoring	Hydrology Monitoring Well	27	1S	98W	39.927814	108.375312	1275	1275	Drilled & Completed August 2021
AM-2	Hydrology Monitoring	Inactive	20	1S	98W	N/A	N/A	90	90	Rock School Well
BG-1	Hydrology Monitoring	P&A'd 2022	35	1S	98W	39.92620970	108.36612260	1911	1552	P&A'd Sept 2022
BG-4	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.929278506	108.356901248	1999.5	1603	

Table 3: List and Status of Wells Associated with NS (continued) (CONFIDENTIAL)

Well Name	Initial Well Type	Current Well Status	Section	Town-ship	Range	Latitude (NAD 27)	Longitude (NAD 27)	Initial TD, (MD, ft)	Current TD, (MD, ft)	Comments
BG-6 (2010-26-198-6C)	Core Hole	Hydrology Subsidence Monitoring Well	26	1S	98W	39.931301816	108.354997679	1978	1577	
BG-7	Core Hole 2014-25-198-K	Hydrology Monitoring Well	25	1S	98W	39.928987896	108.432905289	1967	1593.1	Cemented up to groundwater monitoring well level
BG-10	Hydrology Monitoring	Hydrology Monitoring Well	27	1S	98W	39.927930	108.375072	1461	1461	Drilled & Completed August 2021
BG-11	Hydrology Monitoring	Hydrology Monitoring Well	25	1S	98W	39.929399	108.348929	1685.5	1685.5	Drilled & Completed February 2021
DS-2 (97 DS2)	Hydrology Monitoring	P&A'd 2022	35	1S	98W	39.926217942	108.366158755	1854	1829	P&A'd Sept 2022
DS-3	Hydrology Monitoring	Hydrology Monitoring Well	26	1S	98W	39.929529067	108.360329121	2100	1874.5	Sample pump replaced with NLP in 2018
DVPW-1	Vertical Production	P&A'd 2022	26	1S	98W	39.929100000	108.357500000	2904.6	2904.6	P&A'd Sept 2022
DS-6	Core Hole	Hydrology Monitoring Well	35	1S	98W	39.926942000	108.362195000	2962.6	1870	Cemented up to groundwater monitoring well level
DS-7	Core Hole	Hydrology Subsidence Monitoring Well	26	1S	98W	39.932036903	108.362826421	1980	1875	Cemented up to groundwater monitoring well level
DS-8	Core Hole 2014-26-198-I	Hydrology Monitoring Well	26	1S	98W	39.932738295	108.355594975	2000	1881.7	Cemented up to groundwater monitoring well level
DS-9	Core Hole 2014-25-198-M	Hydrology Monitoring Well	25	1S	98W	39.927447860	108.340064803	1916.5	1842	Cemented up to groundwater monitoring well level
DS-10	Hydrology Subsidence Monitoring Well	Hydrology Subsidence Monitoring Well	35	1S	98W	39.92659671	108.35590409	1995	1925	
MMC-IRI-1	Core Hole	Hydrology Monitoring Well	26	1S	98W	39.927580161	108.363115621	2981	397	Cemented up to groundwater monitoring well level
MMC-IRI-4	Core Hole	Hydrology Monitoring Well	23	1S	98W	39.942950000	108.355333333	3001	1411	Cemented up to groundwater monitoring well level
MMC-IRI-5	Hydrology Monitoring	Hydrology Monitoring Well	23	1S	98W	39.943578031	108.355623039	2983	378	
MMC-IRI-6	Hydrology Monitoring	Hydrology Monitoring Well	23	1S	98W	39.943733333	108.355316667	1878	1394	
MMC-IRI-7	Hydrology Monitoring	Hydrology Monitoring Well	23	1S	98W	39.943516667	108.356033333	1880	1395	
MMC-IRI-11	Core Hole	Hydrology Monitoring Well	25	1S	98W	39.931608050	108.336010982	2963	1550	Cemented up to groundwater monitoring well level
MWA-2	Hydrology Monitoring	Hydrology Monitoring Well	20	1S	98W	39.952825612	108.412403600	1200	1200	Rock School Well
MWB-2	Hydrology Monitoring	Hydrology Monitoring Well	20	1S	98W	39.953067253	108.412206500	1398	1398	Rock School Well
MWD-1	Hydrology Monitoring	Hydrology Monitoring Well	20	1S	98W	39.953094778	108.411828300	1731	1731	Rock School Well
MWD-2	Hydrology Monitoring	Hydrology Monitoring Well	20	1S	98W	39.952635000	108.412036900	1703	1703	Rock School Well
MWU-2	Hydrology Monitoring	Hydrology Monitoring Well	20	1S	98W	39.933370000	108.350210000	687	687	Rock School Well
O-GMW-A	Core Hole 2014-27-198-O	Hydrology Monitoring Well (Inactive)	27	1S	98W	39.934483259	108.383446479	1786	1294	Cemented up to groundwater monitoring well level
PA-1	Hydrology Monitoring	Hydrology Monitoring Well	27	1S	98W	39.927639	108.375175	435	435	Drilled & Completed August 2021
TH75-6A	Hydrology Monitoring	Hydrology Monitoring Well	14	1S	98W	39.964492958	108.353578053	1260	1260	USGS Well
TH75-6B	Hydrology Monitoring	Hydrology Monitoring Well	14	1S	98W	39.964807700	108.353045189	1755	1755	USGS Well
TH75-11A	Hydrology Monitoring	Hydrology Monitoring Well	20	1S	98W	39.952321958	108.409207410	1080	1080	USGS Well
TH75-11B	Hydrology Monitoring	Hydrology Monitoring Well	20	1S	98W	39.953286260	108.409494700	1498	1498	USGS Well
RS-96-20-1	Hydrology Monitoring	Inactive	20	1S	98W	39.95037676	108.41282630	2598	1717	OH Packer at 1295' Rock School Well

4.2 New Findings or Developments (Confidential)

- NS implemented modifications to the groundwater sampling plan in 2022. This modified plan was competed and approved in coordination with DRMS (TR #47), BLM, and EPA.
- In 2023 NS will begin sampling DS Aquifer GMWs that do not have nitrogen lift pumps by utilizing a wireline deployed discrete zone sampling tool.

4.3 2022 Operation Results (Confidential)

Mining and production activities were continuous in 2022. The following Table 4 provides a summary of mining and process results:

Table 4: Mine and Process Data (Confidential)

2022	Recovery	Recovery	Assay	Assay	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Monthly
Month	*Avg GPM*	*Temp.*	*Bicarb g/l*	*NaCl g/l*	*Mining Interval #12H*	*Mining Interval #13H*	*Mining Interval #14H*	*Mining Interval #15H*	*Mining Interval #16H*	*Mining Interval #17H*	*Mining Interval DVPW-1*	*Total Tons*
Jan-2022	1,896	189	208	15	0	3,738	5,297	5,915	7,158	0	0	22,108
Feb-2022	1,934	182	204	14	66	3,277	4,645	5,176	6,539	0	0	19,704
Mar-2022	1,956	183	201	14	2,872	3,451	4,764	5,361	4,756	0	0	21,204
Apr-2022	2,010	184	201	15	2,591	3,722	4,732	5,043	5,504	0	0	21,593
May-2022	1,882	184	203	13	3,288	1,570	4,402	5,507	6,430	0	0	21,197
Jun-2022	1,960	190	200	13	5,281	80	4,471	4,949	6,271	0	0	21,052
Jul-2022	1,967	190	205	15	5,152	0	5,534	5,683	6,978	0	0	23,347
Aug-2022	1,407	188	209	14	3,951	0	1,921	4,574	4,586	1,992	0	17,023
Sep-2022	2,004	185	199	14	4,679	0	0	5,683	5,735	5,238	0	21,336
Oct-2022	1,881	186	200	14	4,435	0	0	5,401	5,088	5,684	0	20,608
Nov-2022	1,944	186	204	15	4,583	0	0	5,137	5,938	6,082	0	21,741
Dec-2022	1,950	184	203	16	5,032	0	0	4,778	6,404	6,350	0	22,564
AVERAGE	1,899	186	203	14	3,494	1,320	2,980	5,267	5,949	2,112	0	21,123
TOTAL					*41,930*	*15,838*	*35,766*	*63,207*	*71,389*	*25,347*	*0*	*253,476*

Key to above headings:	
	Recovery - Monthly average house flow rate and pregnant liquor temperature during process operations.
	Assay - g/L sodium bicarbonate (as total bicarbonate) and sodium chloride in the pregnant liquor.
	(Total bicarbonate = bicarbonate g/L + 1.58 x carbonate g/L)
	Tons - Total monthly bicarbonate production from each mining interval.
	Temp. - Temperature in degrees F recovered at the pregnant liquor tank.
	Avg GPM - Monthly average injection flow rate during process operations.

Figure 6 illustrates 2022 pregnant liquor analytical results along with monthly averages of sodium bicarbonate production (tons/day). Figure 7 represents monthly and cumulative annual production for 2022. NS produced and processed their sodium bicarbonate product throughout 2022.

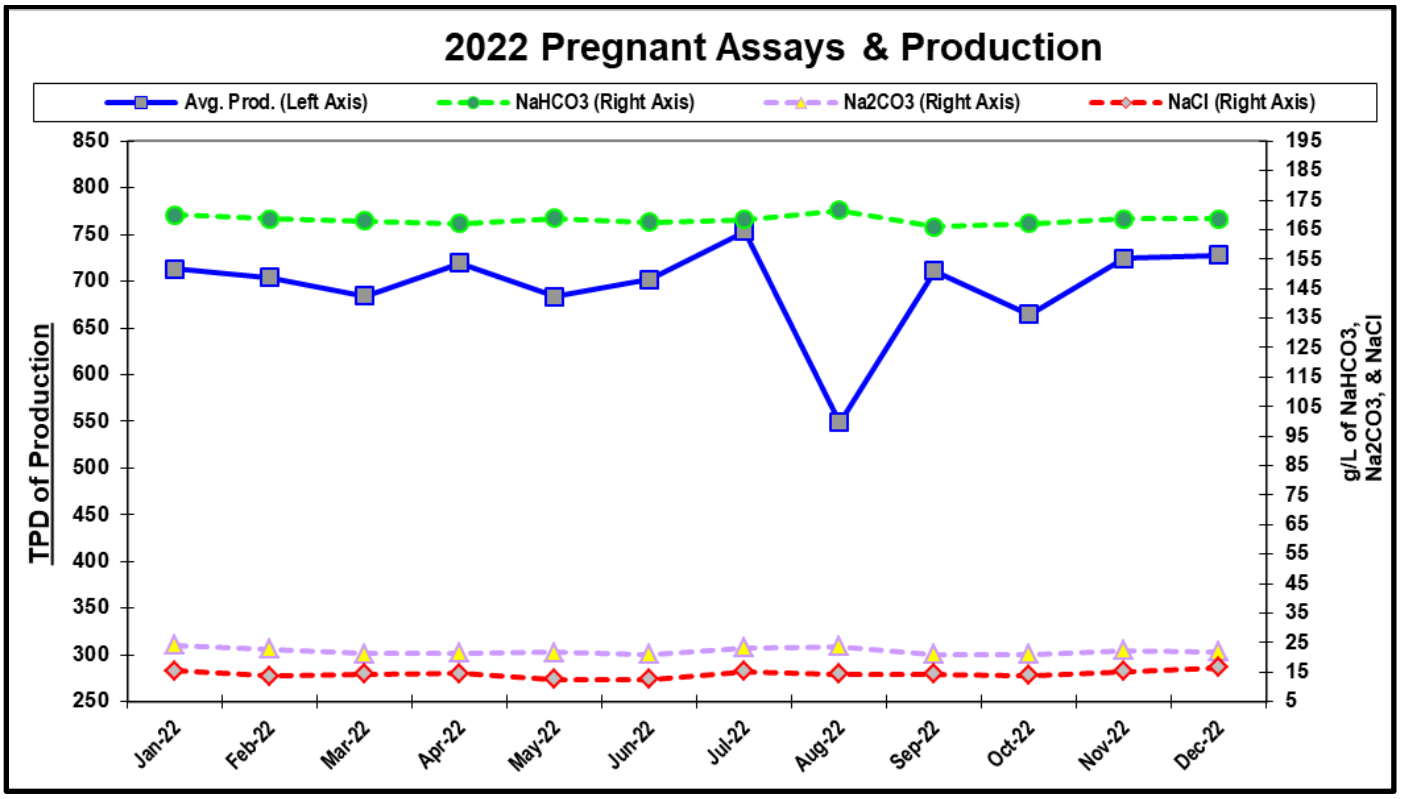


Figure 6: Pregnant Assays and Production (Confidential)

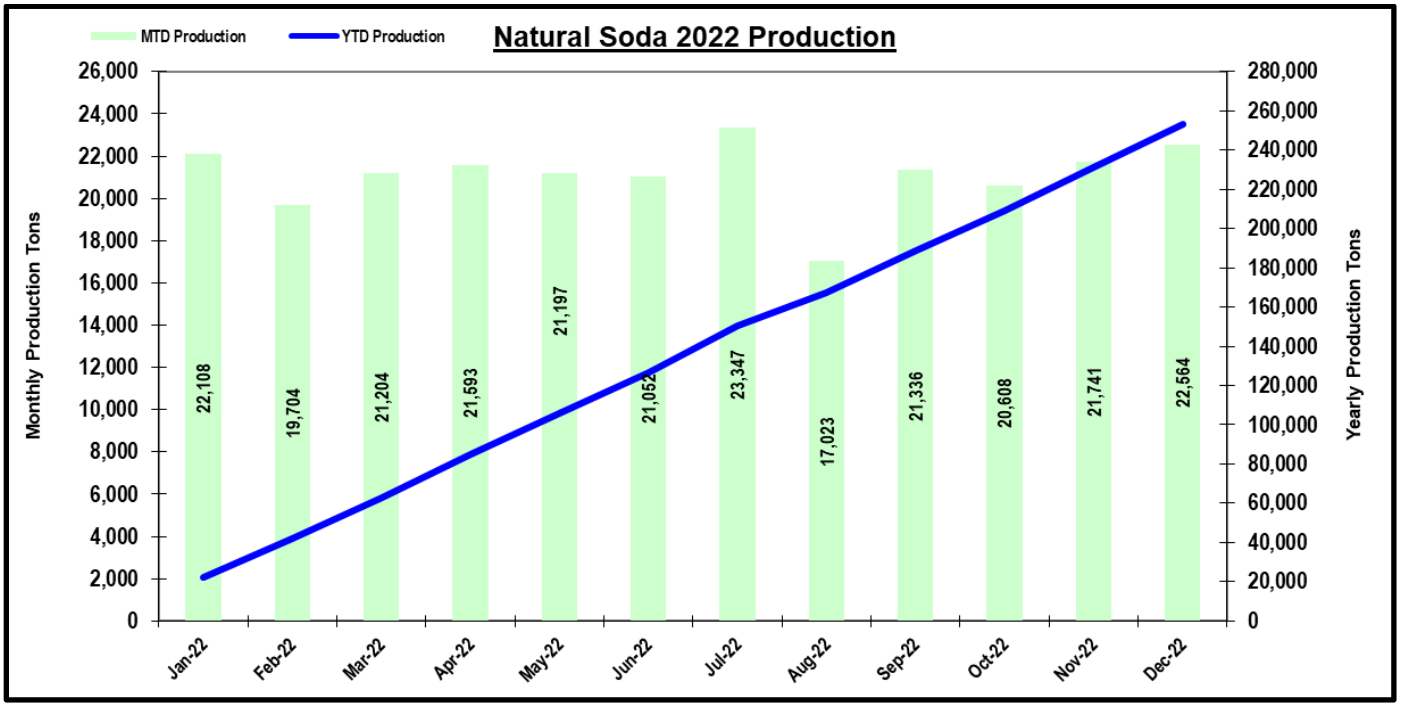


Figure 7: NS 2022 Production (Confidential)

4.4 Geotechnical Program (TDR and Geophysical Logging)

Historically NS monitored two long-term, time-domain-reflectometry (TDR) subsurface-subsidence monitor wells, the 4A-5M and 3M-TDR. The TDR monitoring results were reported to the BLM (monthly) and EPA (quarterly). There has been no indication of surface or subsurface subsidence near the 4A-5M or 3M-TDR wells since installation. After having met the EPA requirement for three years of subsidence monitoring following cessation of mining, the monitoring of the 3M-TDR cables was halted in 2021.

In April/May of 2022 the 4A-5M TDR monitoring satisfied the temporal monitoring requirements of 3 years post cessation of the 8H interval mining, the well was fully abandoned in September 2022.

4A-5M Cable A (Figure 8), and Cable B (Figure 9) show the original September 2007 TDR measurement versus April and May 2022.

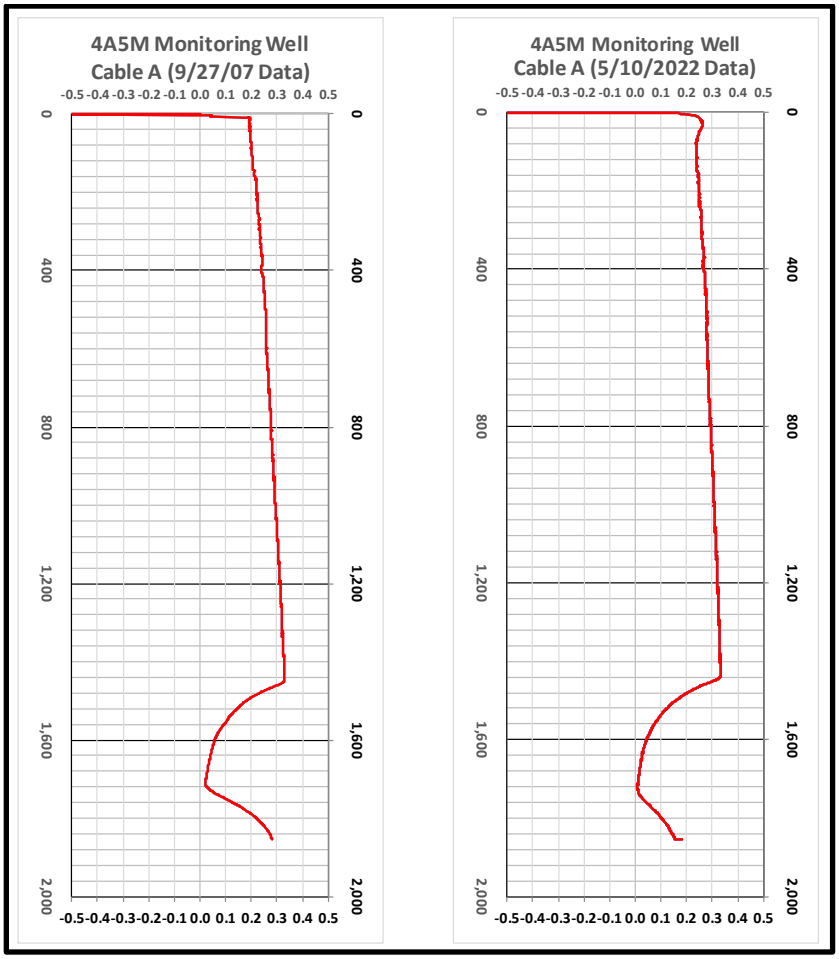


Figure 8: 4A-5M TDR Cable A, Sept 2007 vs. May 2022

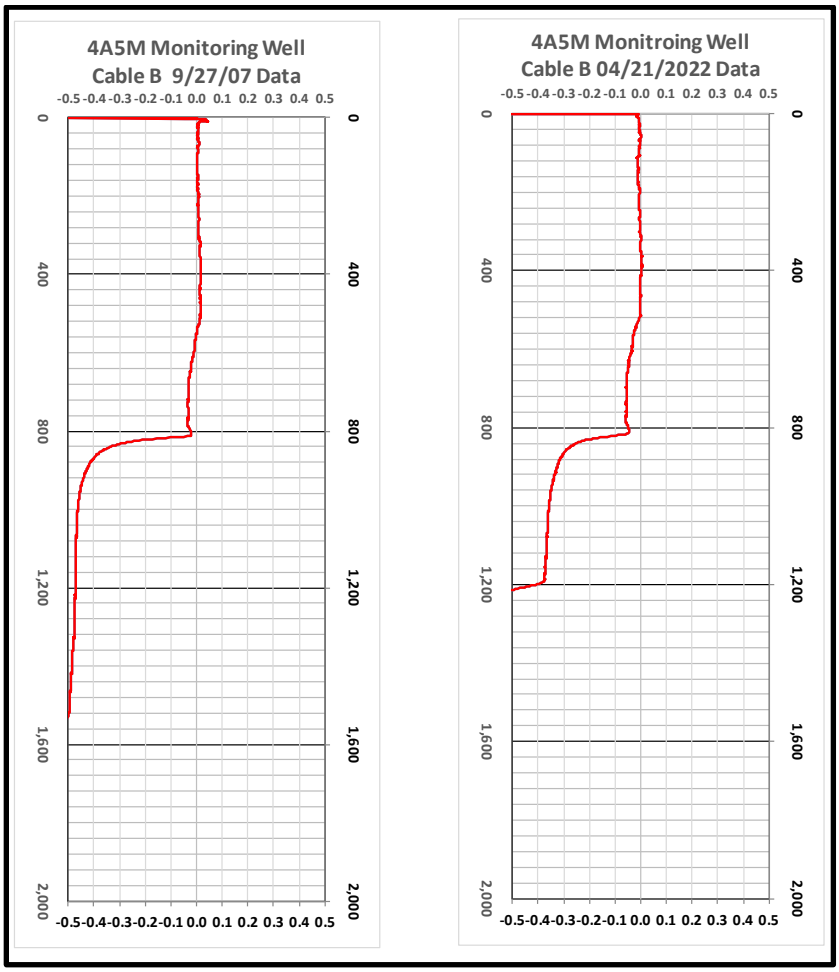


Figure 9: 4A-5M TDR Cable B, Sept 2007 vs. April 2022

4.4.1 Subsurface Subsidence Geophysical Logging

NS conducted the EPA mandated subsurface subsidence logging in the 14H-1V production well at the retirement of the 14H mining interval. The original 14H mining interval SSMW was the BG-9 (DS-5, 2010-26-198-1C). The BG-9 was P&A'd in 2021.

4.4.2 Surface Subsidence Monitoring

A surface subsidence monument (SSM) survey of SSMs above NS's area of operations will be conducted in the second quarter of 2023. Three new SSMs were installed on August 12, 2022 on NS lease. The 17HA SSM was installed above the existing 17H-IR-E wellbore and two supplemental SSMs (CP14 SSM, and CP15 SSM) were installed south and northwest, respectively, of the 17 mining interval. The initial monument elevation survey of the new SSMs is shown in Table 5 below.

Table 5: 2022 Installed Surface Subsidence Monument (SSM) Elevation

Surface Subsidence Monument (SSM)	Initial Monument Elevation (ft. AMSL)	2022 Installed SSMs (Date Installed)
CP 14 SSM	6758.42	Installed 08/12/2022
CP 15 SSM	6624.65	Installed 08/12/2022
17HA SSM	6738.67	Installed 08/12/2022

4.5 Water Supply Well Pumpage

In 2022, approximately 82.09 million gallons of water were pumped from water supply wells WSW-2, WSW-3, and WSW-4 with an average of 155.9 gpm. The 2022 total pumpage decreased 1.39 million gallons from the 2021 pumpage total of 83.48 million gallons. The 2022 total pumpage from WSW-2 was 602,100 gallons, WSW-3 was 39.79 million gallons, and the total pumpage from WSW-4 was 41.70 million gallons.

5.0 Environmental Monitoring and Protection

5.1 Hydrology Monitoring

5.1.1 Introduction

NS's hydrology monitoring program concentrates on groundwater, as there are no perennial streams or springs located on the NS's sodium leases. The USGS stream gauging station-monitoring program is conducted, with NS support, to provide regional surface stream flow data on Yellow Creek and Piceance Creek.

The hydrology-monitoring plan is designed to identify impacts of NS's solution mining operations on underground sources of drinking water, as designated by the US EPA.

Refer to Figure 3 and Figure 4 for the locations of existing monitor wells. Groundwater analytical results are presented in Appendix A.

5.1.2 Stream Gauging Stations

NS contracts with the USGS to monitor surface waters for water quality and quantity. Monitoring was performed upstream and downstream relative to the NS mining operations and with respect to Yellow Creek and Piceance Creek at four existing stations with extensive historical data. Historical stream gauging data is reported in this document and discharge data is complete through the 2022 water year (WY) (October 2021 – September 2022).

The USGS surface water data are available to the public from the USGS web site at http://co.water.usgs.gov. Table 6 and Table 7 summarize key 2022 WY data for surface water near the NS site. Data reported in Table 6 and Table 7 are compiled from the USGS web site. The Specific Conductance and Temperature data included in the tables were generated by using USGS lab test results for each stream reported on the USGS web site during the 2022 WY.

A review of USGS stream water quality data indicated no significant change in stream water quality during 2022. The NS precipitation data showed a slight increase at the NS location in 2022 compared to 2021 (10.35" vs 10.09" respectively). 2022 precipitation was approximately half that of 2019 (20.8").

The 2022 WY discharge (cfs) data in this area indicated an increase in average stream discharge levels for the 6242 Corral Gulch, 6255 Yellow Creek, 6200 and 6222 Piceance Creek streams. 2022 discharge was still below the Period of Record (PR) historic levels. Increased precipitation and/or changes to irrigation diversions may be affecting stream flow discharge levels.

The USGS notes in the 2021 and 2022 year end water reports that the 6200 (Piceance Creek below Ryan Gulch) has diversions for irrigation upstream of the monitor station. The 6222 (Piceance Creek at White River) has diversions for irrigation of approximately 5,500 acres upstream from the monitor station. The 6255 (Yellow Creek near White River) has diversions to irrigate approximately 300 acres upstream from the monitor station. The 6242 (Corral Gulch near Rangely) which historically has been a low flow stream is not reported as having any diversions upstream from the monitoring station.

The 2022 Specific Conductance data from USGS for three stations were within the range values for the period of record. The 6255 (Yellow Creek) set a new max high of 5,330 Specific Conductance for PR in 2022. The 6200 (Piceance Creek below Ryan Gulch) was the only stream location that had a decrease in Specific Conductance in 2022, the other three streams had slight increases in Max Specific Conductance from 2021 to 2022 WY.

The 2022 water temperature values were within the range of historic data. Post review of the USGS data, no effect on stream water quality was noted due to the NS mining operations.

Table 6: Historical Comparison with 2022 Water Year Data

Station	Discharge P of R*	Discharge 2022 WY**	Average Total Discharge P of R	Total Discharge 2022	Specific conductance (µS/cm @ 25° C)				Temp (°c.)	
					P of R	2022 WY	P of R	2022 WY	P of R	2022 WY
	cfs	cfs	ac ft/yr	ac ft/yr	Max	Max	Min	Min	Max	Max
6200	24.80 (57 yrs)	7.07	17,922	5,119	2,800	1,760	600	1,470	26.3	22.8
6222	30.30 (56 yrs)	8.16	21,915	5,908	7,240	4,650	516	2,120	30.0	25.0
6242	1.50 (47 yrs)	0.82	1,056	594	1,760	1,470	312	1,440	24.0	18.4
6255	2.30 (44 yrs)	2.00	1,670	1,448	5,330	5,330	460	4,270	31.0	23.5

6200 Piceance Creek below Ryan Gulch
6222 Piceance Creek at White River
6242 Corral Gulch near Rangely
6255 Yellow Creek near White River
* P of R = Period of Record for collection of data.
**WY = Water Year (October-September).
cfs = cubic feet per second, average annual flow.
N/D = No data available at time of publication

Table 7: Yellow and Piceance Creek Discharge Data up to 2022 Water Year

Project Data Comparison

Discharge for Water Years in cfs

Station	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
6200	16.3	13.4	36.2	17.5	11.3	10.7	15.9	17.0	11.7	7.5	9.6	10.9	5.9	7.1
6222	20.8	17.6	41.7	19.2	11.8	13.0	19.7	21.2	15.5	8.9	11.6	12.4	7.4	8.2
6242	0.4	0.3	1.1	0.3	0.2	0.5	0.5	1.9	0.6	0.1	1.0	0.4	0.2	0.8
6255	1.0	0.9	1.3	1.2	1.1	1.2	1.3	1.3	1.7	0.8	1.6	0.9	0.5	2.0

Maximum Specific Conductance (µS/cm @ 25° C)

Station	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
6200	1,620	2,020	1,460	1,610	1,930	2,040	1,770	1,840	2,120	1,700	1,740	1,590	2,100	1,760
6222	3,130	4,800	2,290	5,350	5,100	3,190	2,790	2,020	3,550	5,350	3,300	4,160	4,610	4,650
6242	1,320	1,460	1,280	1,480	1,430	1,400	1,330	1,170	1,280	1,490	1,480	1,260	1,440	1,470
6255	4,050	4,260	4,130	4,170	4,720	4,530	4,070	4,520	3,600	3,980	4,530	4,560	4,560	5,330

* P of R = Period of Record for collection of data.
**WY = Water Year (October-September).
cfs = cubic feet per second, average annual flow.
6200 Piceance Creek below Ryan Gulch
6242 Corral Gulch near Rangely
6222 Piceance Creek at White River
6255 Yellow Creek near White River
N/D No data available at time of publication.

5.1.3 Monitoring Wells

Per regulatory requirements, dedicated groundwater monitoring wells have been constructed to monitor four water-bearing intervals identified as the Perched, A-Groove, B-Groove, and the Dissolution Surface (DS) Aquifers. The DS Aquifer has been exempted as an underground source of drinking water in the NS lease and permit areas. The DS Aquifer monitored by NS contains total dissolved solids (TDS) values in excess of 10,000 parts per million (PPM). These four aquifers are monitored at several locations across the solution mining area: up and down-gradient, remote down-gradient, and toward the east near the southeast portion of Section 26. Baseline and current groundwater monitoring data have been obtained from 1991 through present. Refer to Figure 3 and Figure 4 for well locations.

The Perched Aquifer is characteristically lower in TDS, conductivity, fluoride, SAR (sodium absorption ratio) and moderate to higher in sulfate and pH. The A-Groove and B-Groove Aquifers are similar in water quality with moderate TDS, conductivity, SAR, but higher fluoride. However, the B-Groove Aquifer generally has slightly higher levels of TDS, conductivity, SAR, and fluoride. The DS Aquifer is characterized by very high TDS and conductivity (30,000 to >100,000 ppm), higher SAR, magnesium, potassium, moderate pH, and a generally higher fluoride.

In 2022, the results of groundwater monitoring were analyzed for potential anomalies in order to prevent or mitigate potential negative impacts to the USDW's.

Appendix A contains detailed sampling results for groundwater monitoring wells.

5.1.4 Storage and Evaporation Ponds

The NS storage and evaporation ponds have a secondary liner and are constructed to collect and direct any condensation or leakage to tubes for removal. Pond information is reported on a monthly basis.

During 2022 NS reported that high TDS fluids are present between the evaporation (7 acre) pond liner and is causing pump equipment issues (salting off). NS has been frequently unable to reliably pump from between the evaporation pond liner and as such will not report evaporation pond pumpage going forward.

5.1.5 Potentiometric Surface Maps (Confidential)

Using groundwater potentiometric elevations from NS groundwater monitoring wells and other NS wells, A-Groove and B-Groove Aquifer potentiometric surface maps have been plotted and have been included with this report in Appendix B (Confidential).

6.0 Land Disturbance and Reclamation

6.1 Summary of 2022 Disturbance

NS created 0.64 acres of new disturbed acreage in 2022 by building one new small location, the 17H-E SSMW with an access road. NS drilled a new 17H-E SSMW well in December, the 17H-E SSMW pad will be interim reclaimed in the spring of 2023. The DRMS visited NS in September 2022, and reviewed the following areas undergoing final reclamation; MMC-IRI-2, R, P, Q, E, D, and 94-1M areas. Finding the areas to have met the DRMS final reclamation goals the combined 5.48 acres of NS disturbed acreage is now 'Recognized as Reclaimed by Agency' reducing NS 2022 yearend total acreage disturbed to 98.85 acres.

The total disturbed acreage reported in 2021 was 103.69 acres, and in 2022 the NS land disturbance decreased to 98.858 acres. The total affected acreage of NS operations in 2022 is 108.91, which includes 10.06 acres that have been 'Recognized as Reclaimed by Agency'. Table 8 lists the disturbed acreage as of December 2022.

Table 8: Disturbed Acreage

Process Area:	**Acres:**
Plant Site Disturbed	26.85
Plant Site Undergoing Interim Reclamation	4.46
Plant Site Undergoing Final Reclamation	0.00
Plant Site Successfully Reclaimed	0.00
Well Field:	
Roads Disturbed	2.49
Well Pads Disturbed	30.48
Roads/Misc. Undergoing Interim Reclamation	1.26
Well Pads Undergoing Interim Reclamation	15.32
Road/Misc. Undergoing Final Reclamation	3.14
Well Pads Undergoing Final Reclamation	14.85
Total Disturbance:	**98.85**
Road/Misc. -- Recognized as Reclaimed by Agencies	1.05
Well Pads -- Recognized as Reclaimed by Agencies	9.01
Total Effected Acreage:	**108.91**

6.2 Regulatory Compliance

6.2.1 Regulatory Activity

In 2022, required reports were submitted in a timely manner. Required forms were submitted to the appropriate agencies regarding activities pertaining to the new wells drilled & associated plugging and abandonment operations.

6.3 Reclamation Activity

6.3.1 Regrading & Scarification

Neither regrading, nor scarification occurred in 2022.

6.3.2 Seeding & Weed Control

During the spring of 2022, hand seeding was conducted along the road adjacent to the reclaimed 8H pad.

Bare Weed Ground Company sprayed active well and utility pads and roadways in 2022. DRMS noted during the 3rd Quarter onsite visit to NS that there are weeds on pads C, H and N; these locations will be spot sprayed during the spring of 2023.

Annual vegetation monitoring continued in 2022 for the areas of study that are currently in final reclamation status. The report, *The 2022 Vegetation Monitoring Reclamation Status Report,* prepared by Mr. Rusty Roberts, is presented in Appendix C.

6.3.3 Reclamation Fencing

Repair and maintenance activities were performed, as necessary, on existing fences in 2022.

6.3.4 Precipitation

Perennial vegetation is an indicator of long-term precipitation, the "normal" precipitation for the NS site is 12-14 inches for the calendar year. The distribution of precipitation is important for proper reclamation. 2022 precipitation as measured at the NS plant was 10.35 inches. Table 9 provides a composite of precipitation from the NS mine site for the last 10 years.

Table 9: Annual Precipitation in inches (10 Year)

Month/Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	AVG
Jan	0.25	0.98	0.47	1.62	1.89	1.26	0.67	1.06	0.32	0.55	0.91
Feb	0.30	0.35	0.39	1.34	1.52	1.35	1.47	0.83	0.17	0.47	0.82
Mar	0.50	0.28	0.82	1.76	1.01	1.55	0.85	0.95	0.60	0.78	0.93
Apr	1.35	0.63	1.71	5.18	1.11	1.74	2.99	0.82	0.20	0.54	1.63
May	1.05	1.66	4.36	2.06	2.17	1.52	2.93	1.29	0.38	1.20	1.86
Jun	0.35	0.01	0.51	0.53	0.47	0.99	3.86	1.83	0.84	0.61	1.00
Jul	1.40	1.34	1.78	1.07	3.36	1.27	1.87	0.61	0.39	0.92	1.40
Aug	0.26	3.17	1.44	2.78	0.85	3.24	0.83	0.37	1.16	0.48	1.46
Sep	2.89	2.14	0.32	2.19	1.55	0.10	1.75	1.17	1.50	1.40	1.50
Oct	1.35	1.09	1.38	1.89	1.62	4.10	1.19	0.08	1.93	1.40	1.60
Nov	1.30	0.80	0.70	1.56	0.64	0.60	1.62	0.14	0.60	0.50	0.85
Dec	0.17	1.00	0.10	1.04	0.44	0.45	0.71	0.66	1.80	1.50	0.79
Annual Totals	11.17	13.45	13.97	23.02	16.63	18.17	20.75	9.79	10.09	10.35	14.74

6.3.5 Vegetation Monitoring Results

A vegetation survey is undertaken annually on the NS lease to collect data from reclaimed land to monitor and evaluate the success of revegetation efforts.

In 2022 the vegetation survey focused on six reclaimed pad sites in final reclamation status, and four additional undisturbed areas for comparison purposes.

Five of the six locations studied are former core holes; BG-8, G, MMC-IRI-3, T, and U that are currently in final reclamation status. One former production well P&A location the 93-2M is in final reclamation status.

The continued dry conditions that occurred during the growing season in 2022 resulted in only minimal changes to the total vegetation cover and composition of desirable plant species as compared to the values measured in 2021 or with comparison to the undisturbed control areas. None of the above mentioned reclaimed sites achieved successful reclamation criteria in 2022. For details of the 2022 vegetation monitoring results, refer to Appendix C for the full *2022 Vegetation Monitoring Reclamation Status Report* prepared for NS by Mr. Rusty Roberts.

6.4 Deer Roadkill Study

Per the monitoring requirement from the BLM, NS compiled deer road kill data throughout 2022 for vehicles traveling to and from the mine site. Two deer of unknown sex were reported as struck and killed in 2022. One deer of unknown sex was reported as struck but departed with unknown injuries to the animal. Two elk of unknown sex were reported as struck in 2022; one with no apparent injuries and one with unknown injuries, both ran away from the area.

6.5 Raptor Survey

In 2021 NS conducted a raptor breeding activity survey and inventory in the pinion-juniper habitat that was proximal to the planned 2021/2022 well field development areas. The area surveyed in 2021 included the areas of the planned 2022 well field development activities. NS will coordinate with the BLM to conduct the required 2023 raptor surveys required for possible 2023 & 2024 wellfield development.

6.6 Other Observations

Elk, deer, coyotes, rabbits, bobcat, badger and fox were noted in and around the well-field throughout the year.

6.7 Waste Disposal

Common domestic solid waste was collected in containers and periodically transported to the Rio Blanco County landfill. Sewage from the plant was directed to a septic system with a leach drain field. Process water, including cooling tower blowdowns, boiler ditch, plant wash down, blow down from the boilers, and precipitation runoff, was directed to the process pond. A pump in the process storage pond allows NS to recycle the water to the barren system. The wastewater evaporation pond contains water from the cooling tower overflow and laboratory drains.

Hazardous waste that is generated and collected at the NS facilities is contained safely, stored separately from day to day waste, and then disposed of properly by Clean Harbors, Inc., a certified hazardous waste handling/disposal company. NS did not dispose of any hazardous waste in 2022.

Natural Soda LLC

2022

Appendix A
Groundwater Analytical Results

Table 10: 89-3 Annual Perched Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	180	404.00	08/28/2013	66.00	09/14/1992	201.52	mg/l
Carbonate as CaCO3	180	138.00	12/05/2012	3.00	06/26/1990	30.04	mg/l
Total Alkalinity as CaCO3	180	524.00	08/28/2013	66.00	09/14/1992	223.79	mg/l
Bromide	26	0.60	07/06/2000	0.05	10/22/1989	0.19	mg/l
Cation-Anion Balance	178	15.70	06/14/2017	-13.00	12/16/2015	0.06	%
Sum of Anions	157	12.60	08/28/2013	5.10	06/14/2017	7.53	meq/l
Sum of Cations	158	11.80	08/28/2013	5.78	09/14/1992	7.48	meq/l
Chemical Oxygen Demand	20	300.00	09/23/2010	10.00	10/22/1989	51.82	mg/l
Chloride	180	75.30	08/28/2013	4.00	09/27/1990	16.07	mg/l
Conductivity, Lab	176	1,210.00	08/28/2013	534.00	08/06/1992	724.80	µmhos
Fluoride	180	18.00	07/31/1991	0.02	04/19/2001	0.47	mg/l
Hardness as CaCO3	179	113.00	04/11/2006	27.00	03/30/1990	79.22	mg/l
Nitrate as N, dissolved	28	0.76	07/24/2002	0.02	12/05/2012	0.14	mg/l
Nitrate/Nitrite as N,	28	0.85	07/24/2002	0.03	07/18/1995	0.15	mg/l
Nitrite as N, dissolved	28	0.10	06/26/1991	0.01	06/25/2007	0.04	mg/l
Nitrogen, Ammonia	25	13.10	09/23/2010	0.11	07/12/1996	1.49	mg/l
Nitrogen, Organic	25	13.40	06/26/1991	0.10	07/18/1995	1.93	mg/l
Nitrogen, Total Kjeldahl	25	25.40	09/23/2010	0.20	07/21/1994	3.10	mg/l
pH, lab	179	11.50	12/19/1991	6.60	09/14/1992	8.59	units
Phosphate, total	23	155.00	06/25/2007	0.03	07/02/1998	10.43	mg/l
Phosphorus, total	25	2.33	09/23/2010	0.01	06/26/1991	0.22	mg/l
SAR in Water	169	15.92	03/30/1990	4.82	09/14/1992	6.83	none
Sulfate	180	296.00	03/30/1990	1.00	12/12/2008	126.43	mg/l
Sulfide	22	4.50	09/23/2010	0.03	07/02/1998	0.48	mg/l
Total Dissolved Solids	180	659.00	08/28/2013	329.00	06/14/2017	440.88	mg/l
Conductivity, Field	197	16,000.00	07/01/1990	500.00	02/24/1993	775.11	µmhos
pH, Field	198	10.23	07/19/2009	6.90	12/12/2018	8.68	units
Temperature (°C), Field	108	21.10	07/19/2009	6.40	12/01/1990	12.18	(°C)
Water Level, Field	97	341.00	09/01/2011	314.76	06/06/2022	322.71	Ft.
Parameters **Metals**	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	27	2.12	07/27/2001	0.03	07/07/1999	0.42	mg/l
Arsenic, dissolved	26	0.04	10/22/1989	0.00	12/05/2012	0.01	mg/l
Barium, dissolved	26	0.69	03/30/1990	0.01	10/22/1989	0.06	mg/l
Beryllium, dissolved	26	0.01	06/26/1991	0.01	06/26/1991	0.01	mg/l
Boron, dissolved	180	0.43	08/28/2013	0.02	04/24/1991	0.06	mg/l
Cadmium, dissolved	26	0.00	09/13/1995	0.00	09/13/1995	0.00	mg/l
Calcium, dissolved	180	17.00	09/27/1990	4.50	06/25/2007	11.56	mg/l
Chromium, dissolved	27	0.01	06/26/1991	0.01	06/26/1991	0.01	mg/l
Copper, dissolved	27	0.20	12/05/2012	0.01	03/30/1990	0.06	mg/l
Iron, dissolved	26	4.17	09/27/1990	0.01	07/07/1999	0.43	mg/l
Lead, dissolved	26	0.06	08/19/2009	0.02	06/26/1991	0.04	mg/l
Lithium, dissolved	26	0.05	03/30/1990	0.02	06/26/1991	0.03	mg/l
Magnesium, dissolved	180	18.40	07/24/2002	3.00	03/30/1990	12.22	mg/l
Manganese, dissolved	26	0.14	09/27/1990	0.01	07/07/1999	0.03	mg/l
Mercury, dissolved	25	0.00	10/22/1989	0.00	06/26/1991	0.00	mg/l
Molybdenum, dissolved	26	0.15	06/26/1990	0.01	07/12/1996	0.07	mg/l
Nickel, dissolved	26	0.02	10/22/1989	0.02	10/22/1989	0.02	mg/l
Potassium, dissolved	180	10.00	01/31/1991	0.04	04/28/1995	1.17	mg/l
Selenium, dissolved	26	0.00	03/30/1990	0.00	09/27/1990	0.00	mg/l
Silica, dissolved	180	33.20	07/27/2001	4.80	01/21/1992	15.52	mg/l
Sodium, dissolved	180	236.00	08/28/2013	96.00	09/14/1992	133.45	mg/l
Strontium, dissolved	180	1.09	04/11/2006	0.17	03/30/1990	0.82	mg/l
Vanadium, dissolved	26	U	09/23/2010	U	12/05/2012	U	mg/l
Zinc, dissolved	26	0.35	03/30/1990	0.01	10/22/1989	0.05	mg/l

Table 11: MMC-IRI-1 Annual Perched Aquifer

Parameters Wet	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	124	548.00	01/08/201	0.00	08/01/199	161.44	mg/l
Carbonate as	124	300.00	10/25/199	0.00	08/30/200	117.29	mg/l
Total Alkalinity	124	900.00	08/01/199	96.40	08/10/202	293.80	mg/l
Bromide	27	1.60	07/21/199	0.06	06/16/201	0.29	mg/l
Cation-Anion	121	63.90	08/14/201	-16.00	03/13/200	0.64	%
Sum of Anions	114	24.97	08/13/199	5.00	08/10/202	8.85	meq/l
Sum of	114	50.00	08/14/201	5.70	06/14/201	9.30	meq/l
Chemical	20	300.00	09/21/201	10.00	08/16/199	46.25	mg/l
Chloride	124	400.00	04/24/199	14.00	12/15/199	53.43	mg/l
Conductivity,	121	2,630.00	01/20/199	347.0	08/10/202	864.43	µmho
Fluoride	124	24.00	09/02/199	1.70	04/20/199	6.44	mg/l
Hardness as	124	553.00	08/01/199	2.00	06/23/201	36.16	mg/l
Nitrate as N,	27	2.77	06/26/200	0.02	06/28/200	0.38	mg/l
Nitrate/Nitrite as	27	2.79	06/26/200	0.02	09/07/202	0.33	mg/l
Nitrite as N,	27	0.13	08/16/199	0.01	08/01/199	0.05	mg/l
Nitrogen,	26	2.57	07/31/199	0.25	06/09/199	0.74	mg/l
Nitrogen,	26	3.90	07/21/199	0.10	06/16/201	1.03	mg/l
Nitrogen, Total	26	5.90	07/31/199	0.33	09/07/202	1.77	mg/l
pH, lab	121	11.30	07/31/199	6.60	08/30/200	9.56	units
Phosphate,	25	155.00	06/28/200	0.03	09/07/202	17.55	mg/l
Phosphorus,	26	1.41	09/21/201	0.01	09/07/202	0.25	mg/l
SAR in Water	116	76.00	08/14/201	5.76	08/01/199	21.18	none
Sulfate	124	243.00	12/15/199	40.40	09/16/201	75.43	mg/l
Sulfide	25	4.00	06/13/200	0.03	06/02/199	1.08	mg/l
Total	122	1,644.00	08/01/199	328.0	08/10/202	581.02	mg/l
Conductivity,	182	3,500.00	08/01/199	573.0	08/10/202	1,143.1	µmho
pH, Field	182	12.80	12/01/199	6.04	08/30/200	10.21	units
	Temperatur	122	20.10	05/16/200	6.50	12/12/200	12.29	(°C)
Water Level,	99	387.19	08/14/201	308.80	06/20/2017	380.46	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	27	11.10	08/16/199	0.06	07/29/2009	3.18	mg/l
Arsenic,	27	0.01	07/31/199	0.00	11/27/2012	0.00	mg/l
Barium,	27	0.29	08/14/199	0.01	11/27/2012	0.07	mg/l
Beryllium,	27	0.00	08/14/199	0.00	08/14/1995	0.00	mg/l
Boron,	124	0.39	01/08/201	0.00	10/25/1990	0.17	mg/l
Cadmium,	27	0.03	07/21/199	0.03	07/21/1993	0.03	mg/l
Calcium,	124	223.00	08/01/199	0.90	06/23/2010	10.83	mg/l
Chromium,	27	0.02	08/01/199	0.01	08/16/1996	0.01	mg/l
Copper,	27	0.20	06/14/200	0.01	08/01/1990	0.04	mg/l
Iron, dissolved	27	14.10	07/21/199	0.02	07/21/1992	3.20	mg/l
Lead,	27	0.10	07/21/199	0.05	06/16/1997	0.07	mg/l
Lithium,	27	0.19	08/13/199	0.00	08/30/2008	0.05	mg/l
Magnesium,	124	31.20	03/14/200	0.30	09/26/2001	2.57	mg/l
Manganese,	27	0.37	08/14/199	0.01	08/30/2008	0.09	mg/l
Mercury,	27	0.00	08/14/199	0.00	08/14/1995	0.00	mg/l
Molybdenum,	27	0.10	08/01/199	0.01	06/16/1997	0.04	mg/l
Nickel,	27	0.02	10/25/199	0.01	08/16/1996	0.01	mg/l
Potassium,	124	146.00	08/01/199	1.00	04/24/1991	7.47	mg/l
Selenium,	27	0.00	07/31/199	0.00	08/13/1990	0.00	mg/l
Silica,	124	99.30	08/14/199	6.90	09/04/2020	28.97	mg/l
Sodium,	124	1,110.0	08/14/201	124.00	05/18/2021	195.97	mg/l
Strontium,	124	2.45	08/01/199	0.02	05/24/1994	0.30	mg/l
Vanadium,	27	0.03	08/14/199	0.01	06/16/1997	0.01	mg/l
Zinc, dissolved	27	0.24	07/21/199	0.02	06/09/1999	0.07	mg/l

Table 12: MMC-IRI-5 Annual Perched Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	62	327.00	06/30/200	2.00	12/18/199	183.97	mg/l
Carbonate as	62	284.00	12/18/199	0.00	06/14/200	75.51	mg/l
Total Alkalinity as	62	406.00	03/25/199	181.0	05/29/200	251.87	mg/l
Bromide	32	1.00	08/22/199	0.00	08/12/199	0.21	mg/l
Cation-Anion	59	17.30	06/14/200	-10.20	05/26/200	0.78	%
Sum of Anions	54	15.77	06/16/199	8.43	12/19/199	9.91	meq/l
Sum of Cations	54	15.25	06/16/199	7.90	05/26/200	10.12	meq/l
Chemical Oxygen	29	181.00	11/02/201	0.00	05/29/200	52.07	mg/l
Chloride	62	420.00	06/16/199	9.00	12/19/199	20.73	mg/l
Conductivity, Lab	62	1,500.00	06/16/199	795.0	08/12/199	974.71	µmho
Fluoride	62	0.90	09/16/199	0.00	06/30/199	0.29	mg/l
Hardness as	62	182.00	06/14/200	1.00	12/20/199	34.31	mg/l
Nitrate as N,	33	12.50	05/29/200	0.00	08/12/199	0.97	mg/l
Nitrate/Nitrite as	33	12.50	05/29/200	0.00	08/12/199	0.86	mg/l
Nitrite as N,	33	0.06	09/14/199	0.00	08/12/199	0.02	mg/l
Nitrogen,	33	0.87	06/23/199	0.08	05/21/200	0.27	mg/l
Nitrogen, Organic	33	80.00	05/15/199	0.20	03/09/202	5.10	mg/l
Nitrogen, Total	33	80.00	05/15/199	0.30	03/09/202	4.60	mg/l
pH, lab	62	11.90	06/28/199	2.40	06/16/199	9.20	units
Phosphate, total	31	155.00	07/29/200	0.06	05/29/200	5.63	mg/l
Phosphorus, total	33	1.87	06/18/199	0.02	05/29/200	0.20	mg/l
SAR in Water	53	90.44	01/20/199	7.50	06/30/200	22.06	none
Sulfate	62	290.00	03/25/199	148.0	03/22/199	203.97	mg/l
Sulfide	32	6.60	03/09/202	0.05	06/14/200	0.56	mg/l
Total Dissolved	61	1,090	06/16/199	504	04/21/199	629	mg/l
Conductivity,	75	9,880	05/21/200	715	12/19/199	1,169	µmho
pH, Field	74	12.00	08/12/199	6.33	06/14/200	9.85	units
Temperatur	35	17	06/14/200	9.70	11/01/200	12	(°C)
Water Level,	59	248.06	06/15/201	237.80	11/09/202	240.82	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	32	10.00	08/22/199	0.04	05/29/200	1.09	mg/l
Arsenic,	32	0.01	06/18/199	0.00	05/26/200	0.00	mg/l
Barium, dissolved	32	0.27	05/21/200	0.01	05/26/200	0.04	mg/l
Beryllium,	32	0.01	08/22/199	0.01	08/22/199	0.01	mg/l
Boron, dissolved	62	0.11	11/21/200	0.02	08/22/199	0.07	mg/l
Cadmium,	32	0.01	08/22/199	0.00	03/22/201	0.00	mg/l
Calcium,	62	63.60	06/14/200	1.00	06/16/199	7.19	mg/l
Chromium,	32	0.02	08/22/199	0.01	06/23/199	0.01	mg/l
Copper, dissolved	32	0.04	06/25/201	0.01	06/23/199	0.02	mg/l
Iron, dissolved	32	7.30	08/22/199	0.01	05/26/200	0.63	mg/l
Lead, dissolved	32	0.12	03/22/201	0.02	08/12/199	0.05	mg/l
Lithium, dissolved	32	0.06	10/03/201	0.02	05/26/200	0.03	mg/l
Magnesium,	62	9.10	06/30/200	0.30	06/30/199	4.62	mg/l
Manganese,	36	0.07	08/22/199	0.01	08/22/199	0.02	mg/l
Mercury,	32	0.00	08/22/199	0.00	08/22/199	0.00	mg/l
Molybdenum,	32	0.03	06/14/200	0.01	06/18/199	0.02	mg/l
Nickel, dissolved	32	0.04	07/29/200	0.02	08/22/199	0.03	mg/l
Potassium,	61	22.00	12/18/199	0.70	06/25/201	7.24	mg/l
Selenium,	32	0.00	08/12/199	0.00	08/12/199	0.00	mg/l
Silica, dissolved	61	74.00	08/22/199	10.90	03/21/201	18.18	mg/l
Sodium,	61	336.00	06/16/199	166.00	05/26/200	208.28	mg/l
Strontium,	61	1.30	06/30/200	0.06	06/16/199	0.49	mg/l
Vanadium,	32	0.01	08/22/199	0.01	08/22/199	0.01	mg/l
Zinc, dissolved	32	0.58	03/15/202	0.02	06/23/199	0.07	mg/l

Table 13: PA-1 Annual Perched Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	5	497	06/03/2022	395	09/03/2021	449	mg/l
Carbonate as CaCO3	5	124	09/10/2021	39	06/03/2022	72	mg/l
Total Alkalinity as CaCO3	5	551	08/21/2021	479	09/03/2021	521	mg/l
Bromide	4	U	08/21/2021	U	06/03/2022	U	mg/l
Cation-Anion Balance	5	2.60	09/03/2021	-2.60	11/12/2021	0.48	%
Sum of Anions	5	20.00	08/21/2021	19.00	09/03/2021	19.80	meq/l
Sum of Cations	5	21.00	08/21/2021	19.00	11/12/2021	20.00	meq/l
Chemical Oxygen Demand	4	48.00	08/21/2021	20.00	09/03/2021	34.00	mg/l
Chloride	5	13	09/03/2021	7	08/21/2021	11	mg/l
Conductivity, Lab	5	1,690	09/10/2021	1,630	09/03/2021	1,664	µmhos
Fluoride	5	0.65	06/03/2022	0.65	06/03/2022	0.65	mg/l
Hardness as CaCO3	5	619.00	08/21/2021	470.00	11/12/2021	536.20	mg/l
Nitrate as N, dissolved	4	UH	08/21/2021	UH	06/03/2022	UH	mg/l
Nitrate/Nitrite as N,	4	UH	08/21/2021	UH	06/03/2022	UH	mg/l
Nitrite as N, dissolved	4	UH	08/21/2021	UH	06/03/2022	UH	mg/l
Nitrogen, Ammonia	4	0.43	09/10/2021	0.27	08/21/2021	0.38	mg/l
Nitrogen, Organic	4	0.55	09/10/2021	0.22	09/03/2021	0.38	mg/l
Nitrogen, Total Kjeldahl	4	0.98	09/10/2021	0.29	08/21/2021	0.60	mg/l
pH, lab	5	8.80	09/03/2021	8.40	11/12/2021	8.62	units
Phosphate, total	4	1.22	06/03/2022	0.45	08/21/2021	0.80	mg/l
Phosphorus, total	4	0.39	06/03/2022	0.15	08/21/2021	0.26	mg/l
SAR in Water	5	4	11/12/2021	3.20	08/21/2021	4	none
Sulfate	5	439	08/21/2021	407.00	09/10/2021	424	mg/l
Sulfide	4	UH	08/21/2021	U	06/03/2022	U	mg/l
Total Dissolved Solids	5	1,190	08/21/2021	1,120	09/03/2021	1,146	mg/l
Conductivity, Field	4	1,633	09/03/2021	1,460	06/06/2022	1,579	µmhos
pH, Field	4	8.60	09/03/2021	7.48	06/06/2022	8.25	units
Temperature (°C), Field	4	16.30	09/10/2021	12.60	11/12/2021	15.20	(°C)
Water Level, Field	7	305.30	03/14/2022	304.90	11/08/2022	305.11	Ft.
Parameters **Metals**	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	4	U	08/21/2021	U	06/03/2022	U	mg/l
Arsenic, dissolved	4	0.01	09/10/2021	0.00	08/21/2021	0.01	mg/l
Barium, dissolved	4	0.04	06/03/2022	0.01	09/10/2021	0.02	mg/l
Beryllium, dissolved	4	U	08/21/2021	U	06/03/2022	U	mg/l
Boron, dissolved	5	0.12	06/03/2022	0.09	09/03/2021	0.10	mg/l
Cadmium, dissolved	4	U	08/21/2021	U	06/03/2022	U	mg/l
Calcium, dissolved	5	74.80	08/21/2021	43.80	11/12/2021	56.38	mg/l
Chromium, dissolved	4	U	08/21/2021	U	06/03/2022	U	mg/l
Copper, dissolved	4	U	08/21/2021	U	06/03/2022	U	mg/l
Iron, dissolved	4	0.30	09/10/2021	0.13	09/03/2021	0.22	mg/l
Lead, dissolved	4	U	08/21/2021	U	06/03/2022	U	mg/l
Lithium, dissolved	4	0.12	09/03/2021	0.08	08/21/2021	0.11	mg/l
Magnesium, dissolved	5	105.00	08/21/2021	87.60	11/12/2021	96.00	mg/l
Manganese, dissolved	4	0.21	08/21/2021	0.02	06/03/2022	0.09	mg/l
Mercury, dissolved	4	U	08/21/2021	U	06/03/2022	U	mg/l
Molybdenum, dissolved	4	0.03	09/03/2021	0.02	09/10/2021	0.02	mg/l
Nickel, dissolved	4	U	08/21/2021	U	06/03/2022	U	mg/l
Potassium, dissolved	5	15.10	09/10/2021	2.20	08/21/2021	9.62	mg/l
Selenium, dissolved	4	0.00	09/03/2021	0.00	08/21/2021	0.00	mg/l
Silica, dissolved	5	32.50	08/21/2021	21.90	09/03/2021	26.44	mg/l
Sodium, dissolved	5	210	09/10/2021	183	08/21/2021	199	mg/l
Strontium, dissolved	5	3.07	06/03/2022	2.06	08/21/2021	2.50	mg/l
Vanadium, dissolved	4	U	08/21/2021	U	06/03/2022	U	mg/l
Zinc, dissolved	4	0.03	06/03/2022	0.03	06/03/2022	0.03	mg/l

Table 14: 89-2 Quarterly A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	191	903.00	12/12/2008	41.00	01/30/1997	516.86	mg/l
Carbonate as CaCO3	191	566.00	01/30/1997	8.00	11/28/1990	90.84	mg/l
Total Alkalinity as CaCO3	191	926.00	12/12/2008	160.00	10/25/1990	606.05	mg/l
Bromide	27	3.00	06/26/1990	0.05	07/01/1997	0.44	mg/l
Cation-Anion Balance	182	63.40	04/14/2005	-28.80	08/02/2006	0.47	%
Sum of Anions	165	20.10	12/12/2008	11.66	11/28/1990	14.14	meq/l
Sum of Cations	165	67.50	04/14/2005	7.80	08/02/2006	14.40	meq/l
Chemical Oxygen Demand	24	220.00	09/22/2010	10.00	08/02/2006	80.23	mg/l
Chloride	190	118.00	10/22/1989	2.00	04/24/1991	19.25	mg/l
Conductivity, Lab	188	1,760.00	12/12/2008	1,000.00	05/20/1993	1,257.55	µmhos
Fluoride	191	30.00	12/19/1991	1.90	06/26/1991	21.39	mg/l
Hardness as CaCO3	185	375.00	05/21/2018	0.40	10/25/1990	11.11	mg/l
Nitrate as N, dissolved	28	5.76	08/10/2008	0.02	07/18/1995	0.53	mg/l
Nitrate/Nitrite as N,	28	6.26	08/10/2008	0.02	07/18/1995	0.56	mg/l
Nitrite as N, dissolved	28	0.50	08/10/2008	0.01	03/30/1990	0.13	mg/l
Nitrogen, Ammonia	26	3.77	08/10/2008	0.54	06/15/1992	1.30	mg/l
Nitrogen, Organic	26	14.60	09/27/1990	0.10	06/15/1992	4.37	mg/l
Nitrogen, Total Kjeldahl	26	15.40	09/27/1990	0.60	06/15/1992	5.49	mg/l
pH, lab	187	9.70	12/20/1994	8.00	07/18/1995	8.92	units
Phosphate, total	22	155.00	06/25/2007	0.06	07/02/1998	10.79	mg/l
Phosphorus, total	27	0.46	06/26/1990	0.01	08/17/1993	0.08	mg/l
SAR in Water	148	345.00	04/14/2005	0.21	05/21/2018	56.77	none
Sulfate	191	445.00	06/26/1990	2.49	05/21/2018	40.76	mg/l
Sulfide	23	2.40	07/24/2002	0.02	07/15/2004	0.45	mg/l
Total Dissolved Solids	191	2,040.00	04/14/2005	494.00	10/25/1990	783.76	mg/l
Conductivity, Field	237	1,980.00	12/12/2008	620.00	03/16/1994	1,222.62	µmhos
pH, Field	237	10.00	08/22/1991	6.80	03/10/2015	9.08	units
Temperature (°C), Field	117	17.40	07/01/2002	8.10	02/08/2021	12.26	(°C)
Water Level, Field	103	545.20	06/25/2014	463.95	04/01/2003	496.96	Ft.
Parameters **Metals**	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	26	0.70	10/22/1989	0.03	07/01/1997	0.12	mg/l
Arsenic, dissolved	26	0.04	06/26/1991	0.003	06/15/1992	0.01	mg/l
Barium, dissolved	26	0.23	07/15/2004	0.01	08/02/2006	0.04	mg/l
Beryllium, dissolved	26	0.01	06/26/1990	0.01	06/26/1990	0.01	mg/l
Boron, dissolved	184	1.48	04/14/2005	0.19	08/02/2006	0.37	mg/l
Cadmium, dissolved	26	0.01	06/26/1990	0.01	06/26/1990	0.01	mg/l
Calcium, dissolved	183	141.00	05/21/2018	0.30	04/27/2004	2.32	mg/l
Chromium, dissolved	26	0.07	07/30/2003	0.01	06/26/1990	0.04	mg/l
Copper, dissolved	26	0.01	06/26/1990	0.01	06/26/1990	0.01	mg/l
Iron, dissolved	26	0.80	10/22/1989	0.01	07/18/1995	0.13	mg/l
Lead, dissolved	26	0.05	10/22/1989	0.02	06/26/1990	0.03	mg/l
Lithium, dissolved	26	0.13	07/15/2004	0.02	06/26/1990	0.05	mg/l
Magnesium, dissolved	183	9.10	12/12/2008	0.20	04/27/2004	1.25	mg/l
Manganese, dissolved	25	0.14	07/30/2003	0.01	06/26/1990	0.06	mg/l
Mercury, dissolved	26	0.0001	06/15/1992	0.0006	06/26/1990	0.0004	mg/l
Molybdenum, dissolved	26	0.13	10/22/1989	0.01	07/12/1996	0.05	mg/l
Nickel, dissolved	26	0.52	07/30/2003	0.02	10/22/1989	0.19	mg/l
Potassium, dissolved	184	12.50	05/21/2018	0.50	06/10/2020	1.34	mg/l
Selenium, dissolved	26	0.01	09/27/1990	0.001	06/26/1990	0.004	mg/l
Silica, dissolved	184	27.70	01/09/2001	2.00	12/10/2019	12.57	mg/l
Sodium, dissolved	184	1,530.00	04/14/2005	9.20	05/21/2018	321.32	mg/l
Strontium, dissolved	184	1.34	12/12/2008	0.03	04/27/2004	0.20	mg/l
Vanadium, dissolved	26	0.01	06/26/1990	0.01	06/26/1990	0.01	mg/l
Zinc, dissolved	26	0.03	07/29/2009	0.01	06/26/1990	0.02	mg/l

Table 15: 90-1 Annual A-Groove Aquifer (P&A'd 2022)

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	108	16,300.00	02/24/2020	170.00	06/12/1990	3,629.99	mg/l
Carbonate as CaCO3	108	6,530.00	12/13/2016	9.00	04/27/2004	588.65	mg/l
Total Alkalinity as CaCO3	108	18,700.00	02/24/2020	477.00	04/16/2002	4,184.81	mg/l
Bromide	24	0.10	01/31/1991	0.08	07/31/2009	0.10	mg/l
Cation-Anion Balance	105	30.70	12/13/2016	-14.70	02/27/2017	-0.92	%
Sum of Anions	105	566.00	02/24/2020	11.49	02/24/1992	133.28	meq/l
Sum of Cations	105	516.00	08/17/2021	11.50	09/27/1990	125.21	meq/l
Chemical Oxygen Demand	20	191.00	06/29/2016	10.00	10/22/2002	61.30	mg/l
Chloride	107	6,950.00	08/17/2021	10.00	01/31/1991	1,643.11	mg/l
Conductivity, Lab	106	40,600.00	08/17/2021	1,075.00	01/31/1991	10,758.63	µmhos
Fluoride	108	51.90	02/24/2020	1.40	04/27/2004	19.27	mg/l
Hardness as CaCO3	108	98.00	11/06/2014	4.00	09/09/2015	41.41	mg/l
Nitrate as N, dissolved	24	3.99	01/31/1991	0.02	09/27/1990	0.70	mg/l
Nitrate/Nitrite as N,	24	4.00	01/31/1991	0.02	09/27/1990	0.60	mg/l
Nitrite as N, dissolved	24	0.02	09/27/1990	0.01	01/31/1991	0.02	mg/l
Nitrogen, Ammonia	23	5.85	04/07/2022	0.08	09/27/1990	1.24	mg/l
Nitrogen, Organic	23	2.50	06/29/2016	0.10	01/31/1991	0.53	mg/l
Nitrogen, Total Kjeldahl	23	7.10	06/29/2016	0.04	09/27/1990	1.65	mg/l
pH, lab	106	12.80	01/27/2016	6.30	07/25/2002	8.76	units
Phosphate, total	20	13.00	04/07/2022	0.06	06/28/2007	1.94	mg/l
Phosphorus, total	23	4.14	04/07/2022	0.02	06/28/2007	0.54	mg/l
SAR in Water	103	1,600.00	12/13/2016	25.30	08/04/2008	235.53	none
Sulfate	108	933.00	09/09/2015	10.00	10/04/2011	90.83	mg/l
Sulfide	24	12.00	10/19/2000	0.07	10/22/2002	3.98	mg/l
Total Dissolved Solids	108	29,700.00	08/17/2021	700.00	07/21/1994	7,019.25	mg/l
Conductivity, Field	324	37,620.00	02/24/2020	1,122.70	05/04/2010	4,490.06	µmhos
pH, Field	109	12.50	04/13/2016	7.00	12/11/2018	8.48	units
Temperature (°C), Field	81	24.40	07/28/2011	7.50	03/04/2013	17.65	(°C)
Water Level, Field	29	549.12	10/15/2015	531.00	04/21/2016	538.61	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	24	0.05	06/12/1990	0.04	06/28/2007	0.05	mg/l
Arsenic, dissolved	24	0.05	08/21/2015	0.0008	10/26/2004	0.01	mg/l
Barium, dissolved	24	2.09	04/07/2022	0.02	01/31/1991	0.54	mg/l
Beryllium, dissolved	24	0.01	06/12/1990	0.01	06/12/1990	0.01	mg/l
Boron, dissolved	108	18.40	08/17/2021	0.25	06/12/1990	3.13	mg/l
Cadmium, dissolved	24	0.01	06/12/1990	0.01	09/27/1990	0.01	mg/l
Calcium, dissolved	106	16.60	04/07/2022	U	05/17/2017	4.94	mg/l
Chromium, dissolved	24	0.02	09/28/2006	0.01	06/12/1990	0.01	mg/l
Copper, dissolved	24	0.01	06/12/1990	0.01	06/12/1990	0.01	mg/l
Iron, dissolved	24	3.00	08/21/2015	0.02	09/27/1990	0.23	mg/l
Lead, dissolved	24	0.02	06/12/1990	0.02	06/12/1990	0.02	mg/l
Lithium, dissolved	24	0.49	11/06/2014	0.01	06/12/1990	0.18	mg/l
Magnesium, dissolved	108	19.00	11/06/2014	2.00	06/12/1990	7.97	mg/l
Manganese, dissolved	24	0.08	10/04/2011	0.01	09/22/2010	0.02	mg/l
Mercury, dissolved	24	0.0004	10/30/2003	0.0001	06/12/1990	0.0002	mg/l
Molybdenum, dissolved	24	0.05	06/12/1990	0.02	09/15/2007	0.04	mg/l
Nickel, dissolved	24	0.02	06/12/1990	0.02	06/12/1990	0.02	mg/l
Potassium, dissolved	108	746.00	12/13/2016	0.40	07/18/2000	28.67	mg/l
Selenium, dissolved	24	0.0014	08/21/2015	0.001	06/12/1990	0.0011	mg/l
Silica, dissolved	108	40.00	09/09/2015	6.00	01/17/2018	12.70	mg/l
Sodium, dissolved	108	11,700.00	08/17/2021	259.00	06/12/1990	2,776.09	mg/l
Strontium, dissolved	108	4.93	11/06/2014	0.03	09/09/2015	1.91	mg/l
Vanadium, dissolved	24	0.01	06/12/1990	0.01	06/12/1990	0.01	mg/l
Zinc, dissolved	24	0.02	06/28/2007	0.01	06/12/1990	0.01	mg/l

Table 16: 90-4 Quarterly A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	131	2,790.00	11/07/2022	45.00	06/26/2002	836.40	mg/l
Carbonate as CaCO3	131	693.00	06/26/2002	10.00	12/16/2003	97.41	mg/l
Total Alkalinity as CaCO3	131	3,020.00	11/07/2022	142.00	09/28/2006	922.50	mg/l
Bromide	30	16.00	06/16/1997	0.29	08/01/1990	5.56	mg/l
Cation-Anion Balance	128	11.90	06/23/2010	-68.80	08/15/2017	-2.26	%
Sum of Anions	128	153.40	05/24/1994	34.16	08/01/1990	84.74	meq/l
Sum of Cations	128	143.00	02/27/1997	10.00	08/15/2017	81.72	meq/l
Chemical Oxygen Demand	22	840.00	08/16/1994	10.00	08/16/1996	192.50	mg/l
Chloride	131	4,690.00	05/24/1994	700.00	08/01/1990	2,389.57	mg/l
Conductivity, Lab	128	14,100.00	02/21/1994	309.00	05/27/2015	8,398.46	µmhos
Fluoride	131	23.70	08/01/1990	5.50	06/14/2008	12.44	mg/l
Hardness as CaCO3	131	204.00	02/21/1994	25.00	08/15/2017	86.09	mg/l
Nitrate as N, dissolved	29	0.08	06/26/2002	0.02	06/28/2006	0.05	mg/l
Nitrate/Nitrite as N,	29	0.09	06/16/2011	0.02	06/28/2006	0.06	mg/l
Nitrite as N, dissolved	29	0.04	06/16/2011	0.01	01/29/1991	0.02	mg/l
Nitrogen, Ammonia	28	3.30	08/10/2008	0.83	08/13/1990	1.88	mg/l
Nitrogen, Organic	28	10.10	03/14/2008	0.40	07/21/1993	3.39	mg/l
Nitrogen, Total Kjeldahl	28	12.10	03/14/2008	1.30	06/14/2000	5.03	mg/l
pH, lab	128	9.10	12/14/2021	7.70	09/14/2004	8.58	units
Phosphate, total	26	155.00	06/28/2006	0.06	08/14/1995	17.00	mg/l
Phosphorus, total	28	0.11	08/13/1990	0.02	07/31/1991	0.06	mg/l
SAR in Water	128	4,950.00	06/24/2003	19.00	08/15/2017	128.88	none
Sulfate	130	2,310.00	06/15/2014	4.00	12/16/2004	70.78	mg/l
Sulfide	23	5.80	06/26/2002	0.02	08/10/2008	1.18	mg/l
Total Dissolved Solids	131	8,270.00	02/27/1997	2,110.00	08/15/2017	4,932.12	mg/l
Conductivity, Field	189	13,600.00	11/17/1993	2,900.00	08/01/1990	8,525.32	µmhos
pH, Field	184	9.53	07/29/2009	7.30	10/09/2019	8.53	units
Temperature (°C), Field	132	22.10	07/10/2018	7.40	12/15/2005	12.34	(°C)
Water Level, Field	108	552.00	06/06/2022	516.40	10/01/1990	538.77	Ft.
Parameters **Metals**	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	29	0.80	06/16/2005	0.03	09/21/2010	0.28	mg/l
Arsenic, dissolved	29	0.05	01/29/1991	0.00	06/28/2006	0.01	mg/l
Barium, dissolved	29	1.56	03/14/2008	0.09	08/01/1990	0.85	mg/l
Beryllium, dissolved	29	U	11/27/2012	U	08/10/2008	U	mg/l
Boron, dissolved	131	1.29	07/21/1992	0.10	11/20/1996	0.35	mg/l
Cadmium, dissolved	29	0.03	07/21/1993	0.03	07/21/1993	0.03	mg/l
Calcium, dissolved	131	45.00	12/16/2004	3.00	11/20/1996	10.70	mg/l
Chromium, dissolved	29	U	11/27/2012	U	08/10/2008	U	mg/l
Copper, dissolved	29	0.08	06/24/2004	0.08	06/24/2004	0.08	mg/l
Iron, dissolved	29	1.67	10/25/1990	0.07	09/21/2010	0.39	mg/l
Lead, dissolved	29	U	11/27/2012	U	08/10/2008	U	mg/l
Lithium, dissolved	28	0.10	06/16/1997	0.02	08/13/1990	0.04	mg/l
Magnesium, dissolved	131	37.00	02/21/1994	3.90	08/15/2017	14.38	mg/l
Manganese, dissolved	28	0.15	10/25/1990	0.01	09/21/2010	0.05	mg/l
Mercury, dissolved	29	0.002	09/15/2007	0.0002	08/14/1995	0.0009	mg/l
Molybdenum, dissolved	29	0.37	08/13/1990	0.13	10/25/1990	0.24	mg/l
Nickel, dissolved	29	U	11/27/2012	U	08/10/2008	U	mg/l
Potassium, dissolved	131	10.00	07/31/1991	1.37	12/14/2020	2.99	mg/l
Selenium, dissolved	29	0.003	01/29/1991	0.001	08/13/1990	0.002	mg/l
Silica, dissolved	131	63.00	12/16/2004	2.10	04/20/1992	12.22	mg/l
Sodium, dissolved	131	3,180.00	02/27/1997	220.00	08/15/2017	1,870.50	mg/l
Strontium, dissolved	131	8.17	02/21/1994	0.30	08/15/2017	3.11	mg/l
Vanadium, dissolved	29	U	11/27/2012	U	08/10/2008	U	mg/l
Zinc, dissolved	29	0.10	07/31/1991	0.01	10/25/1990	0.05	mg/l

Table 17: AG-1 Quarterly A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	15	1,410	06/03/2020	198	02/10/2015	699	mg/l
Carbonate as CaCO3	15	275	02/01/2022	53	11/04/2014	194	mg/l
Total Alkalinity as CaCO3	15	1,670	06/03/2020	377	02/10/2015	893	mg/l
Bromide	11	2.38	04/22/2019	0.17	01/29/2015	1.27	mg/l
Cation-Anion Balance	15	2.00	10/05/2022	-6.70	02/10/2015	-2.58	%
Sum of Anions	15	45.00	06/11/2019	15.00	12/15/2015	25.47	meq/l
Sum of Cations	15	42.00	06/11/2019	14.00	02/10/2015	24.07	meq/l
Chemical Oxygen Demand	11	37.00	12/15/2015	10.00	06/11/2019	19.11	mg/l
Chloride	15	435	06/11/2019	92	11/04/2014	193	mg/l
Conductivity, Lab	15	3,800	06/11/2019	1,430	11/04/2014	2,340	µmhos
Fluoride	15	17.50	06/03/2020	5.47	06/19/2018	10.87	mg/l
Hardness as CaCO3	15	80.00	06/11/2019	13.00	06/19/2018	36.02	mg/l
Nitrate as N, dissolved	11	0.02	01/29/2015	0.02	01/29/2015	0.02	mg/l
Nitrate/Nitrite as N,	11	0.03	01/29/2015	0.00	11/04/2014	0.02	mg/l
Nitrite as N, dissolved	11	0.01	01/29/2015	0.00	11/04/2014	0.01	mg/l
Nitrogen, Ammonia	11	1.51	09/28/2017	0.47	04/05/2016	0.84	mg/l
Nitrogen, Organic	11	0.50	01/29/2015	0.10	04/05/2016	0.28	mg/l
Nitrogen, Total Kjeldahl	11	1.90	09/28/2017	0.60	04/05/2016	1.05	mg/l
pH, lab	15	9.70	01/29/2015	8.70	11/04/2014	9.23	units
Phosphate, total	11	1.02	06/03/2020	0.06	06/19/2018	0.38	mg/l
Phosphorus, total	11	0.33	06/03/2020	0.02	06/19/2018	0.12	mg/l
SAR in Water	15	59	06/03/2020	20.00	11/04/2014	40	none
Sulfate	15	210	02/10/2015	14.60	06/03/2022	78	mg/l
Sulfide	11	6.20	06/03/2020	0.04	11/04/2014	2.22	mg/l
Total Dissolved Solids	15	2,400	06/11/2019	843	12/15/2015	1,374	mg/l
Conductivity, Field	13	4,062	04/22/2019	1,432	04/05/2016	2,453	µmhos
pH, Field	13	9.64	06/19/2018	8.44	04/22/2019	8.99	units
Temperature (°C), Field	13	22.22	06/19/2018	14.90	02/01/2022	18.21	(°C)
Water Level, Field	13	581.90	09/28/2017	569.40	05/18/2021	574.22	Ft.
Parameters **Metals**	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Arsenic, dissolved	11	0.0038	11/04/2014	0.0004	02/10/2015	0.0011	mg/l
Barium, dissolved	11	0.41	04/22/2019	0.01	12/15/2015	0.12	mg/l
Beryllium, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Boron, dissolved	15	1.07	06/03/2020	0.21	02/10/2015	0.49	mg/l
Cadmium, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Calcium, dissolved	15	7.80	11/04/2014	1.30	04/05/2016	3.63	mg/l
Chromium, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Copper, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Iron, dissolved	11	0.86	09/28/2017	0.03	11/04/2014	0.25	mg/l
Lead, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Lithium, dissolved	11	0.28	06/11/2019	0.12	11/04/2014	0.17	mg/l
Magnesium, dissolved	15	17.10	06/11/2019	2.40	06/19/2018	6.80	mg/l
Manganese, dissolved	11	0.08	11/04/2014	0.01	04/05/2016	0.03	mg/l
Mercury, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Molybdenum, dissolved	11	0.19	06/19/2018	0.06	11/04/2014	0.13	mg/l
Nickel, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Potassium, dissolved	15	11.30	06/19/2018	1.23	10/05/2022	5.00	mg/l
Selenium, dissolved	11	0.0134	05/18/2021	0.0002	09/28/2017	0.0005	mg/l
Silica, dissolved	15	13.90	11/04/2014	0.20	02/10/2015	6.76	mg/l
Sodium, dissolved	15	924	06/11/2019	303	02/10/2015	514	mg/l
Strontium, dissolved	15	1.93	06/11/2019	0.23	12/15/2015	0.78	mg/l
Vanadium, dissolved	11	U	06/03/2020	U	11/04/2014	U	mg/l
Zinc, dissolved	11	0.61	05/18/2021	0.01	11/04/2014	0.23	mg/l

Table 18: AG-2 Annual A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	5	441	08/17/2021	308	11/12/2021	368	mg/l
Carbonate as	5	283	11/12/2021	80	08/17/2021	179	mg/l
Total Alkalinity as	5	592	11/12/2021	513	09/03/2021	547	mg/l
Bromide	3	U	08/17/2021	U	09/10/2021	U	mg/l
Cation-Anion	5	3.20	09/03/2021	-3.40	03/14/2022	-0.64	%
Sum of Anions	5	17.00	09/10/2021	13.00	08/17/2021	15.40	meq/l
Sum of Cations	5	17.00	09/10/2021	13.00	08/17/2021	15.20	meq/l
Chemical Oxygen	4	35.00	09/03/2021	25.00	09/10/2021	29.33	mg/l
Chloride	5	32	09/10/2021	14	03/14/2022	25	mg/l
Conductivity, Lab	5	1,620	11/12/2021	1,220	08/17/2021	1,430	µmhos
Fluoride	5	10.40	09/03/2021	9.31	09/10/2021	9.90	mg/l
Hardness as	5	60.00	08/17/2021	40.00	09/03/2021	51.80	mg/l
Nitrate as N,	3	UH	08/17/2021	UH	09/10/2021	UH	mg/l
Nitrate/Nitrite as	3	UH	08/17/2021	UH	09/10/2021	UH	mg/l
Nitrite as N,	3	UH	08/17/2021	UH	09/10/2021	UH	mg/l
Nitrogen,	4	0.91	09/03/2021	0.39	08/17/2021	0.71	mg/l
Nitrogen, Organic	4	0.59	09/10/2021	0.31	09/03/2021	0.46	mg/l
Nitrogen, Total	4	1.36	09/10/2021	0.78	03/14/2022	1.06	mg/l
pH, lab	5	9.80	09/10/2021	8.90	08/17/2021	9.40	units
Phosphate, total	4	1.45	09/03/2021	0.19	03/14/2022	0.83	mg/l
Phosphorus, total	4	0.47	09/03/2021	0.06	03/14/2022	0.27	mg/l
SAR in Water	5	23	09/03/2021	15.00	08/17/2021	19	none
Sulfate	5	190	11/12/2021	82.60	08/17/2021	149	mg/l
Sulfide	4	2.73	09/10/2021	0.10	08/17/2021	1.20	mg/l
Total Dissolved	5	971	09/10/2021	735	08/17/2021	871	mg/l
Conductivity, Field	8	1,561	09/10/2021	1,020	08/11/2021	1,237	µmhos
pH, Field	8	9.71	09/03/2021	7.44	08/11/2021	8.54	units
Temperature (°C),	8	28.10	08/11/2021	11.80	03/14/2022	18.96	(°C)
Water Level, Field	7	371.00	09/08/2022	368.70	09/03/2021	369.81	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	4	0.09	08/17/2021	0.09	08/17/2021	0.09	mg/l
Arsenic, dissolved	4	0.45	09/10/2021	0.06	08/17/2021	0.23	mg/l
Barium, dissolved	4	0.07	09/10/2021	0.02	08/17/2021	0.05	mg/l
Beryllium,	4	U	08/17/2021	U	09/10/2021	U	mg/l
Boron, dissolved	5	0.26	09/10/2021	0.25	08/17/2021	0.25	mg/l
Cadmium,	4	U	08/17/2021	U	09/10/2021	U	mg/l
Calcium,	5	11.30	08/17/2021	4.84	09/03/2021	7.52	mg/l
Chromium,	4	U	08/17/2021	U	09/10/2021	U	mg/l
Copper, dissolved	4	U	08/17/2021	U	09/10/2021	U	mg/l
Iron, dissolved	4	0.30	08/17/2021	0.17	09/03/2021	0.25	mg/l
Lead, dissolved	4	U	08/17/2021	U	09/10/2021	U	mg/l
Lithium, dissolved	4	0.11	09/03/2021	0.07	08/17/2021	0.10	mg/l
Magnesium,	5	8.79	11/12/2021	6.73	09/03/2021	7.88	mg/l
Manganese,	4	0.058	08/17/2021	U	09/10/2021	0.05	mg/l
Mercury,	4	U	08/17/2021	U	09/10/2021	U	mg/l
Molybdenum,	4	0.69	09/10/2021	0.22	08/17/2021	0.50	mg/l
Nickel, dissolved	4	U	08/17/2021	U	09/10/2021	U	mg/l
Potassium,	5	30.30	09/03/2021	1.24	08/17/2021	20.61	mg/l
Selenium,	4	0.0028	08/17/2021	0.00025	09/10/2021	0.00119	mg/l
Silica, dissolved	5	13.40	08/17/2021	6.40	09/03/2021	9.03	mg/l
Sodium, dissolved	5	342	09/10/2021	271	08/17/2021	316	mg/l
Strontium,	5	1.07	11/12/2021	0.77	08/17/2021	0.91	mg/l
Vanadium,	4	U	08/17/2021	U	09/10/2021	U	mg/l
Zinc, dissolved	4	0.615	09/10/2021	0.30	03/14/2022	0.46	mg/l

Table 19: MMC-IRI-4 Annual A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	61	1,250.00	03/22/1993	34.00	09/08/1993	282.81	mg/l
Carbonate as	61	870.00	03/22/1993	24.00	06/30/2009	256.27	mg/l
Total Alkalinity as	61	2,120.00	03/22/1993	176.00	06/14/2008	495.21	mg/l
Bromide	32	2.70	11/29/2011	0.07	05/26/2000	0.62	mg/l
Cation-Anion	59	13.30	11/06/2014	-9.10	03/22/2016	1.75	%
Sum of Anions	59	19.49	09/16/1991	9.50	05/29/2003	13.24	meq/l
Sum of Cations	59	18.34	09/16/1991	9.50	05/26/2004	13.77	meq/l
Chemical Oxygen	30	1,300.00	05/29/2002	12.00	03/15/2022	417.35	mg/l
Chloride	61	252.00	06/14/2008	21.00	12/20/1993	113.06	mg/l
Conductivity, Lab	60	3,320.00	09/15/1992	1,010.00	05/29/2003	1,513.17	µmhos
Fluoride	61	27.00	12/19/1995	2.20	09/15/1992	9.37	mg/l
Hardness as	61	962.00	03/22/1993	0.00	01/19/1994	33.65	mg/l
Nitrate as N,	32	3.89	06/14/2008	0.02	09/15/1992	0.43	mg/l
Nitrate/Nitrite as N,	32	3.90	06/14/2008	0.02	09/15/1992	0.33	mg/l
Nitrite as N,	32	0.05	11/06/2014	0.01	06/18/1996	0.02	mg/l
Nitrogen, Ammonia	32	21.30	09/08/1993	0.34	08/23/2017	3.53	mg/l
Nitrogen, Organic	32	104.00	05/29/2002	0.20	08/23/2017	17.23	mg/l
Nitrogen, Total	32	106.00	05/29/2002	0.40	04/22/2019	18.69	mg/l
pH, lab	60	11.90	06/16/1992	8.60	06/30/2009	10.16	units
Phosphate, total	32	155.00	07/29/2009	0.03	05/26/1999	6.50	mg/l
Phosphorus, total	32	2.95	09/27/1990	0.01	05/26/1999	0.24	mg/l
SAR in Water	52	190.00	11/14/1997	3.83	03/25/1992	63.71	none
Sulfate	61	360.00	09/16/1991	0.80	02/26/1997	31.18	mg/l
Sulfide	32	29.00	03/22/2016	0.02	09/15/1992	4.40	mg/l
Total Dissolved	60	2,752.00	03/22/1993	578.00	09/27/1990	846.61	mg/l
Conductivity, Field	79	3,910.00	07/29/2009	694.00	06/01/2005	1,588.34	µmhos
pH, Field	78	12.90	09/13/1995	7.78	09/16/2019	10.61	units
Temperature (°C),	39	22.50	06/01/2005	7.00	07/01/1991	12.42	(°C)
Water Level, Field	66	494.90	09/08/2022	409.63	11/01/1990	436.10	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	32	1.35	11/06/2014	0.03	08/23/2017	0.22	mg/l
Arsenic, dissolved	32	0.01	08/23/2017	0.0004	03/15/2022	0.0029	mg/l
Barium, dissolved	32	0.20	07/29/2009	U	09/08/1993	0.05	mg/l
Beryllium,	32	U	03/15/2022	U	05/26/2004	U	mg/l
Boron, dissolved	61	0.47	12/20/1993	0.04	03/09/2020	0.22	mg/l
Cadmium,	32	U	03/15/2022	U	05/26/2004	U	mg/l
Calcium, dissolved	61	27.50	06/30/2009	0.20	11/14/1997	4.15	mg/l
Chromium,	32	0.02	11/06/2014	0.01	06/23/1994	0.01	mg/l
Copper, dissolved	32	0.04	07/29/2009	0.01	07/30/1991	0.03	mg/l
Iron, dissolved	32	65.10	11/06/2014	0.01	06/30/1995	3.03	mg/l
Lead, dissolved	32	0.63	09/15/2010	0.02	06/23/1994	0.14	mg/l
Lithium, dissolved	32	0.17	09/27/1990	0.02	03/08/2021	0.06	mg/l
Magnesium,	61	5.00	09/27/1990	U	05/24/2005	1.44	mg/l
Manganese,	32	0.59	11/06/2014	0.01	07/29/2009	0.06	mg/l
Mercury, dissolved	32	0.0007	07/30/1991	0.0001	09/27/1990	0.0004	mg/l
Molybdenum,	32	0.13	05/24/2005	0.01	05/09/2001	0.05	mg/l
Nickel, dissolved	32	0.03	09/15/1992	0.01	03/22/2016	0.01	mg/l
Potassium,	61	39.00	03/22/1993	0.47	03/08/2021	5.81	mg/l
Selenium,	32	0.001	07/30/1991	0.0004	03/27/2018	0.0008	mg/l
Silica, dissolved	61	44.60	06/16/1992	1.30	03/09/2020	15.84	mg/l
Sodium, dissolved	61	567.00	03/22/1993	153.00	03/25/1992	303.77	mg/l
Strontium,	61	5.10	03/25/1992	0.01	04/21/1994	0.32	mg/l
Vanadium,	32	0.01	06/23/1994	0.01	05/26/2000	0.01	mg/l
Zinc, dissolved	32	0.61	11/06/2014	0.01	09/27/1990	0.09	mg/l

Table 20: O-GMW-A Annual A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	1	528.00	10/05/2014	528.00	10/05/2014	528.00	mg/l
Carbonate as CaCO3	1	51.40	10/05/2014	51.40	10/05/2014	51.40	mg/l
Total Alkalinity as CaCO3	1	579.00	10/05/2014	579.00	10/05/2014	579.00	mg/l
Bromide	1	U	10/05/2014	U	10/05/2014	U	mg/l
Cation-Anion Balance	1	-3.70	10/05/2014	-3.70	10/05/2014	-3.70	%
Sum of Anions	1	14.00	10/05/2014	14.00	10/05/2014	14.00	meq/l
Sum of Cations	1	13.00	10/05/2014	13.00	10/05/2014	13.00	meq/l
Chemical Oxygen Demand	1	U	10/05/2014	U	10/05/2014	U	mg/l
Chloride	1	18.60	10/05/2014	18.60	10/05/2014	18.60	mg/l
Conductivity, Lab	1	1,270.00	10/05/2014	1,270.00	10/05/2014	1,270.00	µmhos
Fluoride	1	16.40	10/05/2014	16.40	10/05/2014	16.40	mg/l
Hardness as CaCO3	1	46.00	10/05/2014	46.00	10/05/2014	46.00	mg/l
Nitrate as N, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Nitrate/Nitrite as N,	1	U	10/05/2014	U	10/05/2014	U	mg/l
Nitrite as N, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Nitrogen, Ammonia	1	0.40	10/05/2014	0.40	10/05/2014	0.40	mg/l
Nitrogen, Organic	1	0.30	10/05/2014	0.30	10/05/2014	0.30	mg/l
Nitrogen, Total Kjeldahl	1	0.70	10/05/2014	0.70	10/05/2014	0.70	mg/l
pH, lab	1	8.60	10/05/2014	8.60	10/05/2014	8.60	units
Phosphate, total	1	0.06	10/05/2014	0.06	10/05/2014	0.06	mg/l
Phosphorus, total	1	0.02	10/05/2014	0.02	10/05/2014	0.02	mg/l
SAR in Water	1	17.00	10/05/2014	17.00	10/05/2014	17.00	none
Sulfate	1	60.00	10/05/2014	60.00	10/05/2014	60.00	mg/l
Sulfide	1	0.03	10/05/2014	0.03	10/05/2014	0.03	mg/l
Total Dissolved Solids	1	746.00	10/05/2014	746.00	10/05/2014	746.00	mg/l
Conductivity, Field	0	N/A	N/A	N/A	N/A	N/A	µmhos
pH, Field	0	N/A	N/A	N/A	N/A	N/A	units
Temperature (°C), Field	0	N/A	N/A	N/A	N/A	N/A	(°C)
Water Level, Field	0	N/A	N/A	N/A	N/A	N/A	Ft.
Parameters **Metals**	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Arsenic, dissolved	1	0.02	10/05/2014	0.02	10/05/2014	0.02	mg/l
Barium, dissolved	1	0.13	10/05/2014	U	10/05/2014	0.13	mg/l
Beryllium, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Boron, dissolved	1	0.25	10/05/2014	0.25	10/05/2014	0.25	mg/l
Cadmium, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Calcium, dissolved	1	6.00	10/05/2014	U	10/05/2014	6.00	mg/l
Chromium, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Copper, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Iron, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Lead, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Lithium, dissolved	1	0.12	10/05/2014	0.12	10/05/2014	0.12	mg/l
Magnesium, dissolved	1	7.40	10/05/2014	U	10/05/2014	7.40	mg/l
Manganese, dissolved	1	0.01	10/05/2014	U	10/05/2014	0.01	mg/l
Mercury, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Molybdenum, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Nickel, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Potassium, dissolved	1	1.30	10/05/2014	1.30	10/05/2014	1.30	mg/l
Selenium, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Silica, dissolved	1	11.80	10/05/2014	11.80	10/05/2014	11.80	mg/l
Sodium, dissolved	1	267.00	10/05/2014	267.00	10/05/2014	267.00	mg/l
Strontium, dissolved	1	1.16	10/05/2014	U	10/05/2014	1.16	mg/l
Vanadium, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l
Zinc, dissolved	1	U	10/05/2014	U	10/05/2014	U	mg/l

Table 21: WSW-2 Quarterly A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Lo	Da	Av	Un
Bicarbonate as CaCO3	58	4,070.00	1	4	0	1	m
Carbonate as CaCO3	58	636.00	0	4	1	1	m
Total Alkalinity as CaCO3	58	4,410.00	1	5	0	1	m
Bromide	5	0.46	0	0	1	0	m
Cation-Anion Balance	57	38.70	0	-	0	-	%
Sum of Anions	58	137.00	1	1	1	5	m
Sum of Cations	58	126.00	1	1	0	5	m
Chemical Oxygen Demand	11	91.00	0	1	0	2	m
Chloride	58	1,910.00	0	1	0	6	m
Conductivity, Lab	59	11,600	1	1	1	4	µ
Fluoride	58	28.10	1	1	0	2	m
Hardness as CaCO3	58	72.00	0	1	1	3	m
Nitrate as N, dissolved	15	0.10	1	0	0	0	m
Nitrate/Nitrite as N,	15	0.10	1	0	0	0	m
Nitrite as N, dissolved	15	U	1	U	0	U	m
Nitrogen, Ammonia	15	2.08	0	0	1	1	m
Nitrogen, Organic	12	0.90	0	0	0	0	m
Nitrogen, Total Kjeldahl	15	2.50	0	0	0	1	m
pH, lab	59	8.90	0	8	0	8	u
Phosphate, total	15	2.80	0	0	0	0	m
Phosphorus, total	15	0.92	0	0	0	0	m
SAR in Water	58	190.00	1	3	0	8	n
Sulfate	50	156.00	0	5	0	3	m
Sulfide	15	3.90	1	1	0	2	m
Total Dissolved Solids	58	7,280.00	1	7	1	3	m
Conductivity, Field	134	11,740	1	7	0	4	µ
pH, Field	106	9.10	0	7	0	8	u
	Temperature (°C),	106	25.00	0	1	0	2	(
Water Level, Field	N/A	N/A	N/A	N/A	N/A	N/A	Ft.	

Parameters Metals	No. of Samples	High	Date	Low	Da	Av	Units
Aluminum, dissolved	15	0.05	03/23/2011	0.03	1	0	mg/l
Arsenic, dissolved	15	0.00	03/23/2017	0.00	1	0	mg/l
Barium, dissolved	15	1.53	04/03/2019	0.03	0	0	mg/l
Beryllium, dissolved	15	0.0004	01/20/2011	0.0002	0	0	mg/l
Boron, dissolved	58	3.00	11/29/2022	0.36	1	1	mg/l
Cadmium, dissolved	15	U	05/09/2022	U	1	U	mg/l
Calcium, dissolved	58	14.10	01/24/2018	1.70	0	3	mg/l
Chromium, dissolved	15	0.02	04/06/2016	0.02	0	0	mg/l
Copper, dissolved	15	U	05/09/2022	U	1	U	mg/l
Iron, dissolved	15	1.34	05/09/2022	0.05	0	0	mg/l
Lead, dissolved	15	U	05/09/2022	U	1	U	mg/l
Lithium, dissolved	15	0.27	05/09/2022	0.06	0	0	mg/l
Magnesium, dissolved	58	13.00	04/10/2018	2.00	0	6	mg/l
Manganese, dissolved	15	0.05	04/03/2019	0.01	0	0	mg/l
Mercury, dissolved	15	U	05/09/2022	U	1	U	mg/l
Molybdenum, dissolved	15	U	05/09/2022	U	1	U	mg/l
Nickel, dissolved	15	0.02	07/11/2013	0.01	0	0	mg/l
Potassium, dissolved	58	7.00	02/11/2020	0.40	1	1	mg/l
Selenium, dissolved	15	0.00	05/09/2022	0.00	0	0	mg/l
Silica, dissolved	58	12.80	11/05/2015	9.00	0	1	mg/l
Sodium, dissolved	58	2,850.00	11/29/2022	279.00	0	1	mg/l
Strontium, dissolved	58	2.67	01/24/2018	0.44	0	1	mg/l
Vanadium, dissolved	15	U	05/09/2022	U	1	U	mg/l

Zinc, dissolved	15	0.07	04/03/2019	0.01	1	0	mg/l

Table 22: WSW-3 Quarterly A-Groove Aquifer

Parameters Wet	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	37	529.00	08/22/201	459.0	07/17/201	487.16	mg/l
Carbonate as	37	86.10	04/03/201	26.70	04/06/201	54.97	mg/l
Total Alkalinity	37	578.00	11/05/201	518.0	03/03/202	542.16	mg/l
Bromide	9	1.54	03/23/201	0.10	08/22/201	0.94	mg/l
Cation-Anion	37	13.30	01/24/201	-7.70	07/08/202	-1.24	%
Sum of Anions	37	14.00	04/03/201	12.00	10/18/201	13.08	meq/l
Sum of	37	17.00	01/24/201	12.00	08/22/201	12.78	meq/l
Chemical	9	196.00	04/06/201	11.00	05/09/202	76.33	mg/l
Chloride	37	43.00	11/29/202	11.60	08/27/201	16.20	mg/l
Conductivity,	37	1,320	11/29/202	1,100	08/16/201	1,190	µmho
Fluoride	37	19.80	08/22/201	15.70	08/10/202	18.06	mg/l
Hardness as	37	238.00	01/24/201	12.00	06/27/201	19.47	mg/l
Nitrate as N,	9	0.09	08/22/201	0.09	08/22/201	0.09	mg/l
Nitrate/Nitrite	9	0.25	08/22/201	0.25	08/22/201	0.25	mg/l
Nitrite as N,	9	0.16	08/22/201	0.16	08/22/201	0.16	mg/l
Nitrogen,	9	0.60	05/09/202	0.43	04/06/201	0.48	mg/l
Nitrogen,	9	0.40	08/22/201	0.30	04/03/201	0.37	mg/l
Nitrogen, Total	9	0.80	08/22/201	0.30	01/24/201	0.58	mg/l
pH, lab	37	9.30	10/10/201	8.40	11/29/202	8.72	units
Phosphate,	9	0.12	08/22/201	0.05	05/09/202	0.08	mg/l
Phosphorus,	9	0.04	08/22/201	0.02	05/09/202	0.03	mg/l
SAR in Water	37	37.00	09/10/201	7.60	01/24/201	33.02	none
Sulfate	37	57.90	04/06/201	11.60	01/27/201	37.44	mg/l
Sulfide	9	6.93	05/09/202	0.16	08/22/201	2.61	mg/l
Total	37	774.00	01/24/201	661.0	08/27/201	701.46	mg/l
Conductivity,	88	1,498	10/10/201	632	02/21/201	1,196	µmho
pH, Field	88	8.90	03/16/201	7.60	04/06/201	8.41	units
	Temperatur	88 23.40	07/17/201	14.85	02/11/202	21.35	(°C)
Water Level,	N/A	N/A N/A	N/A		N/A	N/A	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	9	0.04	01/24/201	0.00	08/22/201	0.02	mg/l
Arsenic,	9	0.05	08/22/201	0.00	03/23/201	0.01	mg/l
Barium,	9	0.27	05/09/202	0.03	01/24/201	0.19	mg/l
Beryllium,	9	U	08/22/201	U	08/22/201	U	mg/l
Boron,	37	0.27	08/22/201	0.21	04/06/201	0.24	mg/l
Cadmium,	9	U	08/22/201	U	08/22/201	U	mg/l
Calcium,	37	81.30	01/24/201	2.20	03/23/201	4.60	mg/l
Chromium,	9	U	08/22/201	U	08/22/201	U	mg/l
Copper,	9	U	08/22/201	U	08/22/201	U	mg/l
Iron, dissolved	9	0.13	11/05/201	0.05	03/23/201	0.07	mg/l
Lead,	9	U	08/22/201	U	08/22/201	U	mg/l
Lithium,	9	0.13	04/06/201	0.06	08/22/201	0.07	mg/l
Magnesium,	37	8.50	01/24/201	1.40	09/10/201	1.90	mg/l
Manganese,	9	0.03	08/22/201	0.01	04/06/201	0.02	mg/l
Mercury,	9	U	08/22/201	U	08/22/201	U	mg/l
Molybdenum,	9	0.16	01/24/201	0.07	08/22/201	0.12	mg/l
Nickel,	9	0.014	04/06/201	U	08/22/201	0.01	mg/l
Potassium,	37	29.20	04/06/201	0.20	10/18/201	1.39	mg/l
Selenium,	9	0.003	04/07/202	0.0003	01/24/201	0.0017	mg/l
Silica,	37	13.50	07/08/202	11.30	04/06/201	12.54	mg/l
Sodium,	37	303.0	11/29/202	258.00	05/14/201	277.05	mg/l
Strontium,	37	0.63	11/29/202	0.45	01/24/201	0.54	mg/l
Vanadium,	9	U	08/22/201	U	08/22/201	U	mg/l
Zinc, dissolved	9	0.36	01/24/201	0.02	08/22/201	0.19	mg/l

Table 23: WSW-4 Quarterly A-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	38	524.00	04/07/202	439.0	08/27/201	479.92	mg/l
Carbonate as	39	537.00	09/25/201	46.10	01/13/202	74.66	mg/l
Total Alkalinity as	39	925.00	09/25/201	511.0	06/09/201	552.26	mg/l
Bromide	10	1.91	05/09/202	0.09	08/25/201	0.75	mg/l
Cation-Anion	38	3.70	01/24/201	-7.70	07/08/202	-2.19	%
Sum of Anions	39	22.00	09/25/201	13.00	06/09/201	13.59	meq/l
Sum of Cations	39	19.00	09/25/201	12.00	08/27/201	13.00	meq/l
Chemical Oxygen	10	53.00	08/25/201	13.00	04/06/201	31.25	mg/l
Chloride	39	50.60	11/14/201	7.87	10/05/202	17.90	mg/l
Conductivity,	39	2,810	09/25/201	1,130	04/06/201	1,256	µmho
Fluoride	39	19.70	11/14/201	5.11	09/25/201	16.61	mg/l
Hardness as	39	67.00	01/24/201	11.00	03/05/201	13.96	mg/l
Nitrate as N,	10	0.03	08/25/201	U	09/25/201	0.02	mg/l
Nitrate/Nitrite as	10	0.08	08/25/201	U	09/25/201	0.04	mg/l
Nitrite as N,	10	0.05	08/25/201	0.01	09/25/201	0.03	mg/l
Nitrogen,	10	2.28	09/25/201	0.43	04/13/202	0.66	mg/l
Nitrogen,	10	0.40	04/03/201	U	09/25/201	0.25	mg/l
Nitrogen, Total	10	1.00	09/25/201	0.30	03/23/201	0.62	mg/l
pH, lab	39	11.70	09/25/201	8.50	10/05/202	8.84	units
Phosphate, total	10	0.28	09/25/201	0.06	05/09/202	0.10	mg/l
Phosphorus,	10	0.09	09/25/201	0.02	05/09/202	0.03	mg/l
SAR in Water	39	44.00	09/25/201	15.00	01/24/201	35.10	none
Sulfate	39	130.00	09/25/201	20.00	04/06/201	53.36	mg/l
Sulfide	10	4.10	04/03/201	0.10	09/25/201	2.62	mg/l
Total Dissolved	39	1,210.00	09/25/201	687.0	08/15/202	732.08	mg/l
Conductivity,	89	1,558	10/10/201	1,073	04/06/201	1,228	µmho
pH, Field	89	9.40	01/13/202	7.70	08/27/201	8.51	units
Temperatur	89	29.00	06/20/201	13.80	04/19/201	21.35	(°C)
Water Level,	N/A	N/A	N/A	N/A	N/A	N/A	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	10	0.42	09/25/201	0.42	09/25/2014	0.42	mg/l
Arsenic,	10	0.01	09/25/201	0.00	04/07/2021	0.00	mg/l
Barium,	10	0.23	04/06/201	0.02	09/25/2014	0.09	mg/l
Beryllium,	10	U	04/06/201	U	09/25/2014	U	mg/l
Boron,	39	0.44	09/25/201	0.18	08/27/2015	0.21	mg/l
Cadmium,	10	U	09/25/201	U	09/25/2014	U	mg/l
Calcium,	39	24.70	01/24/201	1.90	03/23/2017	2.81	mg/l
Chromium,	10	U	09/25/201	U	09/25/2014	U	mg/l
Copper,	10	U	09/25/201	U	09/25/2014	U	mg/l
Iron, dissolved	10	1.63	04/03/201	0.02	03/23/2017	0.33	mg/l
Lead,	10	U	09/25/201	U	09/25/2014	U	mg/l
Lithium,	10	0.14	04/07/202	0.07	04/06/2016	0.11	mg/l
Magnesium,	39	2.00	08/27/201	0.30	09/25/2014	1.68	mg/l
Manganese,	10	0.01	01/24/201	0.01	01/24/2018	0.01	mg/l
Mercury,	10	U	09/25/201	U	09/25/2014	U	mg/l
Molybdenum,	10	0.04	01/24/201	0.02	09/25/2014	0.03	mg/l
Nickel,	10	U	09/25/201	U	09/25/2014	U	mg/l
Potassium,	39	18.30	09/25/201	0.20	05/14/2018	0.99	mg/l
Selenium,	10	0.0042	04/07/202	0.0003	04/03/2019	0.0013	mg/l
Silica,	39	172.00	09/25/201	8.90	01/24/2018	15.93	mg/l
Sodium,	39	416.00	09/25/201	262.00	07/08/2020	285.90	mg/l
Strontium,	39	7.97	01/24/201	0.39	03/05/2019	0.61	mg/l
Vanadium,	10	U	09/25/201	U	09/25/2014	U	mg/l
Zinc, dissolved	10	0.02	09/25/201	0.02	09/25/2014	0.02	mg/l

Table 24: 89-1 Quarterly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	191	762.00	03/25/1994	144.00	07/30/1990	610.71	mg/l
Carbonate as	191	406.00	05/21/1997	25.00	07/01/1997	100.05	mg/l
Total Alkalinity as	191	830.00	07/31/1991	200.00	07/30/1990	710.91	mg/l
Bromide	44	10.00	06/26/1991	0.06	07/01/1997	1.15	mg/l
Cation-Anion	186	24.10	04/16/2002	-10.30	01/13/2021	-0.21	%
Sum of Anions	185	18.00	06/14/2017	4.29	07/30/1990	15.71	meq/l
Sum of Cations	185	18.20	04/11/2006	4.38	07/30/1990	15.46	meq/l
Chemical	31	420.00	06/25/2007	30.00	03/30/1990	81.41	mg/l
Chloride	190	70.50	06/14/2017	6.00	09/27/1990	15.28	mg/l
Conductivity,	183	1,850.00	04/24/1991	1,000.00	05/20/1993	1,392.07	µmhos
Fluoride	185	38.20	02/24/1992	0.20	09/29/1994	23.81	mg/l
Hardness as	189	65.00	09/27/1990	0.00	07/30/1990	11.16	mg/l
Nitrate as N,	30	16.50	06/25/2007	0.02	06/26/1991	1.01	mg/l
Nitrate/Nitrite	30	17.00	06/25/2007	0.02	06/26/1991	1.07	mg/l
Nitrite as N,	31	0.55	06/25/2007	0.01	03/30/1990	0.13	mg/l
Nitrogen,	30	9.23	12/26/2018	0.06	07/30/1990	1.85	mg/l
Nitrogen,	29	29.10	06/26/1991	0.10	06/15/1992	5.08	mg/l
Nitrogen, Total	30	30.10	06/26/1991	0.80	06/15/1992	6.81	mg/l
pH, lab	186	9.80	12/20/1994	8.10	10/28/2002	8.89	units
Phosphate,	26	155.00	06/25/2007	0.06	07/18/1995	13.46	mg/l
Phosphorus,	31	2.90	09/27/1990	0.02	07/02/1998	0.17	mg/l
SAR in Water	161	158.62	06/26/1990	16.50	09/27/1990	48.40	none
Sulfate	189	140.00	10/25/1990	0.00	08/16/2017	20.10	mg/l
Sulfide	26	2.10	07/30/1990	0.02	07/27/2001	0.45	mg/l
Total Dissolved	191	1,100.00	10/21/1989	446.00	07/30/1990	862.76	mg/l
Conductivity,	208	1,683.00	06/05/2012	925.00	08/02/2006	1,343.22	µmhos
pH, Field	208	10.12	07/29/2009	7.10	06/10/2020	9.01	units
	Temperature	114 19.00	07/31/1991	7.60	04/01/2006	12.53	(°C)
Water Level, Field	98	500.70	06/25/2014	432.37	06/25/2014	473.31	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	30	1.54	03/30/1990	0.04	07/01/1997	0.24	mg/l
Arsenic,	30	0.30	10/21/1989	0.00	12/03/2012	0.02	mg/l
Barium,	30	0.43	08/02/2006	0.02	12/26/2018	0.18	mg/l
Beryllium,	29	0.01	06/26/1991	0.01	06/26/1991	0.01	mg/l
Boron,	186	3.30	03/25/1991	0.35	01/27/2004	0.68	mg/l
Cadmium,	29	0.01	10/21/1989	0.01	10/21/1989	0.01	mg/l
Calcium,	183	13.00	09/27/1990	0.50	03/16/2010	2.29	mg/l
Chromium,	29	0.01	06/26/1991	0.01	06/26/1991	0.01	mg/l
Copper,	30	0.02	06/25/2007	0.01	03/30/1990	0.01	mg/l
Iron, dissolved	30	0.93	03/30/1990	0.01	07/07/1999	0.17	mg/l
Lead, dissolved	29	0.10	10/21/1989	0.02	06/26/1991	0.06	mg/l
Lithium,	29	0.20	12/27/1990	0.06	03/30/1990	0.13	mg/l
Magnesium,	185	8.00	09/27/1990	0.30	03/16/2010	1.37	mg/l
Manganese,	29	0.07	06/25/2007	0.01	07/01/1997	0.03	mg/l
Mercury,	30	0.001	06/15/1992	0.0001	06/26/1991	0.0005	mg/l
Molybdenum,	29	0.60	10/21/1989	0.01	07/27/2001	0.14	mg/l
Nickel,	30	0.03	10/21/1989	0.01	12/03/2012	0.02	mg/l
Potassium,	185	13.00	03/25/1991	0.60	06/10/2020	1.28	mg/l
Selenium,	30	0.001	10/21/1989	0.001	10/21/1989	0.001	mg/l
Silica,	186	35.90	10/21/1989	1.80	06/11/2019	16.89	mg/l
Sodium,	186	408.00	04/11/2006	102.00	12/27/1990	348.55	mg/l
Strontium,	186	0.83	03/14/2012	0.06	10/21/1989	0.49	mg/l
Vanadium,	30	0.03	06/26/1991	0.01	10/21/1989	0.02	mg/l
Zinc, dissolved	30	0.07	07/29/2009	0.01	03/30/1990	0.02	mg/l

Table 25: 90-3 Quarterly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	130	1,790.00	09/14/2004	419.00	03/23/2005	768.54	mg/l
Carbonate as	130	419.00	03/23/2005	4.00	06/16/1997	88.55	mg/l
Total Alkalinity as	130	1,790.00	09/14/2004	680.00	06/15/2014	853.71	mg/l
Bromide	14	1.50	07/21/1992	0.10	01/29/1991	0.44	mg/l
Cation-Anion	129	36.90	08/10/2008	-33.50	09/14/2004	-1.58	%
Sum of Anions	120	37.50	09/14/2004	15.00	06/26/2002	18.92	meq/l
Sum of Cations	120	39.50	08/10/2008	11.10	11/23/2010	18.23	meq/l
Chemical	21	210.00	09/15/2007	10.00	08/14/1995	75.00	mg/l
Chloride	130	293.00	06/14/2008	9.75	01/16/2018	23.47	mg/l
Conductivity,	127	2,200.00	05/16/2007	1,280.00	07/21/1992	1,598.14	µmhos
Fluoride	130	98.00	03/24/1999	9.00	12/11/2001	23.07	mg/l
Hardness as	126	47.00	10/09/2019	1.00	10/25/1990	15.12	mg/l
Nitrate as N,	26	0.27	06/24/2004	0.04	01/29/1991	0.11	mg/l
Nitrate/Nitrite	26	0.27	06/24/2004	0.05	01/29/1991	0.12	mg/l
Nitrite as N,	26	0.03	08/16/1994	0.01	01/29/1991	0.02	mg/l
Nitrogen,	25	10.90	08/16/1996	0.83	06/28/2006	1.63	mg/l
Nitrogen,	25	12.00	09/15/2007	0.20	01/29/1991	3.56	mg/l
Nitrogen, Total	25	13.00	09/15/2007	0.50	08/14/1995	4.26	mg/l
pH, lab	127	9.00	04/24/1991	7.40	06/16/1997	8.70	units
Phosphate,	21	155.00	06/28/2006	0.06	05/08/2020	8.29	mg/l
Phosphorus,	24	3.63	08/01/1990	0.02	06/28/2006	0.27	mg/l
SAR in Water	121	198.04	10/25/1990	0.08	04/24/1991	48.17	none
Sulfate	86	333.00	01/20/1992	0.60	09/29/1997	49.26	mg/l
Sulfide	19	6.21	08/01/1990	0.03	06/28/2006	0.76	mg/l
Total Dissolved	128	1,490.00	08/10/2008	813.00	11/23/2010	1,013.63	mg/l
Conductivity,	188	2,200.00	05/16/2007	1,135.00	06/16/1997	1,554.03	µmhos
pH, Field	188	10.60	12/16/2002	7.00	10/09/2019	8.67	units
	Temperature 129	19.70	05/01/2002	7.90	02/09/2021	12.31	(°C)
Water Level,	108	547.40	06/14/2011	507.30	01/15/2016	530.70	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	26	9.47	06/16/1997	0.04	06/14/2000	1.73	mg/l
Arsenic,	26	0.02	08/01/1990	0.00	11/27/2012	0.00	mg/l
Barium,	26	0.96	06/16/1997	0.03	08/08/1990	0.36	mg/l
Beryllium,	26	U	06/16/1997	U	08/08/1990	U	mg/l
Boron,	131	0.93	03/18/2004	0.31	02/21/1994	0.74	mg/l
Cadmium,	26	0.03	07/21/1993	0.03	07/21/1993	0.03	mg/l
Calcium,	131	15.00	10/09/2019	0.80	12/12/2008	2.54	mg/l
Chromium,	26	U	06/16/1997	U	08/08/1990	U	mg/l
Copper,	26	0.40	07/31/1991	0.01	06/24/2004	0.21	mg/l
Iron, dissolved	26	12.10	06/16/1997	0.01	06/16/2005	1.65	mg/l
Lead, dissolved	26	0.07	06/16/1997	0.04	07/21/1992	0.06	mg/l
Lithium,	25	0.15	06/09/1999	0.04	07/21/1993	0.13	mg/l
Magnesium,	131	8.00	10/30/1991	0.90	12/12/2008	2.20	mg/l
Manganese,	25	0.08	06/16/1997	0.01	06/28/2006	0.02	mg/l
Mercury,	27	0.02	07/31/1991	0.00	08/14/1995	0.01	mg/l
Molybdenum,	26	0.14	08/01/1990	0.02	08/16/1996	0.07	mg/l
Nickel,	26	0.02	01/29/1991	0.01	09/21/2010	0.02	mg/l
Potassium,	131	12.00	07/31/1991	1.00	05/23/1994	1.65	mg/l
Selenium,	26	0.001	08/08/1990	0.001	08/08/1990	0.001	mg/l
Silica,	131	122.00	10/30/1991	0.30	04/24/1991	19.50	mg/l
Sodium,	131	882.00	08/10/2008	247.00	11/23/2010	408.50	mg/l
Strontium,	131	1.30	04/20/1992	0.06	06/14/2000	0.69	mg/l
Vanadium,	26	U	06/16/1997	U	08/08/1990	U	mg/l
Zinc, dissolved	26	0.53	07/31/1991	0.01	08/01/1990	0.09	mg/l

Table 26: BG-1 Monthly B-Groove Aquifer (P&A'd 2022)

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	153	1,010.00	08/07/1997	283.00	02/16/2007	634.63	mg/l
Carbonate as CaCO3	153	581.00	08/21/2003	8.00	05/26/2000	138.31	mg/l
Total Alkalinity as CaCO3	153	1,160.00	08/21/2003	364.00	02/16/2007	769.19	mg/l
Bromide	19	3.00	09/02/1998	0.10	05/18/2006	0.49	mg/l
Cation-Anion Balance	152	42.30	03/17/2009	-36.30	08/07/1997	-1.65	%
Sum of Anions	152	30.80	08/07/1997	9.10	02/16/2007	17.37	meq/l
Sum of Cations	152	43.20	03/17/2009	6.70	02/16/2007	16.84	meq/l
Chemical Oxygen Demand	16	470.00	08/25/2005	10.00	09/14/2000	140.31	mg/l
Chloride	152	249.00	08/07/1997	U	09/25/2002	24.58	mg/l
Conductivity, Lab	153	3,980.00	08/07/1997	769.00	02/16/2007	1,514.95	µmhos
Fluoride	152	56.00	03/25/1998	12.80	06/14/2008	24.04	mg/l
Hardness as CaCO3	152	48.00	04/19/2001	1.00	02/16/2007	10.79	mg/l
Nitrate as N, dissolved	19	0.53	09/25/2002	0.03	08/30/2008	0.20	mg/l
Nitrate/Nitrite as N,	19	0.53	09/25/2002	0.02	05/18/2006	0.17	mg/l
Nitrite as N, dissolved	19	0.02	05/18/2006	0.02	05/18/2006	0.02	mg/l
Nitrogen, Ammonia	17	5.00	09/29/1997	0.72	09/29/2006	1.87	mg/l
Nitrogen, Organic	17	28.00	09/25/2002	0.30	09/22/1999	7.59	mg/l
Nitrogen, Total Kjeldahl	17	28.00	09/25/2002	1.40	09/15/1997	9.36	mg/l
pH, lab	152	22.10	05/01/2020	7.00	12/12/2008	9.06	units
Phosphate, total	15	155.00	05/18/2006	0.08	09/15/1997	22.53	mg/l
Phosphorus, total	17	0.51	09/24/2003	0.03	07/07/2022	0.12	mg/l
SAR in Water	151	148.00	11/23/2010	19.80	04/19/2001	58.80	none
Sulfate	150	70.00	10/30/2003	0.70	11/20/2000	12.83	mg/l
Sulfide	15	1.50	09/24/2003	0.03	09/29/2006	0.33	mg/l
Total Dissolved Solids	152	1,510.00	03/17/2009	453.00	02/16/2007	933.26	mg/l
Conductivity, Field	165	3,980.00	08/07/1997	1,310.00	02/08/2000	1,525.72	µmhos
pH, Field	165	10.69	07/29/2009	6.35	08/30/2008	8.93	units
Temperature (°C), Field	117	16.70	07/07/2022	8.60	12/01/2003	12.71	(°C)
Water Level, Field	117	541.70	07/07/2022	493.67	07/01/2001	522.68	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	19	7.96	09/25/2002	0.03	11/16/2007	1.06	mg/l
Arsenic, dissolved	19	0.00	09/29/1997	0.00	11/27/2012	0.00	mg/l
Barium, dissolved	19	1.26	09/25/2002	0.13	09/29/2006	0.31	mg/l
Beryllium, dissolved	19	U	11/27/2012	U	09/29/1997	U	mg/l
Boron, dissolved	151	1.67	03/17/2009	0.22	04/19/2001	0.82	mg/l
Cadmium, dissolved	19	U	11/27/2012	U	09/29/1997	U	mg/l
Calcium, dissolved	150	8.80	12/12/2008	0.20	11/23/2010	2.23	mg/l
Chromium, dissolved	19	0.02	09/29/1997	0.02	09/29/1997	0.02	mg/l
Copper, dissolved	19	0.38	09/25/2002	0.01	09/24/2003	0.09	mg/l
Iron, dissolved	19	29.40	09/25/2002	0.03	03/14/2008	2.66	mg/l
Lead, dissolved	19	0.88	09/25/2002	0.05	09/21/2010	0.36	mg/l
Lithium, dissolved	19	0.20	09/02/1998	0.12	08/30/2008	0.16	mg/l
Magnesium, dissolved	150	9.40	04/19/2001	0.20	09/29/2006	1.28	mg/l
Manganese, dissolved	18	0.18	09/25/2002	0.01	09/14/2000	0.04	mg/l
Mercury, dissolved	19	0.00	09/02/1998	0.00	09/02/1998	0.00	mg/l
Molybdenum, dissolved	19	0.06	09/29/1997	0.01	09/14/2004	0.03	mg/l
Nickel, dissolved	19	0.05	09/29/2006	0.02	09/25/2002	0.03	mg/l
Potassium, dissolved	152	12.00	08/07/1997	1.20	06/14/2001	3.09	mg/l
Selenium, dissolved	19	U	11/27/2012	U	09/29/1997	U	mg/l
Silica, dissolved	152	50.20	09/25/2002	1.40	10/26/2004	9.67	mg/l
Sodium, dissolved	152	973.00	03/17/2009	152.00	02/16/2007	374.43	mg/l
Strontium, dissolved	151	1.58	09/25/2002	0.14	02/16/2007	0.52	mg/l
Vanadium, dissolved	19	U	11/27/2012	U	09/29/1997	U	mg/l
Zinc, dissolved	19	0.80	09/25/2002	0.01	09/29/1997	0.11	mg/l

Table 27: BG-4 Monthly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	238	899.00	10/28/2002	524.00	09/14/2004	693.22	mg/l
Carbonate as CaCO3	238	210.00	07/30/2003	16.00	11/21/2008	94.19	mg/l
Total Alkalinity as CaCO3	238	984.00	05/07/2018	612.00	04/17/2002	783.88	mg/l
Bromide	31	0.10	08/12/2004	0.10	08/12/2004	0.10	mg/l
Cation-Anion Balance	237	13.40	08/02/2006	-12.80	05/07/2018	-2.25	%
Sum of Anions	237	22.00	05/07/2018	12.60	08/02/2006	17.72	meq/l
Sum of Cations	237	20.00	05/14/2020	13.60	04/29/2010	16.94	meq/l
Chemical Oxygen Demand	31	400.00	08/22/2002	10.00	08/02/2006	74.48	mg/l
Chloride	237	116.00	11/03/2020	2.00	08/02/2006	29.50	mg/l
Conductivity, Lab	237	1,960	01/12/2021	1,160	08/02/2006	1,568	µmhos
Fluoride	237	26.90	12/16/2003	2.09	06/06/2017	22.16	mg/l
Hardness as CaCO3	236	47.00	09/30/2008	5.00	11/27/2002	15.56	mg/l
Nitrate as N, dissolved	30	2.06	09/28/2006	0.03	11/06/2014	1.05	mg/l
Nitrate/Nitrite as N,	30	2.08	09/28/2006	0.02	05/18/2006	0.59	mg/l
Nitrite as N, dissolved	30	0.21	08/02/2006	0.01	05/18/2006	0.07	mg/l
Nitrogen, Ammonia	31	1.61	09/30/2008	0.43	05/14/2020	0.89	mg/l
Nitrogen, Organic	29	27.00	08/22/2002	0.50	08/02/2006	4.59	mg/l
Nitrogen, Total Kjeldahl	31	28.00	08/22/2002	1.00	04/13/2016	4.91	mg/l
pH, lab	238	9.20	05/21/2009	7.50	08/30/2008	8.78	units
Phosphate, total	27	155.00	05/18/2006	0.12	08/18/2010	38.97	mg/l
Phosphorus, total	31	0.32	05/14/2020	0.03	08/02/2006	0.08	mg/l
SAR in Water	236	73.30	12/16/2002	23.40	09/30/2008	42.89	none
Sulfate	235	50.00	09/28/2006	0.00	09/02/2015	12.06	mg/l
Sulfide	23	0.80	08/22/2002	0.03	09/28/2006	0.24	mg/l
Total Dissolved Solids	237	1,110	10/06/2020	789	08/02/2006	938	mg/l
Conductivity, Field	254	2,874	02/10/2016	1,101	10/05/2006	1,551	µmhos
pH, Field	253	10.01	07/29/2009	6.90	11/04/2019	8.52	units
Temperature (°C), Field	250	22.70	08/02/2016	5.80	01/26/2010	12.11	(°C)
Water Level, Field	246	547.26	11/10/2010	468.30	07/01/2002	506.49	Ft.
Parameters **Metals**	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	33	1.26	05/14/2020	0.03	05/18/2006	0.19	mg/l
Arsenic, dissolved	33	0.00	09/30/2008	0.00	05/04/2021	0.00	mg/l
Barium, dissolved	33	0.18	07/07/2022	0.00	07/06/2017	0.03	mg/l
Beryllium, dissolved	33	U	08/22/2002	U	05/04/2021	U	mg/l
Boron, dissolved	238	0.97	07/12/2007	0.34	08/21/2003	0.73	mg/l
Cadmium, dissolved	33	U	08/22/2002	U	05/04/2021	U	mg/l
Calcium, dissolved	239	14.30	11/05/2021	1.10	12/16/2002	2.99	mg/l
Chromium, dissolved	33	0.02	09/28/2006	0.02	09/28/2006	0.02	mg/l
Copper, dissolved	33	U	08/22/2002	U	05/04/2021	U	mg/l
Iron, dissolved	33	2.08	05/14/2020	0.01	08/12/2004	0.20	mg/l
Lead, dissolved	33	0.04	05/06/2019	0.04	05/06/2019	0.04	mg/l
Lithium, dissolved	33	0.17	05/14/2020	0.08	08/21/2003	0.14	mg/l
Magnesium, dissolved	238	4.40	09/30/2008	0.60	11/27/2002	1.95	mg/l
Manganese, dissolved	31	0.19	09/30/2008	0.01	03/14/2008	0.03	mg/l
Mercury, dissolved	33	U	09/28/2006	0.0004	09/28/2006	U	mg/l
Molybdenum, dissolved	33	0.12	08/22/2002	0.01	08/18/2010	0.04	mg/l
Nickel, dissolved	33	0.03	09/30/2008	0.01	12/03/2012	0.02	mg/l
Potassium, dissolved	239	6.20	07/24/2002	0.60	11/21/2008	1.56	mg/l
Selenium, dissolved	33	U	05/06/2019	0.0001	05/06/2019	0.0001	mg/l
Silica, dissolved	238	29.30	04/17/2002	5.50	08/21/2003	14.64	mg/l
Sodium, dissolved	239	451.00	08/03/2021	302.00	09/11/2013	375.55	mg/l
Strontium, dissolved	238	0.93	11/03/2020	0.06	04/27/2004	0.53	mg/l
Vanadium, dissolved	33	U	08/22/2002	U	05/04/2021	U	mg/l
Zinc, dissolved	33	0.13	08/30/2008	0.01	08/22/2002	0.03	mg/l

Table 28: BG-6 Monthly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	149	869.00	12/18/2013	541.00	12/08/2010	673.48	mg/l
Carbonate as	149	219.00	12/08/2010	48.10	02/10/2020	86.75	mg/l
Total Alkalinity	149	1,040.00	12/18/2013	633.00	06/11/2014	759.09	mg/l
Bromide	15	U	01/13/2011	U	07/07/2022	U	mg/l
Cation-Anion	148	5.90	04/09/2014	-9.70	01/12/2021	-2.36	%
Sum of Anions	148	23.00	12/18/2013	14.30	06/11/2014	16.86	meq/l
Sum of Cations	148	20.00	12/18/2013	13.10	04/11/2011	16.08	meq/l
Chemical	14	800.00	01/13/2011	10.00	07/07/2022	214.17	mg/l
Chloride	148	70.00	12/08/2010	10.00	01/20/2011	15.57	mg/l
Conductivity,	149	8,820	06/03/2019	1,320	07/05/2017	1,558	µmhos
Fluoride	148	27.80	06/03/2019	14.60	09/17/2012	23.37	mg/l
Hardness as	148	17.00	03/07/2022	10.00	09/11/2013	12.64	mg/l
Nitrate as N,	15	0.03	12/27/2012	0.03	12/27/2012	0.03	mg/l
Nitrate/Nitrite as	15	0.03	12/27/2012	0.03	12/27/2012	0.03	mg/l
Nitrite as N,	15	U	01/13/2011	U	07/07/2022	U	mg/l
Nitrogen,	14	0.95	10/12/2015	0.71	01/20/2011	0.82	mg/l
Nitrogen,	14	8.30	01/13/2011	0.25	07/07/2022	2.30	mg/l
Nitrogen, Total	14	9.00	01/13/2011	1.00	05/14/2020	2.95	mg/l
pH, lab	149	9.40	12/08/2010	8.00	01/11/2022	8.79	units
Phosphate,	14	77.50	08/11/2011	0.09	01/13/2011	5.66	mg/l
Phosphorus,	14	0.09	07/10/2013	0.03	01/13/2011	0.04	mg/l
SAR in Water	148	56.60	12/18/2013	37.00	03/07/2022	44.38	none
Sulfate	148	20.00	01/13/2011	3.45	11/02/2016	12.06	mg/l
Sulfide	14	0.10	01/20/2011	0.03	07/10/2013	0.05	mg/l
Total Dissolved	148	1,130	12/18/2013	799	05/14/2014	882	mg/l
Conductivity,	146	2,413	09/17/2012	1,232	06/05/2017	1,482	µmhos
pH, Field	144	9.58	03/05/2012	6.60	11/04/2019	8.35	units
Temperature	146	23.00	09/05/2017	4.62	11/22/2011	11.86	(°C)
Water Level, Field	145	517.10	08/07/2017	493.95	10/12/2015	507.54	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	15	0.04	01/13/2011	0.04	01/13/2011	0.04	mg/l
Arsenic,	15	0.06	01/13/2011	0.00	04/12/2016	0.01	mg/l
Barium,	15	0.39	01/13/2011	0.31	07/05/2017	0.34	mg/l
Beryllium,	15	U	05/04/2021	U	08/11/2011	U	mg/l
Boron,	148	0.91	12/18/2013	0.62	12/08/2010	0.72	mg/l
Cadmium,	15	U	05/04/2021	U	08/11/2011	U	mg/l
Calcium,	148	4.10	03/07/2022	2.00	09/11/2013	2.43	mg/l
Chromium,	15	0.01	12/31/2018	0.01	12/31/2018	0.01	mg/l
Copper,	15	0.04	05/06/2019	0.04	05/06/2019	0.04	mg/l
Iron, dissolved	15	0.19	12/31/2018	0.02	12/04/2012	0.07	mg/l
Lead, dissolved	15	0.05	12/04/2012	0.05	12/04/2012	0.05	mg/l
Lithium,	15	0.13	01/13/2011	0.11	07/05/2017	0.12	mg/l
Magnesium,	148	1.90	03/09/2011	1.30	12/08/2010	1.58	mg/l
Manganese,	15	0.01	01/13/2011	0.01	01/13/2011	0.01	mg/l
Mercury,	16	U	05/04/2021	U	08/11/2011	U	mg/l
Molybdenum,	15	0.06	01/13/2011	0.06	01/13/2011	0.06	mg/l
Nickel,	15	U	05/04/2021	U	08/11/2011	U	mg/l
Potassium,	148	2.10	12/08/2010	0.60	11/02/2016	0.95	mg/l
Selenium,	15	U	05/04/2021	U	08/11/2011	U	mg/l
Silica,	148	17.80	08/03/2021	1.10	12/08/2010	15.54	mg/l
Sodium,	148	439.00	12/18/2013	292.00	04/11/2011	357.13	mg/l
Strontium,	148	0.83	09/07/2014	0.38	12/08/2010	0.70	mg/l
Vanadium,	15	U	05/04/2021	U	08/11/2011	U	mg/l
Zinc, dissolved	15	0.03	07/05/2017	0.01	12/04/2012	0.02	mg/l

Table 29: BG-7 Annual B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	9	912	06/02/2020	501	12/15/2015	708	mg/l
Carbonate as	9	307	12/15/2015	80	06/02/2020	180	mg/l
Total Alkalinity as	9	992	06/02/2020	808	12/15/2015	888	mg/l
Bromide	9	0.14	10/18/2014	0.13	09/28/2017	0.13	mg/l
Cation-Anion	9	2.40	06/25/2019	-4.80	06/02/2020	-1.02	%
Sum of Anions	9	24.00	10/18/2014	20.00	06/25/2019	22.11	meq/l
Sum of Cations	9	24.00	10/18/2014	19.00	06/03/2022	21.67	meq/l
Chemical	9	30.00	06/25/2019	10.00	06/02/2020	21.13	mg/l
Chloride	9	201	12/15/2015	16	06/03/2022	109	mg/l
Conductivity,	9	2,340	10/18/2014	1,770	06/02/2020	2,033	µmhos
Fluoride	9	23.70	06/09/2021	18.20	12/15/2015	20.69	mg/l
Hardness as	9	13.00	10/18/2014	11.00	04/05/2016	11.99	mg/l
Nitrate as N,	9	0.02	10/18/2014	0.02	10/18/2014	0.02	mg/l
Nitrate/Nitrite	9	0.02	10/18/2014	0.02	10/18/2014	0.02	mg/l
Nitrite as N,	9	0.01	12/15/2015	UH	10/18/2014	UH	mg/l
Nitrogen,	9	1.22	10/18/2014	0.81	06/20/2018	1.03	mg/l
Nitrogen,	9	1.20	06/20/2018	0.20	10/18/2014	0.63	mg/l
Nitrogen, Total	9	2.00	09/28/2017	0.85	06/03/2022	1.47	mg/l
pH, lab	9	9.60	12/15/2015	8.30	06/09/2021	9.07	units
Phosphate,	9	0.40	12/15/2015	0.06	06/09/2021	0.15	mg/l
Phosphorus,	9	0.13	12/15/2015	0.02	06/09/2021	0.05	mg/l
SAR in Water	9	66	04/05/2016	53.00	06/09/2021	60	none
Sulfate	9	40	10/18/2014	5.58	06/20/2018	16	mg/l
Sulfide	9	0.15	06/25/2019	0.02	06/02/2020	0.09	mg/l
Total Dissolved	9	1,350	10/18/2014	1,050	06/03/2022	1,181	mg/l
Conductivity,	10	2,575	12/15/2015	1,594	10/25/2018	1,999	µmhos
pH, Field	10	9.40	06/20/2018	8.00	06/02/2020	8.68	units
	Temperature	10	22.50	10/18/2014	11.49	10/25/2018	14.90	(°C)
Water Level,	10	480.10	09/28/2017	470.30		10/25/2018	476.28	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	9	0.08	10/18/2014	0.04	04/05/2016	0.07	mg/l
Arsenic,	9	0.03	10/18/2014	0.00	09/28/2017	0.01	mg/l
Barium,	9	0.40	06/09/2021	0.02	12/15/2015	0.20	mg/l
Beryllium,	9	U	10/18/2014	U	06/09/2021	U	mg/l
Boron,	9	0.83	06/09/2021	0.56	12/15/2015	0.70	mg/l
Cadmium,	9	U	10/18/2014	U	06/09/2021	U	mg/l
Calcium,	9	3.60	10/18/2014	1.40	06/20/2018	2.23	mg/l
Chromium,	9	U	10/18/2014	U	06/09/2021	U	mg/l
Copper,	9	U	10/18/2014	U	06/09/2021	U	mg/l
Iron, dissolved	9	0.36	09/28/2017	0.06	12/15/2015	0.17	mg/l
Lead, dissolved	9	U	10/18/2014	U	06/09/2021	U	mg/l
Lithium,	9	0.17	04/05/2016	0.09	06/02/2020	0.13	mg/l
Magnesium,	9	1.90	09/28/2017	1.00	10/18/2014	1.61	mg/l
Manganese,	9	0.02	09/28/2017	0.01	10/18/2014	0.01	mg/l
Mercury,	9	U	10/18/2014	U	06/09/2021	U	mg/l
Molybdenum,	9	0.14	10/18/2014	0.05	06/20/2018	0.09	mg/l
Nickel,	9	U	10/18/2014	U	06/09/2021	U	mg/l
Potassium,	9	14.50	10/18/2014	0.90	06/25/2019	6.95	mg/l
Selenium,	9	0.00	10/18/2014	U	06/09/2021	U	mg/l
Silica,	9	18.90	10/18/2014	0.90	12/15/2015	8.70	mg/l
Sodium,	9	536	10/18/2014	428	06/03/2022	478	mg/l
Strontium,	9	0.66	06/25/2019	0.16	12/15/2015	0.41	mg/l
Vanadium,	9	0.01	10/18/2014	0.01	10/18/2014	0.01	mg/l
Zinc, dissolved	9	0.04	12/15/2015	0.04	12/15/2015	0.04	mg/l

Table 30: BG-10 Quarterly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	8	599	08/04/2021	446	09/03/2021	516	mg/l
Carbonate as	8	323	09/03/2021	192	09/10/2021	238	mg/l
Total Alkalinity as	8	802	08/04/2021	709	06/03/2022	754	mg/l
Bromide	3	U	08/04/2021	U	09/10/2021	U	mg/l
Cation-Anion	8	0.00	09/08/2022	-5.90	11/12/2021	-2.61	%
Sum of Anions	8	18.00	08/04/2021	16.00	06/03/2022	17.00	meq/l
Sum of Cations	8	17.00	08/04/2021	15.00	06/03/2022	16.13	meq/l
Chemical	3	247.00	08/04/2021	16.00	09/10/2021	98.67	mg/l
Chloride	8	42	09/03/2021	25	11/08/2022	31	mg/l
Conductivity,	8	1,610	09/03/2021	1,470	06/03/2022	1,534	µmhos
Fluoride	8	22.70	09/08/2022	20.10	08/04/2021	21.34	mg/l
Hardness as	8	88.00	08/04/2021	14.00	06/03/2022	25.88	mg/l
Nitrate as N,	3	UH	08/04/2021	UH	09/10/2021	UH	mg/l
Nitrate/Nitrite	3	UH	08/04/2021	UH	09/10/2021	UH	mg/l
Nitrite as N,	3	UH	08/04/2021	UH	09/10/2021	UH	mg/l
Nitrogen,	3	1.24	09/03/2021	0.82	08/04/2021	1.07	mg/l
Nitrogen,	3	0.93	08/04/2021	0.20	09/10/2021	0.48	mg/l
Nitrogen, Total	3	1.75	08/04/2021	1.38	09/10/2021	1.55	mg/l
pH, lab	8	9.70	09/03/2021	9.20	08/04/2021	9.43	units
Phosphate,	3	6.30	08/04/2021	1.01	09/10/2021	3.34	mg/l
Phosphorus,	3	2.02	08/04/2021	0.33	09/10/2021	1.08	mg/l
SAR in Water	8	41	03/14/2022	16.00	08/04/2021	35	none
Sulfate	8	U	08/04/2021	U	09/10/2021	U	mg/l
Sulfide	3	0.09	09/10/2021	0.07	09/03/2021	0.08	mg/l
Total Dissolved	8	939	08/04/2021	830	06/03/2022	882	mg/l
Conductivity,	12	1,620	07/23/2021	1,421	09/08/2022	1,478	µmhos
pH, Field	12	9.50	03/14/2022	7.04	07/23/2021	8.68	units
	Temperature	12	25.50	07/23/2021	11.60	11/08/2022	18.23	(°C)
Water Level,	7	452.00	11/07/2022	441.60		03/14/2022	447.81	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	3	U	08/04/2021	U	09/10/2021	U	mg/l
Arsenic,	3	0.011	08/04/2021	0.001	09/10/2021	0.004	mg/l
Barium,	3	0.40	09/10/2021	0.07	08/04/2021	0.24	mg/l
Beryllium,	3	U	08/04/2021	U	09/10/2021	U	mg/l
Boron,	8	0.82	08/04/2021	0.71	09/03/2021	0.73	mg/l
Cadmium,	3	U	08/04/2021	U	09/10/2021	U	mg/l
Calcium,	8	17.40	08/04/2021	2.50	11/08/2022	4.93	mg/l
Chromium,	3	U	08/04/2021	U	09/10/2021	U	mg/l
Copper,	3	U	08/04/2021	U	09/10/2021	U	mg/l
Iron, dissolved	3	1.06	09/03/2021	0.45	09/10/2021	0.66	mg/l
Lead, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l
Lithium,	3	0.26	08/04/2021	0.23	09/10/2021	0.24	mg/l
Magnesium,	8	10.80	08/04/2021	1.81	09/08/2022	3.27	mg/l
Manganese,	3	0.03	08/04/2021	0.02	09/10/2021	0.02	mg/l
Mercury,	3	U	08/04/2021	U	09/10/2021	U	mg/l
Molybdenum,	3	0.02	08/04/2021	0.02	08/04/2021	0.02	mg/l
Nickel,	3	U	08/04/2021	U	09/10/2021	U	mg/l
Potassium,	8	8.03	09/03/2021	4.28	11/08/2022	6.07	mg/l
Selenium,	3	0.0104	09/03/2021	0.0001	08/04/2021	0.0052	mg/l
Silica,	8	15.80	08/04/2021	3.30	03/14/2022	5.45	mg/l
Sodium,	8	356	09/03/2021	336	06/03/2022	350	mg/l
Strontium,	8	0.69	09/10/2021	0.54	08/04/2021	0.61	mg/l
Vanadium,	3	U	08/04/2021	U	09/10/2021	U	mg/l
Zinc, dissolved	3	U	08/04/2021	U	09/10/2021	U	mg/l

Table 31: BG-11 Quarterly B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	16	827	03/09/2021	683	03/05/2021	763	mg/l
Carbonate as	16	181	02/22/2022	63	03/16/2021	127	mg/l
Total Alkalinity as	16	955	09/07/2022	830	05/03/2021	890	mg/l
Bromide	4	U	05/03/2021	U	03/05/2021	U	mg/l
Cation-Anion	16	4.80	08/02/2021	-7.70	07/12/2021	-1.64	%
Sum of Anions	16	25.00	09/07/2022	19.00	03/05/2021	21.44	meq/l
Sum of Cations	16	25.00	09/07/2022	17.00	03/05/2021	20.81	meq/l
Chemical	4	34.00	03/05/2021	10.00	03/09/2021	16.75	mg/l
Chloride	16	183	09/07/2022	43	03/16/2021	93	mg/l
Conductivity,	16	2,370	09/07/2022	1,690	05/03/2021	1,940	µmhos
Fluoride	16	24.70	05/03/2021	19.80	06/03/2022	21.56	mg/l
Hardness as	16	22.00	08/02/2021	14.00	03/16/2021	17.50	mg/l
Nitrate as N,	4	0.06	03/05/2021	UH	03/05/2021	UH	mg/l
Nitrate/Nitrite	4	0.06	03/05/2021	UH	03/05/2021	UH	mg/l
Nitrite as N,	4	UH	05/03/2021	UH	03/05/2021	UH	mg/l
Nitrogen,	4	0.99	03/16/2021	0.89	03/05/2021	0.95	mg/l
Nitrogen,	4	0.28	03/05/2021	U	03/05/2021	U	mg/l
Nitrogen, Total	4	1.17	03/05/2021	0.96	03/16/2021	1.06	mg/l
pH, lab	16	9.20	11/02/2021	8.50	10/05/2021	8.89	units
Phosphate,	4	2.04	03/05/2021	0.15	03/16/2021	0.65	mg/l
Phosphorus,	4	0.66	03/05/2021	0.05	03/16/2021	0.21	mg/l
SAR in Water	16	56	09/07/2022	39.00	03/05/2021	49	none
Sulfate	16	5	03/05/2021	U	10/05/2021	U	mg/l
Sulfide	4	0.02	05/03/2021	U	03/05/2021	U	mg/l
Total Dissolved	16	1,360	09/07/2022	972	03/05/2021	1,145	mg/l
Conductivity,	15	2,276	11/08/2022	1,637	03/09/2021	1,903	µmhos
pH, Field	15	8.90	10/05/2021	8.15	07/12/2021	8.50	units
	Temperature	15	17.40	07/12/2021	12.60	03/09/2021	14.68	(°C)
Water Level,	15	561.40	11/08/2022	539.40		03/16/2021	551.26	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	4	U	03/05/2021	U	05/03/2021	U	mg/l
Arsenic,	4	0.03	03/09/2021	0.00	05/03/2021	0.01	mg/l
Barium,	4	0.41	05/03/2021	0.19	03/05/2021	0.32	mg/l
Beryllium,	4	U	03/05/2021	U	05/03/2021	U	mg/l
Boron,	16	0.89	11/02/2021	0.74	03/05/2021	0.82	mg/l
Cadmium,	4	U	03/05/2021	U	05/03/2021	U	mg/l
Calcium,	16	4.78	12/07/2021	2.75	04/05/2021	3.37	mg/l
Chromium,	4	0.01	03/05/2021	0.01	03/05/2021	0.01	mg/l
Copper,	4	0.01	05/03/2021	0.01	05/03/2021	0.01	mg/l
Iron, dissolved	4	0.94	03/16/2021	0.40	05/03/2021	0.66	mg/l
Lead, dissolved	4	U	03/05/2021	U	05/03/2021	U	mg/l
Lithium,	4	0.16	03/16/2021	0.15	03/05/2021	0.16	mg/l
Magnesium,	16	2.97	08/02/2021	1.79	03/16/2021	2.20	mg/l
Manganese,	4	0.04	03/05/2021	0.02	03/16/2021	0.03	mg/l
Mercury,	4	U	03/05/2021	U	05/03/2021	U	mg/l
Molybdenum,	4	0.13	03/09/2021	0.06	03/05/2021	0.09	mg/l
Nickel,	4	U	03/05/2021	U	05/03/2021	U	mg/l
Potassium,	16	2.90	08/02/2021	0.90	04/05/2021	1.20	mg/l
Selenium,	4	0.0017	03/09/2021	.0003	03/05/2021	0.0010	mg/l
Silica,	16	16.60	11/02/2021	10.30	03/05/2021	14.92	mg/l
Sodium,	16	553	09/07/2022	372	03/05/2021	462	mg/l
Strontium,	16	1.09	09/07/2022	0.63	03/05/2021	0.87	mg/l
Vanadium,	4	U	03/05/2021	U	05/03/2021	U	mg/l
Zinc, dissolved	4	U	03/05/2021	U	05/03/2021	U	mg/l

Table 32: MMC-IRI-6 Annual B-Groove Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	65	806.00	12/16/1992	356.00	02/26/1991	634.50	mg/l
Carbonate as CaCO3	65	754.00	09/27/1990	10.00	06/16/1992	102.08	mg/l
Total Alkalinity as CaCO3	65	1,064.00	09/27/1990	375.00	09/07/1990	714.28	mg/l
Bromide	35	2.60	09/07/1990	0.06	05/26/2000	0.74	mg/l
Cation-Anion Balance	63	11.10	05/29/2002	-9.40	07/29/2009	0.31	%
Sum of Anions	57	24.21	09/27/1990	12.00	05/26/2004	16.40	meq/l
Sum of Cations	57	23.84	09/27/1990	13.00	05/26/2004	16.43	meq/l
Chemical Oxygen Demand	27	550.00	07/29/2009	11.00	08/24/2017	149.42	mg/l
Chloride	64	524.00	09/07/1990	11.00	06/30/1995	41.45	mg/l
Conductivity, Lab	63	1,660.00	09/08/1993	1,050.00	03/22/1993	1,436.27	µmhos
Fluoride	65	32.00	09/28/1994	2.80	05/28/1991	21.64	mg/l
Hardness as CaCO3	63	59.00	09/27/1990	3.00	06/30/2009	10.92	mg/l
Nitrate as N, dissolved	34	1.99	06/14/2008	0.02	06/30/1995	0.23	mg/l
Nitrate/Nitrite as N,	34	2.13	06/14/2008	0.02	09/28/1994	0.24	mg/l
Nitrite as N, dissolved	34	0.14	06/14/2008	0.01	10/03/2012	0.08	mg/l
Nitrogen, Ammonia	34	5.70	05/09/2001	0.58	05/21/2007	1.12	mg/l
Nitrogen, Organic	34	34.70	07/29/2009	0.37	03/08/2021	8.48	mg/l
Nitrogen, Total Kjeldahl	34	35.50	07/29/2009	1.13	03/08/2021	9.58	mg/l
pH, lab	63	11.60	12/20/1993	8.40	12/30/1996	8.87	units
Phosphate, total	34	0.90	09/07/1990	0.03	05/26/2000	0.14	mg/l
Phosphorus, total	34	0.30	09/07/1990	0.01	06/18/1996	0.05	mg/l
SAR in Water	53	92.00	11/27/2002	29.17	09/27/1990	52.53	none
Sulfate	65	140.00	06/14/2008	2.00	05/28/1991	17.55	mg/l
Sulfide	34	0.80	09/07/1990	0.01	05/26/2004	0.13	mg/l
Total Dissolved Solids	64	1,428.00	09/27/1990	690.00	05/29/2003	914.05	mg/l
Conductivity, Field	89	3,803.00	09/01/2009	982.00	11/21/2005	1,535.96	µmhos
pH, Field	88	12.00	09/27/1990	7.60	09/16/2019	9.27	units
Temperature (°C), Field	46	16.20	06/14/2008	8.00	12/01/1990	12.22	(°C)
Water Level, Field	63	435.60	08/24/2017	398.45	11/01/1990	412.60	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	33	3.79	09/27/1990	0.03	05/26/2004	0.65	mg/l
Arsenic, dissolved	33	0.0280	09/27/1990	0.0003	05/26/2004	0.0068	mg/l
Barium, dissolved	33	0.44	03/08/2021	0.01	09/07/1990	0.24	mg/l
Beryllium, dissolved	33	U	03/08/2021	U	09/07/1990	U	mg/l
Boron, dissolved	65	0.72	01/31/1991	0.19	12/20/1993	0.57	mg/l
Cadmium, dissolved	33	U	03/08/2021	U	09/07/1990	U	mg/l
Calcium, dissolved	65	12.00	09/27/1990	0.00	02/26/1991	2.29	mg/l
Chromium, dissolved	33	0.01	03/08/2021	0.01	09/07/1990	0.01	mg/l
Copper, dissolved	33	0.07	10/22/2013	0.07	10/22/2013	0.07	mg/l
Iron, dissolved	33	0.24	11/06/2014	0.01	05/26/1999	0.05	mg/l
Lead, dissolved	33	0.32	03/22/2016	0.02	06/23/1994	0.15	mg/l
Lithium, dissolved	33	0.13	09/07/1990	0.06	09/15/1992	0.08	mg/l
Magnesium, dissolved	65	7.00	09/27/1990	0.00	02/26/1991	1.21	mg/l
Manganese, dissolved	33	0.02	03/27/2018	0.01	07/31/1991	0.01	mg/l
Mercury, dissolved	33	U	03/08/2021	U	09/07/1990	U	mg/l
Molybdenum, dissolved	33	0.02	03/22/2016	0.02	03/22/2016	0.02	mg/l
Nickel, dissolved	33	0.02	06/23/1994	0.02	06/23/1994	0.02	mg/l
Potassium, dissolved	65	13.00	09/07/1990	0.86	03/08/2021	1.75	mg/l
Selenium, dissolved	33	0.002	09/27/1990	0.001	07/31/1991	0.001	mg/l
Silica, dissolved	65	63.00	09/27/1990	9.50	12/20/1993	17.38	mg/l
Sodium, dissolved	65	508.00	09/27/1990	287.00	12/20/1993	367.60	mg/l
Strontium, dissolved	65	0.78	03/08/2021	0.00	12/20/1993	0.47	mg/l
Vanadium, dissolved	33	0.01	09/07/1990	U	06/18/1996	U	mg/l
Zinc, dissolved	33	0.13	10/22/2013	0.01	05/09/2001	0.03	mg/l

Table 33: DS-2 Annual Dissolution Surface Aquifer (P&A'd 2022)

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as CaCO3	170	66,300.00	08/21/2003	3,970.00	11/18/2006	41,898.64	mg/l
Carbonate as CaCO3	170	33,400.00	08/05/1999	130.00	11/18/2006	3,886.81	mg/l
Total Alkalinity as CaCO3	170	68,800.00	08/21/2003	4,100.00	11/18/2006	45,510.65	mg/l
Bromide	21	3.00	05/18/2006	2.70	11/05/2019	2.85	mg/l
Cation-Anion Balance	169	80.00	11/18/2006	-67.20	09/15/2007	-1.99	%
Sum of Anions	169	1,430.00	05/13/2020	105.00	11/18/2006	980.39	meq/l
Sum of Cations	169	1,320.00	01/15/2019	193.00	09/15/2007	945.90	meq/l
Chemical Oxygen Demand	20	1,100.00	07/29/2009	100.00	09/14/2000	283.35	mg/l
Chloride	169	19,400.00	04/05/2021	105.00	04/11/2006	2,453.58	mg/l
Conductivity, Lab	170	75,100.00	05/13/2020	5,220.00	02/08/2000	51,875.33	µmhos
Fluoride	169	123.00	03/25/1998	8.60	04/11/2006	50.02	mg/l
Hardness as CaCO3	169	150.00	11/16/2007	1.00	03/25/1998	36.14	mg/l
Nitrate as N, dissolved	21	0.96	09/25/2002	0.00	09/24/2003	0.10	mg/l
Nitrate/Nitrite as N,	21	1.65	09/25/2002	0.00	09/24/2003	0.16	mg/l
Nitrite as N, dissolved	21	0.87	09/25/2002	0.00	09/24/2003	0.11	mg/l
Nitrogen, Ammonia	20	20.30	05/13/2020	3.75	09/14/2000	12.56	mg/l
Nitrogen, Organic	20	17.00	05/03/2021	1.90	09/24/2003	7.73	mg/l
Nitrogen, Total Kjeldahl	20	31.90	05/03/2021	1.70	09/14/2000	16.21	mg/l
pH, lab	170	9.10	10/14/2008	8.20	06/09/1999	8.50	units
Phosphate, total	20	77.50	05/18/2006	1.55	10/14/2008	35.71	mg/l
Phosphorus, total	20	18.80	09/15/2007	3.00	10/14/2008	11.16	mg/l
SAR in Water	135	7,600.00	03/25/1998	801.00	11/16/2007	2,285.15	none
Sulfate	169	1,040.00	12/16/2002	10.00	09/27/2005	126.60	mg/l
Sulfide	20	18.60	11/05/2019	0.05	08/25/2005	2.88	mg/l
Total Dissolved Solids	169	71,400.00	05/13/2020	20,800.00	12/08/2000	52,023.81	mg/l
Conductivity, Field	173	82,870.00	12/09/2019	26,900.00	12/01/2008	54,643.29	µmhos
pH, Field	172	12.60	01/11/2021	7.00	03/04/2015	8.50	units
Temperature (°C), Field	127	23.77	06/15/2011	6.30	03/04/2013	12.99	(°C)
Water Level, Field	192	604.20	09/20/2021	471.20	09/03/2020	551.49	Ft.
Parameters Metals	**No. of Samples**	**High**	**Date**	**Low**	**Date**	**Average**	**Units**
Aluminum, dissolved	21	1.60	09/23/2010	0.58	03/14/2008	1.09	mg/l
Arsenic, dissolved	21	U	09/30/1997	U	09/22/1999	U	mg/l
Barium, dissolved	21	3.85	03/14/2008	0.06	10/14/2008	1.78	mg/l
Beryllium, dissolved	21	U	09/30/1997	U	09/22/1999	U	mg/l
Boron, dissolved	168	43.40	01/28/2003	6.60	09/15/2007	31.64	mg/l
Cadmium, dissolved	21	U	09/30/1997	U	09/22/1999	U	mg/l
Calcium, dissolved	168	60.00	11/16/2007	0.40	08/12/2004	13.09	mg/l
Chromium, dissolved	21	0.40	09/23/2010	0.40	09/23/2010	U	mg/l
Copper, dissolved	21	0.60	09/14/2004	0.30	09/02/1998	U	mg/l
Iron, dissolved	21	1.20	09/02/1998	0.24	10/14/2008	U	mg/l
Lead, dissolved	21	0.28	03/14/2008	U	09/02/1998	U	mg/l
Lithium, dissolved	21	12.70	03/14/2008	1.00	09/15/2007	4.62	mg/l
Magnesium, dissolved	168	10.00	09/08/2015	0.30	03/14/2008	5.56	mg/l
Manganese, dissolved	21	0.01	10/14/2008	U	09/22/1999	U	mg/l
Mercury, dissolved	21	U	09/30/1997	U	09/22/1999	U	mg/l
Molybdenum, dissolved	21	0.50	09/23/2010	0.29	03/14/2008	U	mg/l
Nickel, dissolved	21	0.23	03/14/2008	U	09/22/1999	U	mg/l
Potassium, dissolved	168	340.00	10/10/2018	11.40	10/14/2008	51.77	mg/l
Selenium, dissolved	21	0.002	09/30/1997	U	09/22/1999	U	mg/l
Silica, dissolved	168	50.00	06/02/1998	3.60	04/11/2006	26.59	mg/l
Sodium, dissolved	168	29,800.00	04/19/2001	4,370.00	09/15/2007	21,507.56	mg/l
Strontium, dissolved	168	0.60	08/04/1997	0.07	10/14/2008	0.27	mg/l
Vanadium, dissolved	21	0.20	09/23/2010	U	09/22/1999	U	mg/l
Zinc, dissolved	21	3.00	11/16/2007	0.03	03/14/2008	U	mg/l

Table 34: DS-3 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	217	43,000	05/24/200	17,40	11/27/200	27,154	mg/l
Carbonate as	217	23,900	05/03/200	419	06/26/200	3,935	mg/l
Total Alkalinity as	217	60,100	03/14/200	21,90	06/11/201	30,915	mg/l
Bromide	32	5.00	05/03/200	0.70	08/02/200	2.18	mg/l
Cation-Anion	217	13.50	10/28/200	-93.80	04/10/201	-4.67	%
Sum of Anions	217	1,440.00	04/07/202	511.0	04/29/200	781.50	meq/l
Sum of Cations	217	1,730.00	03/14/200	20.70	04/10/201	727.33	meq/l
Chemical Oxygen	32	1,100.00	07/30/200	140.0	08/21/200	405.66	mg/l
Chloride	217	17,200.00	12/19/201	39.00	05/24/200	5,707.04	mg/l
Conductivity, Lab	217	81,800	02/13/201	27,20	09/28/200	47,376	µmho
Fluoride	217	329.00	11/07/201	2.80	05/24/200	61.43	mg/l
Hardness as	217	49.00	03/08/201	1.00	01/28/200	15.08	mg/l
Nitrate as N,	32	0.10	08/12/200	0.02	09/28/200	0.05	mg/l
Nitrate/Nitrite as	32	0.14	11/10/201	0.02	09/28/200	0.05	mg/l
Nitrite as N,	32	0.05	11/10/201	0.01	07/11/201	0.03	mg/l
Nitrogen,	32	34.20	12/19/201	4.84	03/14/202	13.02	mg/l
Nitrogen, Organic	32	28.00	08/22/200	0.80	09/30/200	9.02	mg/l
Nitrogen, Total	32	50.00	12/19/201	3.50	09/23/201	19.80	mg/l
pH, lab	217	9.20	04/10/200	7.90	10/28/200	8.61	units
Phosphate, total	32	155.00	07/30/200	3.10	08/16/201	33.12	mg/l
Phosphorus, total	32	183.00	09/30/200	3.20	06/26/200	14.26	mg/l
SAR in Water	151	8,450	05/18/200	U	12/09/201	2,481	none
Sulfate	217	1,860	09/23/201	U	09/02/201	206	mg/l
Sulfide	32	18.10	06/10/202	0.04	08/25/200	3.86	mg/l
Total Dissolved	217	88,500	03/14/200	18,50	05/29/200	41,549	mg/l
Conductivity,	239	86,810	02/13/201	30,60	04/29/200	50,373	µmho
pH, Field	238	9.91	06/30/200	7.00	03/09/201	8.43	units
Temperatur	238	24.40	07/05/201	5.30	02/09/201	12.84	(°C)
Water Level,	243	547.30	08/02/202	484.10	02/04/201	521.75	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	33	79.90	08/12/200	0.40	03/14/200	17.00	mg/l
Arsenic,	33	0.02	06/10/202	0.01	12/04/201	0.02	mg/l
Barium, dissolved	33	3.32	08/25/200	0.19	08/19/200	1.83	mg/l
Beryllium,	33	U	05/04/202	U	08/22/200	U	mg/l
Boron, dissolved	218	74.70	02/13/201	3.69	05/29/200	19.28	mg/l
Cadmium,	33	U	05/04/202	U	08/22/200	U	mg/l
Calcium,	218	14.00	07/10/201	0.30	05/29/200	4.07	mg/l
Chromium,	33	0.01	05/18/200	U	05/18/200	U	mg/l
Copper, dissolved	33	1.20	08/16/201	0.50	08/12/200	0.85	mg/l
Iron, dissolved	33	3.70	09/15/200	0.07	05/18/200	1.49	mg/l
Lead, dissolved	33	1.40	08/22/200	0.22	03/14/200	0.81	mg/l
Lithium, dissolved	33	8.48	03/14/200	2.70	12/19/201	3.35	mg/l
Magnesium,	218	10.00	01/08/200	U	09/02/201	3.99	mg/l
Manganese,	33	U	05/04/202	U	08/22/200	U	mg/l
Mercury,	33	U	05/04/202	U	08/22/200	U	mg/l
Molybdenum,	33	0.70	08/19/200	0.30	08/18/201	0.45	mg/l
Nickel, dissolved	33	0.20	09/23/201	0.02	05/18/200	0.13	mg/l
Potassium,	218	150.00	02/13/201	0.00	11/21/200	36.65	mg/l
Selenium,	33	0.008	08/22/200	0.004	07/12/200	0.0058	mg/l
Silica, dissolved	218	79.00	04/11/200	8.90	05/29/200	25.88	mg/l
Sodium,	218	39,200	03/14/200	450	04/10/201	16,614	mg/l
Strontium,	218	0.70	02/21/200	0.04	05/29/200	0.22	mg/l
Vanadium,	33	0.20	06/26/200	0.01	05/18/200	0.08	mg/l
Zinc, dissolved	33	1.80	07/10/201	0.02	03/14/200	0.68	mg/l

Table 35: DS-6 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	78	9,560	07/06/202	5,770	12/07/201	7,133	mg/l
Carbonate as	78	5,060	03/07/201	2,110	07/06/202	3,710	mg/l
Total Alkalinity as	78	12,400	03/05/202	9,650	08/09/201	10,841	mg/l
Bromide	11	U	04/06/202	U	04/05/201	U	mg/l
Cation-Anion	77	2.60	02/11/202	-13.30	07/06/202	-4.19	%
Sum of Anions	77	272.00	03/05/202	219.0	11/03/202	240.14	meq/l
Sum of Cations	77	255.00	02/11/202	188.0	12/01/202	220.89	meq/l
Chemical Oxygen	11	167.00	12/09/201	44.00	04/05/201	80.50	mg/l
Chloride	77	1,330	12/09/201	448	11/03/202	702	mg/l
Conductivity, Lab	78	19,800	12/09/201	14,90	12/01/202	16,964	µmho
Fluoride	77	51.00	04/07/202	26.80	09/08/201	37.10	mg/l
Hardness as	77	30.00	09/22/201	3.00	01/03/201	6.64	mg/l
Nitrate as N,	11	UH	04/06/202	UH	04/05/201	UH	mg/l
Nitrate/Nitrite as	11	UH	04/06/202	UH	04/05/201	UH	mg/l
Nitrite as N,	11	UH	04/06/202	UH	04/05/201	UH	mg/l
Nitrogen,	11	4.39	05/13/202	0.58	03/14/202	3.52	mg/l
Nitrogen, Organic	11	7.00	03/14/202	0.80	07/11/201	3.40	mg/l
Nitrogen, Total	11	9.30	05/07/201	4.70	07/11/201	6.84	mg/l
pH, lab	78	9.50	03/01/201	9.00	08/10/202	9.26	units
Phosphate, total	11	7.00	09/27/201	0.71	12/09/201	4.89	mg/l
Phosphorus, total	11	2.20	09/27/201	0.23	12/09/201	1.58	mg/l
SAR in Water	54	1,600	02/11/202	410.0	09/22/201	1,042	none
Sulfate	77	370	12/09/201	20.60	09/04/202	86	mg/l
Sulfide	11	3.00	07/11/201	0.30	04/05/201	1.74	mg/l
Total Dissolved	77	14,100	12/09/201	11,20	12/01/202	12,482	mg/l
Conductivity,	73	19,680	05/07/201	13,82	05/01/202	16,851	µmho
pH, Field	73	9.70	08/09/201	7.30	12/10/201	8.97	units
Temperatur	73	16.70	09/06/201	8.00	01/14/202	12.07	(°C)
Water Level,	77	550.40	09/08/202	489.40	10/06/202	522.95	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	11	U	05/03/202	U	04/05/201	U	mg/l
Arsenic,	11	0.01	12/09/201	0.01	12/09/201	0.01	mg/l
Barium, dissolved	11	0.46	10/04/201	0.05	04/05/201	0.27	mg/l
Beryllium,	11	0.00	10/04/201	0.00	10/04/201	0.00	mg/l
Boron, dissolved	76	8.54	04/06/202	6.20	10/04/201	7.59	mg/l
Cadmium,	11	U	05/03/202	U	04/05/201	U	mg/l
Calcium,	76	7.34	06/07/202	1.00	03/25/201	1.98	mg/l
Chromium,	11	U	05/03/202	U	04/05/201	U	mg/l
Copper, dissolved	11	U	05/03/202	U	04/05/201	U	mg/l
Iron, dissolved	11	0.60	12/09/201	0.20	09/22/201	0.38	mg/l
Lead, dissolved	11	0.30	05/07/201	0.30	05/07/201	0.30	mg/l
Lithium, dissolved	11	2.50	03/14/202	1.94	09/27/201	2.16	mg/l
Magnesium,	76	4.00	03/25/201	2.00	09/08/201	2.71	mg/l
Manganese,	11	U	05/03/202	U	04/05/201	U	mg/l
Mercury,	11	U	05/03/202	U	04/05/201	U	mg/l
Molybdenum,	11	U	05/03/202	U	04/05/201	U	mg/l
Nickel, dissolved	11	U	05/03/202	U	04/05/201	U	mg/l
Potassium,	76	113.00	12/09/201	45.20	12/01/202	72.34	mg/l
Selenium,	11	U	09/22/201	U	09/22/201	U	mg/l
Silica, dissolved	76	34.00	07/11/201	7.00	01/27/201	26.24	mg/l
Sodium,	76	5,750	02/11/202	4,240	12/01/202	4,974	mg/l
Strontium,	76	0.48	12/07/202	0.05	12/29/201	0.19	mg/l
Vanadium,	11	U	05/03/202	U	04/05/201	U	mg/l
Zinc, dissolved	11	0.40	09/22/201	0.10	07/11/201	0.28	mg/l

Table 36: DS-7 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	84	33,500	04/08/2019	9,000	12/07/2020	24,166	mg/l
Carbonate as	84	16,600	08/02/2016	63	12/07/2020	4,739	mg/l
Total Alkalinity as	84	41,300	07/07/2016	9,060	12/07/2020	28,791	mg/l
Bromide	10	U	05/04/2021	U	12/30/2014	U	mg/l
Cation-Anion	84	21.30	03/05/2020	-15.70	10/06/2020	-2.02	%
Sum of Anions	84	3,360.00	12/17/2014	302.00	12/07/2020	1,252.25	meq/l
Sum of Cations	84	3,230.00	12/17/2014	293.00	03/15/2022	1,190.51	meq/l
Chemical Oxygen	10	3,630.00	11/05/2015	344.00	05/07/2019	1,693.14	mg/l
Chloride	84	96,000	12/30/2014	3,850	10/12/2021	24,016	mg/l
Conductivity,	84	207,000	12/17/2014	24,000	11/02/2020	73,951	µmhos
Fluoride	84	106.00	12/10/2019	38.50	10/06/2020	64.16	mg/l
Hardness as	84	82.40	12/16/2015	U	12/30/2014	28.88	mg/l
Nitrate as N,	10	0.03	05/07/2020	UH	12/30/2014	UH	mg/l
Nitrate/Nitrite	10	0.03	05/07/2020	UH	12/30/2014	UH	mg/l
Nitrite as N,	10	UH	05/04/2021	UH	12/30/2014	UH	mg/l
Nitrogen,	10	40.40	12/17/2014	3.33	05/04/2021	14.06	mg/l
Nitrogen,	10	7.00	05/07/2019	3.00	05/04/2021	4.58	mg/l
Nitrogen, Total	10	33.00	12/30/2014	1.10	11/05/2015	11.81	mg/l
pH, lab	84	9.10	05/06/2015	8.30	04/08/2020	8.61	units
Phosphate,	10	71.00	11/05/2015	6.10	05/04/2021	34.35	mg/l
Phosphorus,	10	23.00	11/05/2015	1.97	05/04/2021	11.11	mg/l
SAR in Water	30	7,600	06/08/2016	670.00	12/07/2021	2,490	none
Sulfate	84	480	12/30/2014	110.00	07/11/2017	350	mg/l
Sulfide	10	4.80	05/07/2019	1.30	12/17/2014	2.60	mg/l
Total Dissolved	84	189,676	12/17/2014	16,600	11/05/2021	68,709	mg/l
Conductivity,	82	186,700	12/17/2014	23,190	09/07/2021	74,709	µmhos
pH, Field	82	9.20	03/10/2016	7.10	12/17/2014	8.29	units
Temperature	82	17.60	07/08/2021	7.20	02/09/2021	12.89	(°C)
Water Level, Field	86	643.10	12/12/2014	478.76	11/09/2016	503.93	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	10	U	12/30/2014	U	05/04/2021	U	mg/l
Arsenic,	10	U	12/30/2014	U	05/04/2021	U	mg/l
Barium,	10	1.90	07/11/2017	0.40	11/05/2015	1.09	mg/l
Beryllium,	10	U	12/30/2014	U	05/04/2021	U	mg/l
Boron,	84	66.00	09/09/2015	7.10	01/09/2018	23.71	mg/l
Cadmium,	10	U	12/30/2014	U	05/04/2021	U	mg/l
Calcium,	84	30.00	05/06/2015	0.00	12/30/2014	7.17	mg/l
Chromium,	10	U	12/30/2014	U	05/04/2021	U	mg/l
Copper,	10	U	12/30/2014	U	05/04/2021	U	mg/l
Iron, dissolved	10	5.00	12/30/2014	0.64	03/15/2022	2.88	mg/l
Lead, dissolved	10	U	12/30/2014	U	05/04/2021	U	mg/l
Lithium,	10	2.70	07/11/2017	1.00	12/30/2014	2.03	mg/l
Magnesium,	84	20.00	06/17/2015	2.16	10/12/2021	13.52	mg/l
Manganese,	10	U	12/30/2014	U	05/04/2021	U	mg/l
Mercury,	10	U	12/30/2014	U	05/04/2021	U	mg/l
Molybdenum,	10	2.00	04/05/2016	U	05/04/2021	U	mg/l
Nickel,	10	U	12/30/2014	U	05/04/2021	U	mg/l
Potassium,	84	140.00	09/09/2015	14.20	03/15/2022	46.14	mg/l
Selenium,	10	U	12/30/2014	U	05/04/2021	U	mg/l
Silica,	84	55.00	06/08/2021	16.00	09/11/2017	22.78	mg/l
Sodium,	84	73,200	12/17/2014	6,630	03/15/2022	27,021	mg/l
Strontium,	84	1.00	08/12/2015	0.10	06/08/2016	0.33	mg/l
Vanadium,	10	U	12/30/2014	U	05/04/2021	U	mg/l
Zinc, dissolved	10	0.50	07/11/2017	U	05/04/2021	U	mg/l

Table 37: DS-8 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	10	23,300	01/15/2015	16,000	04/07/2022	19,010	mg/l
Carbonate as	10	9,590	06/25/2019	4,200	01/15/2015	7,320	mg/l
Total Alkalinity as	10	27,500	01/15/2015	24,600	04/07/2022	26,330	mg/l
Bromide	10	U	01/08/2015	U	06/08/2021	U	mg/l
Cation-Anion	10	-1.40	06/25/2019	-9.50	01/08/2015	-4.10	%
Sum of Anions	10	586.00	06/03/2020	530.00	04/07/2022	562.50	meq/l
Sum of Cations	10	552.00	06/25/2019	477.00	01/08/2015	518.30	meq/l
Chemical	10	731.00	01/15/2015	95.00	09/28/2017	223.14	mg/l
Chloride	10	1,080	06/25/2019	900	01/15/2015	989	mg/l
Conductivity,	10	37,100	06/19/2018	33,200	12/15/2015	35,030	µmhos
Fluoride	10	83.70	06/08/2021	61.80	06/19/2018	70.13	mg/l
Hardness as	10	7.00	04/07/2022	7.00	04/07/2022	7.00	mg/l
Nitrate as N,	10	0.03	01/15/2015	UH	06/08/2021	UH	mg/l
Nitrate/Nitrite	10	0.03	01/15/2015	UH	06/08/2021	UH	mg/l
Nitrite as N,	10	0.01	06/25/2019	UH	06/08/2021	UH	mg/l
Nitrogen,	10	11.40	04/07/2022	5.93	06/08/2021	8.31	mg/l
Nitrogen,	10	10.00	06/08/2021	1.30	06/19/2018	5.30	mg/l
Nitrogen, Total	10	15.60	06/08/2021	6.80	06/03/2020	12.29	mg/l
pH, lab	10	9.30	04/07/2022	8.70	01/08/2015	9.08	units
Phosphate,	10	25.00	06/25/2019	15.00	12/15/2015	19.70	mg/l
Phosphorus,	10	8.20	06/25/2019	4.90	12/15/2015	6.37	mg/l
SAR in Water	1	1,900	04/07/2022	1,900	04/07/2022	1,900	none
Sulfate	10	368	06/25/2019	100.00	01/08/2015	227	mg/l
Sulfide	10	2.89	04/07/2022	0.60	04/05/2016	1.68	mg/l
Total Dissolved	10	30,100	06/25/2019	27,700	04/07/2022	29,080	mg/l
Conductivity,	10	39,750	12/15/2015	31,210	04/05/2016	34,369	µmhos
pH, Field	10	9.23	06/19/2018	8.20	10/06/2014	8.91	units
	Temperature 10	15.20	06/08/2021	11.20	10/06/2014	13.40	(°C)
Water Level, Field	10	501.10	04/07/2022	81.00	01/08/2015	455.41	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	10	U	06/08/2021	U	01/08/2015	U	mg/l
Arsenic,	10	0.07	01/15/2015	0.01	04/05/2016	0.03	mg/l
Barium,	10	1.00	01/15/2015	0.30	06/03/2020	0.56	mg/l
Beryllium,	10	U	06/08/2021	U	01/08/2015	U	mg/l
Boron,	10	14.00	06/25/2019	12.70	04/05/2016	13.45	mg/l
Cadmium,	10	U	06/08/2021	U	01/08/2015	U	mg/l
Calcium,	10	2.84	04/07/2022	2.84	04/07/2022	2.84	mg/l
Chromium,	10	U	06/08/2021	U	01/08/2015	U	mg/l
Copper,	10	U	06/08/2021	U	01/08/2015	U	mg/l
Iron, dissolved	10	2.70	01/15/2015	0.40	09/28/2017	1.44	mg/l
Lead, dissolved	10	U	06/08/2021	U	01/08/2015	U	mg/l
Lithium,	10	5.07	04/07/2022	4.20	01/08/2015	4.56	mg/l
Magnesium,	10	U	06/08/2021	U	01/08/2015	U	mg/l
Manganese,	10	U	06/08/2021	U	01/08/2015	U	mg/l
Mercury,	10	U	06/08/2021	U	01/08/2015	U	mg/l
Molybdenum,	10	0.50	01/15/2015	0.43	06/08/2021	0.48	mg/l
Nickel,	10	0.30	01/15/2015	0.30	01/15/2015	0.30	mg/l
Potassium,	10	68.00	04/05/2016	43.00	01/08/2015	59.97	mg/l
Selenium,	10	U	06/08/2021	U	01/08/2015	U	mg/l
Silica,	10	60.00	06/08/2021	18.00	01/08/2015	37.80	mg/l
Sodium,	10	12,500	06/25/2019	10,800	01/08/2015	11,730	mg/l
Strontium,	10	0.10	01/15/2015	0.00	01/08/2015	0.07	mg/l
Vanadium,	10	0.10	06/25/2019	U	01/08/2015	U	mg/l
Zinc, dissolved	10	0.70	12/15/2015	U	01/08/2015	U	mg/l

Table 38: DS-9 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	11	20,200	06/02/2020	11,900	06/20/2018	14,536	mg/l
Carbonate as	11	4,570	04/22/2019	1,880	09/28/2017	2,696	mg/l
Total Alkalinity as	11	22,200	06/02/2020	14,300	09/28/2017	17,227	mg/l
Bromide	11	U	06/08/2021	U	11/04/2014	U	mg/l
Cation-Anion	11	-1.90	09/28/2017	-83.70	06/02/2020	-11.55	%
Sum of Anions	11	474.00	06/02/2020	341.00	06/20/2018	405.36	meq/l
Sum of Cations	11	429.00	06/03/2022	42.00	06/02/2020	335.82	meq/l
Chemical	11	132.00	09/28/2017	90.00	06/02/2020	113.22	mg/l
Chloride	11	2,470	02/04/2015	830	06/08/2021	1,755	mg/l
Conductivity,	11	29,900	06/03/2022	24,300	12/15/2015	26,800	µmhos
Fluoride	11	62.50	04/22/2019	41.40	06/20/2018	48.96	mg/l
Hardness as	11	36.00	01/28/2015	0.00	12/15/2015	20.83	mg/l
Nitrate as N,	11	0.03	01/28/2015	UH	12/15/2015	UH	mg/l
Nitrate/Nitrite	11	0.04	01/28/2015	UH	12/15/2015	UH	mg/l
Nitrite as N,	11	0.01	01/28/2015	UH	12/15/2015	UH	mg/l
Nitrogen,	11	7.40	01/28/2015	3.43	06/20/2018	5.15	mg/l
Nitrogen,	11	6.00	06/08/2021	1.80	01/28/2015	3.99	mg/l
Nitrogen, Total	11	10.50	06/08/2021	2.30	06/02/2020	8.14	mg/l
pH, lab	11	9.00	04/22/2019	8.60	06/08/2021	8.80	units
Phosphate,	11	12.00	06/02/2020	3.70	02/04/2015	7.81	mg/l
Phosphorus,	11	3.89	06/08/2021	1.20	02/04/2015	2.50	mg/l
SAR in Water	6	1,700	06/08/2021	83.00	06/02/2020	727	none
Sulfate	11	2,870	02/04/2015	10.80	04/22/2019	588	mg/l
Sulfide	11	0.47	06/03/2022	U	11/04/2014	U	mg/l
Total Dissolved	11	24,100	06/03/2022	15,500	06/02/2020	20,373	mg/l
Conductivity,	10	29,450	04/22/2019	23,740	04/05/2016	26,739	µmhos
pH, Field	10	8.93	06/20/2018	7.20	01/29/2015	8.36	units
	Temperature 10	14.35	06/20/2018	11.90	04/22/2019	13.15	(°C)
Water Level, Field	11	470.10	10/29/2014	453.17	10/18/2018	456.48	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	11	U	11/04/2014	U	06/08/2021	U	mg/l
Arsenic,	11	0.011	11/04/2014	0.003	02/04/2015	0.006	mg/l
Barium,	11	1.87	11/04/2014	0.12	02/04/2015	0.76	mg/l
Beryllium,	11	U	11/04/2014	U	06/08/2021	U	mg/l
Boron,	11	13.90	06/08/2021	1.20	06/02/2020	9.50	mg/l
Cadmium,	11	U	11/04/2014	U	06/08/2021	U	mg/l
Calcium,	11	6.00	11/04/2014	2.00	02/04/2015	3.35	mg/l
Chromium,	11	U	11/04/2014	U	06/08/2021	U	mg/l
Copper,	11	U	11/04/2014	U	06/08/2021	U	mg/l
Iron, dissolved	11	1.20	11/04/2014	0.20	12/15/2015	0.58	mg/l
Lead, dissolved	11	U	11/04/2014	U	06/08/2021	U	mg/l
Lithium,	11	4.09	06/08/2021	0.20	06/02/2020	2.94	mg/l
Magnesium,	11	7.00	01/28/2015	4.00	11/04/2014	5.50	mg/l
Manganese,	11	U	11/04/2014	U	06/08/2021	U	mg/l
Mercury,	11	U	11/04/2014	U	06/08/2021	U	mg/l
Molybdenum,	11	0.30	02/04/2015	0.20	12/15/2015	0.25	mg/l
Nickel,	11	U	11/04/2014	U	06/08/2021	U	mg/l
Potassium,	11	30.00	04/22/2019	21.00	06/20/2018	23.58	mg/l
Selenium,	11	U	11/04/2014	U	06/08/2021	U	mg/l
Silica,	11	29.00	04/22/2019	12.00	06/02/2020	20.91	mg/l
Sodium,	11	9,730	06/03/2022	940	06/02/2020	7,606	mg/l
Strontium,	11	1.10	06/02/2020	0.06	09/28/2017	0.30	mg/l
Vanadium,	11	U	11/04/2014	U	06/08/2021	U	mg/l
Zinc, dissolved	11	1.90	12/15/2015	0.20	09/28/2017	0.83	mg/l

Table 39: DS-10 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	31	41,100	07/08/202	17,20	12/01/202	23,490	mg/l
Carbonate as	31	13,800	09/07/202	566	09/03/202	4,067	mg/l
Total Alkalinity as	31	50,300	07/08/202	19,40	11/02/202	27,552	mg/l
Bromide	5	U	05/03/202	U	08/14/201	U	mg/l
Cation-Anion	30	13.50	05/13/202	-33.30	04/07/202	-4.53	%
Sum of Anions	30	1,230.00	07/08/202	447.0	11/02/202	784.77	meq/l
Sum of Cations	30	1,280.00	09/07/202	353.0	12/01/202	724.53	meq/l
Chemical Oxygen	5	400.00	08/14/201	400.0	08/14/201	400.00	mg/l
Chloride	30	19,800	09/10/201	2,040	11/02/202	8,048	mg/l
Conductivity, Lab	31	74,500	09/10/201	25,00	12/01/202	49,839	µmho
Fluoride	30	109.00	09/07/202	29.00	09/10/201	65.27	mg/l
Hardness as	30	18.00	10/07/201	7.00	04/05/202	12.00	mg/l
Nitrate as N,	5	UH	05/03/202	UH	08/14/201	UH	mg/l
Nitrate/Nitrite as	5	UH	05/03/202	UH	08/14/201	UH	mg/l
Nitrite as N,	5	UH	05/03/202	UH	08/14/201	UH	mg/l
Nitrogen,	5	19.80	03/14/202	8.55	05/03/202	12.31	mg/l
Nitrogen, Organic	5	9.00	05/03/202	5.00	08/14/201	6.67	mg/l
Nitrogen, Total	5	18.00	08/20/201	2.10	05/13/202	13.72	mg/l
pH, lab	31	8.90	04/07/202	8.50	06/02/202	8.69	units
Phosphate, total	5	31.00	05/03/202	22.00	08/14/201	25.00	mg/l
Phosphorus, total	5	9.95	05/03/202	7.10	08/14/201	8.02	mg/l
SAR in Water	8	4,200	08/02/202	1,200	11/02/202	2,414	none
Sulfate	30	U	05/03/202	U	08/14/201	U	mg/l
Sulfide	5	10.00	05/13/202	1.38	08/14/201	4.84	mg/l
Total Dissolved	30	67,700	09/07/202	22,70	12/01/202	41,637	mg/l
Conductivity,	30	70,540	08/20/201	28,73	12/01/202	48,214	µmho
pH, Field	29	8.90	01/11/202	8.20	12/01/202	8.56	units
Temperatur	30	15.90	07/08/202	9.32	02/10/202	12.14	(°C)
Water Level,	34	627.80	04/07/202	565.60	01/11/2021	591.36	Ft.

Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	5	U	08/14/201	U	05/03/2021	U	mg/l
Arsenic,	5	0.011	08/14/201	0.007	03/14/2022	0.009	mg/l
Barium, dissolved	5	1.90	08/20/201	1.25	03/14/2022	1.70	mg/l
Beryllium,	5	U	08/14/201	U	05/03/2021	U	mg/l
Boron, dissolved	30	61.00	09/07/202	11.50	12/01/2020	23.02	mg/l
Cadmium,	5	U	08/14/201	U	05/03/2021	U	mg/l
Calcium,	30	7.00	10/07/201	2.63	08/02/2021	4.79	mg/l
Chromium,	5	U	08/14/201	U	05/03/2021	U	mg/l
Copper, dissolved	5	U	08/14/201	U	05/03/2021	U	mg/l
Iron, dissolved	5	U	08/14/201	U	05/03/2021	U	mg/l
Lead, dissolved	5	U	08/14/201	U	05/03/2021	U	mg/l
Lithium, dissolved	5	3.70	05/13/202	3.50	08/14/2019	3.59	mg/l
Magnesium,	30	U	08/14/201	U	05/03/2021	U	mg/l
Manganese,	5	U	08/14/201	U	05/03/2021	U	mg/l
Mercury,	5	U	08/14/201	U	05/03/2021	U	mg/l
Molybdenum,	5	U	08/14/201	U	05/03/2021	U	mg/l
Nickel, dissolved	5	U	08/14/201	U	05/03/2021	U	mg/l
Potassium,	30	800.00	08/20/201	44.10	12/01/2020	248.60	mg/l
Selenium,	5	0.0021	05/03/202	U	08/14/2019	U	mg/l
Silica, dissolved	30	31.00	12/09/201	15.00	12/01/2020	22.77	mg/l
Sodium,	30	29,100	09/07/202	7,990	12/01/2020	16,320	mg/l
Strontium,	30	0.42	12/06/202	0.20	08/02/2021	0.26	mg/l
Vanadium,	5	U	08/14/201	U	05/03/2021	U	mg/l
Zinc, dissolved	5	U	08/14/201	U	05/03/2021	U	mg/l

Table 40: MMC-IRI-7 Annual Dissolution Surface Aquifer

Parameters Wet Chemistry	No. of Samples	High	Date	Low	Date	Average	Units
Bicarbonate as	64	31,900	03/15/2022	294	09/16/1991	8,909	mg/l
Carbonate as	64	4,730	11/02/2015	10.00	06/30/1995	1,096	mg/l
Total Alkalinity as	64	33,900	03/15/2022	294	09/16/1991	9,901	mg/l
Bromide	33	33.00	08/30/1990	0.10	05/21/2007	7.54	mg/l
Cation-Anion	64	6.10	03/28/2018	-27.90	03/15/2022	-2.61	%
Sum of Anions	61	700.00	03/15/2022	30.69	03/25/1992	233.82	meq/l
Sum of Cations	61	409.00	03/09/2020	31.56	05/28/1991	209.25	meq/l
Chemical Oxygen	30	960.00	06/14/2008	37.00	09/27/2017	154.79	mg/l
Chloride	63	739.00	03/09/2021	21.00	08/30/1990	355.27	mg/l
Conductivity,	62	39,600	03/15/2022	2,500	06/16/1992	13,981	µmhos
Fluoride	64	48.30	03/09/2021	1.30	05/28/1991	27.53	mg/l
Hardness as	64	135.00	06/14/2008	6.00	08/30/1990	25.14	mg/l
Nitrate as N,	33	3.22	10/22/2013	0.02	05/24/2005	0.51	mg/l
Nitrate/Nitrite	33	4.14	10/22/2013	0.02	09/27/2017	0.61	mg/l
Nitrite as N,	33	0.92	10/22/2013	U	05/21/2007	0.15	mg/l
Nitrogen,	33	7.90	11/06/2014	1.17	09/15/1992	4.11	mg/l
Nitrogen,	33	46.00	06/14/2008	0.50	08/22/1990	7.34	mg/l
Nitrogen, Total	33	51.00	06/14/2008	1.90	08/22/1990	11.01	mg/l
pH, lab	64	9.20	06/16/1992	8.30	06/30/1995	8.65	units
Phosphate,	31	155.00	05/21/2007	0.17	09/15/1992	16.18	mg/l
Phosphorus,	34	9.63	03/15/2022	0.05	09/15/1992	2.06	mg/l
SAR in Water	54	1,600.00	03/15/2022	88.89	03/25/1992	420.73	none
Sulfate	63	2,031.00	09/16/1991	2.50	06/18/1996	169.18	mg/l
Sulfide	33	3.31	08/30/1990	U	07/31/1991	0.57	mg/l
Total Dissolved	63	30,400	03/15/2022	1,708	09/15/1992	11,079	mg/l
Conductivity,	81	36,320	03/09/2020	1,800	06/01/1991	13,480	µmhos
pH, Field	80	12.20	09/01/1990	7.86	11/07/2015	8.89	units
	Temperature 45	19.40	08/01/1990	7.50	12/01/1990	12.37	(°C)
Water Level, Field	58	424.00	03/15/2022	405.03	04/01/2001	410.88	Ft.

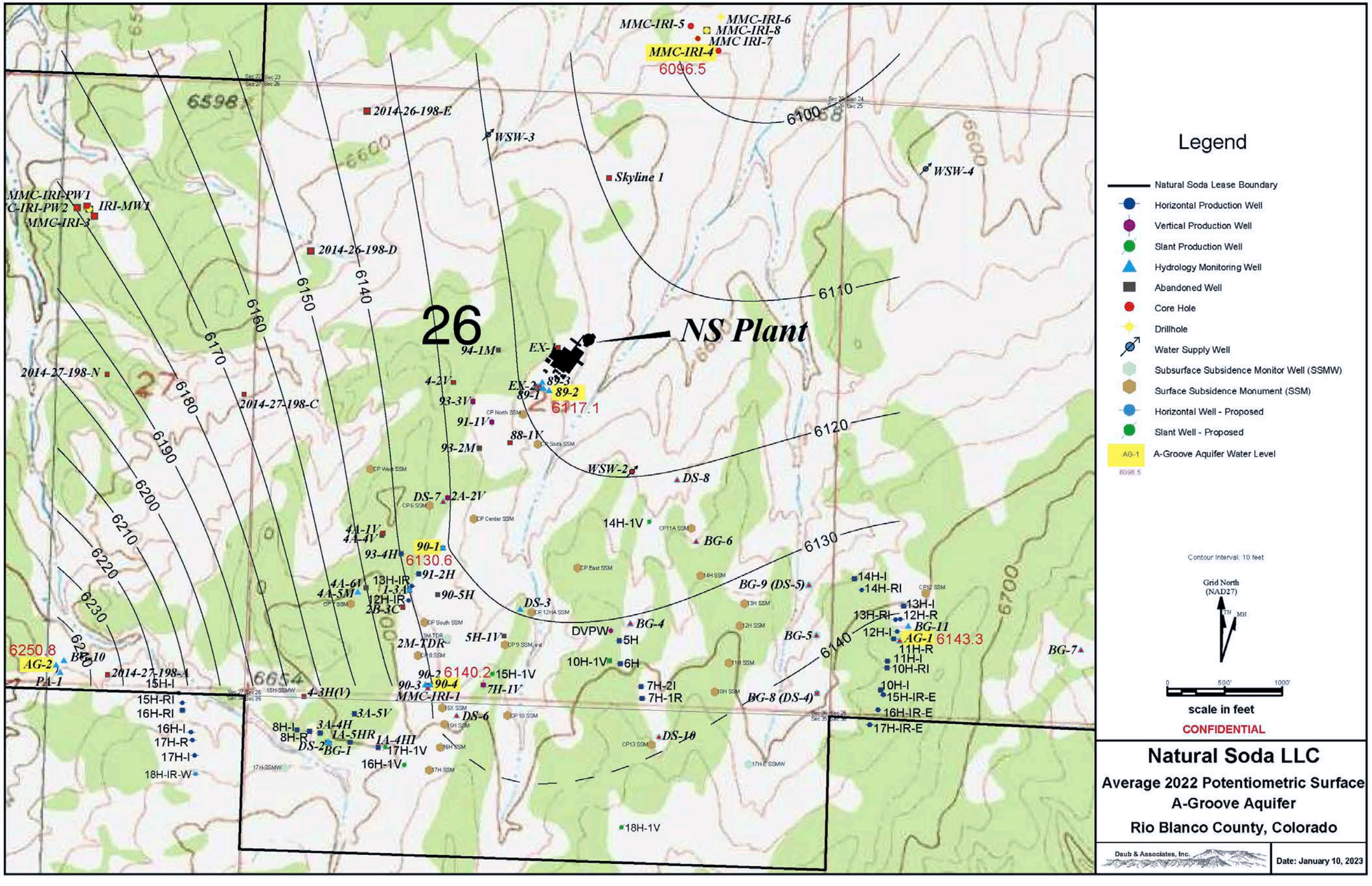
Parameters Metals	No. of Samples	High	Date	Low	Date	Average	Units
Aluminum,	33	1.40	09/15/2010	0.05	06/23/1994	0.61	mg/l
Arsenic,	33	0.005	08/22/1990	0.001	09/15/1992	0.002	mg/l
Barium,	31	6.65	09/15/2010	0.08	09/15/1992	4.03	mg/l
Beryllium,	33	U	08/30/1990	U	03/09/2021	U	mg/l
Boron,	64	8.91	03/15/2022	0.03	02/26/1991	3.26	mg/l
Cadmium,	33	U	08/30/1990	U	03/09/2021	U	mg/l
Calcium,	64	44.00	06/14/2008	1.00	05/28/1991	3.45	mg/l
Chromium,	33	0.20	11/02/2015	0.01	06/23/1994	0.11	mg/l
Copper,	33	0.31	03/09/2021	0.10	07/29/2009	0.20	mg/l
Iron, dissolved	33	1.82	07/31/1991	0.04	06/23/1994	0.30	mg/l
Lead, dissolved	33	0.04	07/31/1991	0.02	06/23/1994	0.03	mg/l
Lithium,	33	4.10	03/09/2020	0.32	09/15/1992	2.22	mg/l
Magnesium,	64	10.00	12/30/1996	1.00	06/16/1992	4.58	mg/l
Manganese,	33	0.07	05/26/1999	0.01	06/23/1994	0.04	mg/l
Mercury,	33	U	08/30/1990	U	03/09/2021	U	mg/l
Molybdenum,	33	0.10	06/23/1994	U	03/09/2021	U	mg/l
Nickel,	33	0.02	06/23/1994	U	03/09/2021	U	mg/l
Potassium,	64	26.00	06/30/2009	3.00	08/30/1990	9.38	mg/l
Selenium,	33	0.002	07/31/1991	0.001	08/30/1990	0.002	mg/l
Silica, dissolved	64	34.00	11/20/2001	1.50	02/26/1991	17.30	mg/l
Sodium,	64	9,280	03/09/2020	710	05/28/1991	4,292	mg/l
Strontium,	64	2.58	03/26/1997	0.18	06/16/1992	1.23	mg/l
Vanadium,	33	0.06	05/26/2004	U	03/09/2021	U	mg/l
Zinc, dissolved	33	0.30	03/09/2020	0.01	06/23/1994	0.10	mg/l

Table 41: Summary of 2022 Annual Remote Water Levels

For Remote Wells (all levels taken from top of casing)						
Well / Ground Level (ft)	Depth to Water Level ft.					
	2017	2018	2019	2020	2021	2022
MMC-IRI-11 / 6613.6	466.90	467.60	468.00	468.30	468.80	469.00
*MWU-2 / 6441.0	195.40	195.38	197.50	195.90	196.00	196.60
*MWA-2 / 6441.0	199.60	199.60	199.40	199.40	199.60	200.00
*MWB-2 / 6441.0	254.80	256.13	255.40	256.00	257.20	257.50
*MWD-1 / 6467.0	329.30	329.60	329.50	329.90	329.70	330.30
*MWD-2 / 6641.0	253.50	254.54	254.30	254.80	254.70	255.50
TH75-6A	298.10	297.21	296.40	298.56	298.65	299.06
TH75-6B	295.50	295.28	294.30	295.93	295.94	296.67
TH75-11A	413.70	413.80	413.80	413.03	411.27	404.35
TH75-11B	494.80	495.00	494.80	495.55	496.02	485.53

2022

Appendix B
Potentiometric Surface Maps
(Confidential)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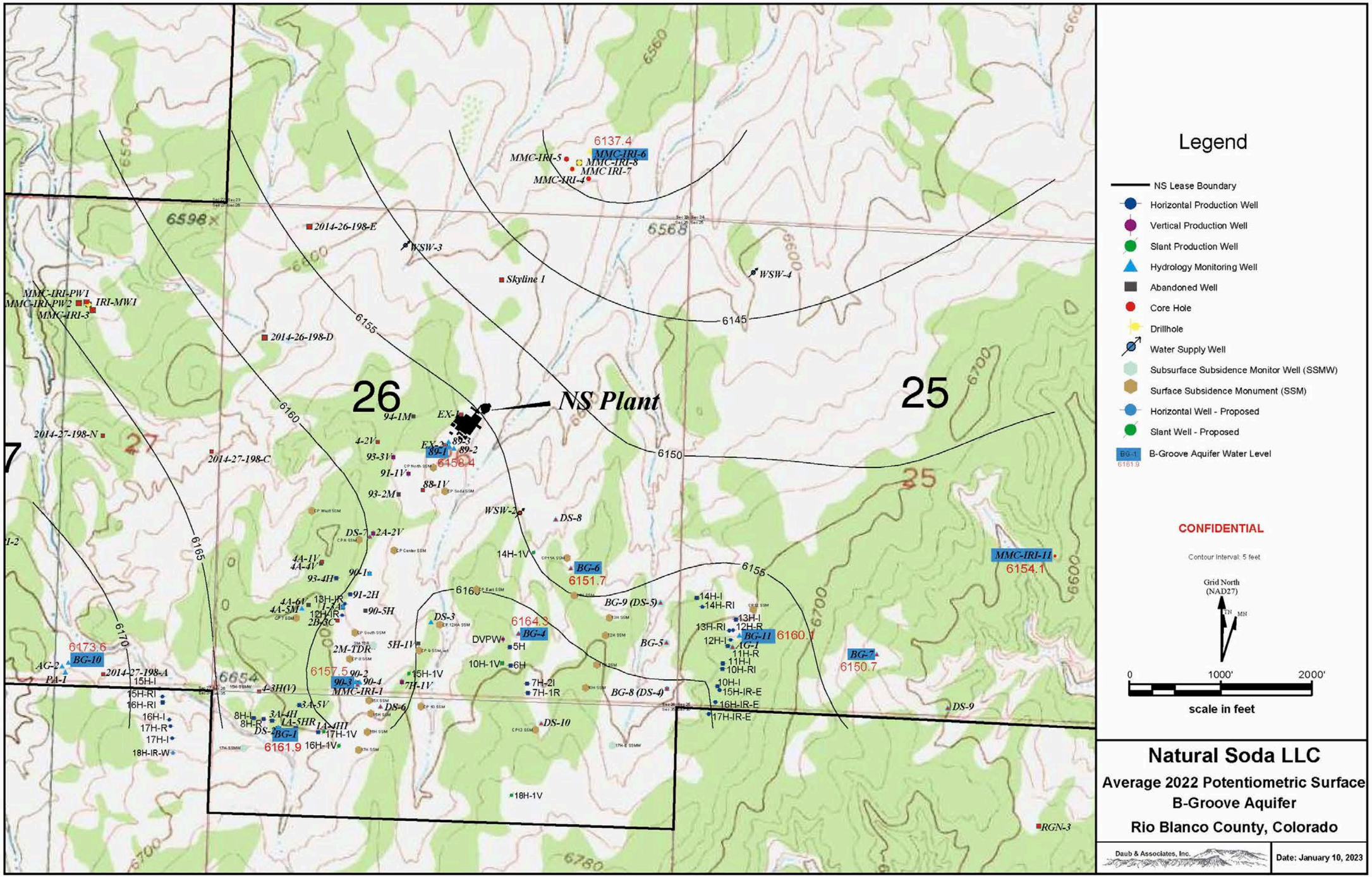
Skyline 1
WSW-4
MMC-IRI-PW1
C-IRI-PW2
IRI-MW1
MMC-IRI-3
2014-26-198-D
26
NS Plant
94-1M
EX-1
EX-2
89-1
89-2
89-3
6117.1
2014-27-198-N
2014-27-198-C
4-2V
93-3V
91-1V
88-1V
93-2M
WSW-2
DS-8
DS-7
2A-2V
14H-1V
BG-6
4A-1V
4A-4V
93-4H
90-1
6130.6
91-2H
4A-6V
4A-5M
13H-IR
1-3A
12H-IR
2B-3C
90-5H
DS-3
BG-9 (DS-5)
14H-I
14H-RI
13H-I
13H-RI
12H-R
BG-11
12H-I
AG-1
6143.3
11H-R
11H-I
10H-RI
10H-I
15H-IR-E
16H-IR-E
17H-IR-E
BG-7
DVPW
5H
BG-4
BG-5
5H-1V
2M-TDR
10H-1V
6H
7H-2I
7H-1R
BG-8 (DS-4)
6250.8
AG-2
BG-10
PA-1
2014-27-198-A
15H-I
15H-RI
16H-RI
16H-I
17H-R
17H-I
18H-IR-W
4-3H(V)
90-2
6140.2
15H-1V
90-3
90-4
7H-1V
MMC-IRI-1
3A-5V
DS-6
8H-I
8H-R
3A-4H
1A-5HR
DS-2
BG-1
1A-4HI
17H-1V
16H-1V
DS-10
18H-1V
6700
6680
6654
6600
6650
6100
6110
6120
6130
6140
6150
6160
6170
6180
6190
6200
6210
6220
6230
6240
Legend
Natural Soda Lease Boundary
Horizontal Production Well
Vertical Production Well
Slant Production Well
Hydrology Monitoring Well
Abandoned Well
Core Hole
Drillhole
Water Supply Well
Subsurface Subsidence Monitor Well (SSMW)
Surface Subsidence Monument (SSM)
Horizontal Well - Proposed
Slant Well - Proposed
AG-1
A-Groove Aquifer Water Level
6096.5
Contour Interval: 10 feet
Grid North
(NAD27)
TN
MN
0
500'
1000'
scale in feet
CONFIDENTIAL
Natural Soda LLC
Average 2022 Potentiometric Surface
A-Groove Aquifer
Rio Blanco County, Colorado
Daub & Associates, Inc.
Date: January 10, 2023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27
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MMC-IRI-4
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WSW-3
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WSW-4
MMC-IRI-PW1
MMC-IRI-PW2
IRI-MW1
MMC-IRI-3
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EX-1
4-2V
89-3
89-1
89-2
6158.4
93-3V
91-1V
88-1V
93-2M
2014-27-198-N
2014-27-198-C
WSW-2
DS-8
DS-7
2A-2V
14H-1V
BG-6
6151.7
4A-1V
4A-4V
93-4H
90-1
91-2H
90-5H
4A-6V
4A-5M
13H-1R
12H-1R
2B-3C
DS-3
6164.3
BG-4
DVPW
5H
2M-TDR
5H-1V
6173.6
BG-10
AG-2
PA-1
2014-27-198-A
15H-I
15H-RI
16H-RI
16H-I
17H-R
17H-I
18H-IR-W
6157.5
90-2
90-3
90-4
MMC-IRI-1
15H-1V
7H-1V
4-3H(V)
3A-5V
8H-I
8H-R
3A-4H
1A-5HR
1A-4HT
DS-2
BG-1
6161.9
17H-1V
16H-1V
DS-6
10H-1V
6H
7H-2I
7H-1R
DS-10
18H-1V
BG-5
BG-9 (DS-5)
BG-8 (DS-9)
14H-I
14H-RI
13H-I
13H-RI
12H-R
12H-I
BG-11
6160.1
AG-1
11H-R
11H-I
10H-RI
10H-I
15H-IR-E
16H-IR-E
17H-IR-E
BG-7
6150.7
DS-9
MMC-IRI-11
6154.1
RGN-3
6780
6700
6600
6560
6500
6598
6568
6155
6145
6150
6165
6170
6160
6654
Legend
NS Lease Boundary
Horizontal Production Well
Vertical Production Well
Slant Production Well
Hydrology Monitoring Well
Abandoned Well
Core Hole
Drillhole
Water Supply Well
Subsurface Subsidence Monitor Well (SSMW)
Surface Subsidence Monument (SSM)
Horizontal Well - Proposed
Slant Well - Proposed
BG-1
6161.9
B-Groove Aquifer Water Level
CONFIDENTIAL
Contour Interval: 5 feet
Grid North
(NAD27)
TN
MN
0
1000'
2000'
scale in feet
Natural Soda LLC
Average 2022 Potentiometric Surface
B-Groove Aquifer
Rio Blanco County, Colorado
Daub & Associates, Inc.
Date: January 10, 2023

Appendix C

2022 Vegetation Monitoring Reclamation Status Report

Prepared

By

Rusty Roberts

Reclamation Status Report
2022 Vegetation Monitoring Results for Reclaimed Sites

Evaluating Status of Current Plant Communities on Six Reclaimed Sites in meeting Criteria for Successful Reclamation

Prepared for:
Natural Soda
Rifle, Colorado

Prepared by:
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Meeker, Colorado

December 2022

Table of Contents

Introduction

The Bureau of Land Management (BLM) and the State of Colorado require reclaimed lands to be revegetated in a manner that establishes a diverse, effective, and long-lasting vegetation cover that is equal or nearly so to the natural vegetation of the surrounding areas. Natural Soda's approved mine plan requires periodic monitoring to evaluate the success of revegetation efforts.

Vegetation cover, species composition, species density and ground cover data were collected from undisturbed reference area sites on Natural Soda's lease area near their current mining operations. The data collected from undisturbed areas is used as a baseline for evaluation of the vegetation cover, species composition, species density and ground cover data collected from reclaimed sites to determine if a site has met the criteria for successful reclamation.

Vegative data was collected between September 20 thru September 26, 2022, for six reclaimed pad sites in final reclamation status and for four undisturbed areas. The baseline data from undisturbed areas was collected from four native rangeland reference area sites on Natural Soda's lease area near the reclaimed sites being evaluated. Table 1 lists the six sites in final reclamation status for which data was collected in 2022.

Criteria for Successful Reclamation of Disturbed Areas

The approved criteria for successful reclamation must reflect a plant community of at least five desirable plant species where no one species may exceed 70 percent relative cover and desired foliar cover, bare ground, and shrub and/or forb density must have 80 percent similarity in relation to the identified desired plant community.

The desired plant community referenced in the criteria refers to an ecological site present at or near the area of disturbance. Two ecological sites occur on the parts of the lease area being actively mined, a pinyon and juniper woodland site and a rolling loam rangeland site. The vegetative values in the criteria are based on the capability of a site in an early seral plant community, which is basically an herbaceous species dominated site with varying amounts of shrub species. The rolling loam rangeland site reflects more of the capability of a site in an early seral plant community, thus, data collected from the four-rolling loam native rangeland reference areas were used to evaluate the success of the plant community on each reclaimed site in achieving the reclamation criteria.

Vegetation Sampling Methods Utilized to Measure Criteria for Successful Reclamation

Data was collected based upon recommendations in White River Field Office's Surface Reclamation Plan which require that vegetation cover, composition, and diversity data be gathered using quantitative methods to measure the six Core Terrestrial Indicators and Methods in BLM Technical Note 440. BLM approved sampling methods are found in Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems, Volume I and II: Quick Start.

The six core terrestrial indicators include:

(1) Bare Ground: The amount of bare ground is accepted as one of the most sensitive indicators of resource condition in rangelands. A large percentage of bare ground can be an indicator of high erosion potential, low forage production, poor wildlife habitat, and increased risk of invasion by nonnative plant species.

(2) Vegetation Composition: Vegetation composition data, including the cover of groups of species are indicators generated from the same data, and when used together, are sensitive to most changes and are useful when determining the status of key species in a plant community.

(3) Nonnative Invasive Plant Species: The presence and cover of nonnative species is acquired as a component of vegetation composition. Nonnative invasive species can have the ability to significantly alter sustainability and site resilience.

(4) Plant Species of Management Concern: The presence and cover of plant species of management concern is also acquired as a component of vegetation composition. Plant species of management concern can be sensitive to site disturbance, provide important ecosystem functions, or contribute to biological diversity.

(5) Vegetation Height: The vertical structure of vegetation which can be used to characterize wildlife habitat and estimate wind erosion potential.

(6) Proportion of Soil Surface in Large Intercanopy Gaps: Canopy gap intercept measures the proportion of a line covered by large gaps between plant canopies and is an important indicator of the potential for erosion.

Line-point intercept with plot-level species inventory was the vegetation monitoring technique used to measure the core indicators of bare ground, vegetation composition, non-native invasive plant species and plant species of management concern.

Line-point intercept is a rapid, accurate method for quantifying soil cover, including vegetation, litter, rocks and biological crusts. The theory behind this method is that if an infinite number of points are placed in a two-dimensional area, the cover of a plant species can be determined by counting the number of points that hit that species. These measurements are related to wind and water erosion, water infiltration, and the ability of the site to resist and recover from disturbance.

Gap intercept measurements were made along the line-point intercept transect line to provide information about the proportion of the line covered by large gaps between plants. Large gaps between plant canopies are important indicators of increased susceptibility to water erosion and runoff, wind erosion, weed invasion, and wildlife habitat.

A plot-level plant species inventory provides a rapid estimate of species richness. A search area at each site was utilized to record all plant species occurring within the plot. A thorough search of the plot can detect less-frequently occurring species that may not have been recorded in line-point intercept cover measurements.

Shrub and forb densities also a criterion for successful reclamation are not measured by the sampling methods used for the other criteria. Forb and shrub density measurements were taken from one-meter square density quadrants along the same line-point intercept transect line used for the other sampling techniques.

Summary of Results for Reclaimed Sites in Achieving Reclamation Goals

Vegetation cover, plant species composition, ground cover and shrub and forb density data were collected from the six well pad sites in final reclamation status and from four native rangeland reference area sites near the reclaimed sites being evaluated. Data was collected between September 20 thru September 26, 2022. Table 1 lists the sites in final reclamation status for which data was collected in 2022. The location of sites from which vegetative data was collected are illustrated on the attached location map.

Table 1 is a summary of the progress of each site monitored in achieving successful reclamation. The site-specific monitoring results for each site are discussed in detail later.

Table 1 - Summary of Results for Reclaimed Sites in Achieving Successful Reclamation Criteria

Site	Criteria for Successful Reclamation of Disturbed Areas						Criteria Met
	at least five desirable plant species where no one species may exceed 70 percent relative cover		desired foliar cover, bare ground, and shrub and/or forb density must have 80 percent similarity in relation to the values measured on nearby undisturbed native rangelands				
	the number of desired plant species present	the relative cover of the desired species with the greatest cover	% similarity of desired foliar cover	% similarity of bare ground	% similarity of shrub density	% similarity of forb density	
	2022 Data Collected for Sites in Final Reclamation Status						
Pad 93-2M	15 species	18.7%	82%	98%	57%	7%	No
Pad BG-8	18 species	14.0%	76%	96%	29%	2.4%	No
Pad G	32 species	12.0%	75%	90%	60%	60%	No
Pads IRI-3+	22 species	20.7%	80%	70%	44%	23%	No
Pad T	21 species	9.3%	46%	105%	86%	38%	No
Pad U	12 species	8.7%	39%	79%	52%	10%	No
	2022 Baseline Data Collected from Native Rangeland Reference Areas						
	33 species	26.4%	56.5%	27.5%	1.74%	5.03%	

Note: values in red are below the criteria required for successful reclamation

Vegetation Sampling Methods and Procedures for Reclaimed Sites and Reference Areas

The line-point intercept with plot-level species inventory was the vegetation sampling protocol used on both the reclaimed sites and associated reference areas. The procedure involves random placement of a transect line (measuring tape) as the base for data collection. Values for foliar cover, basal cover, species composition and bare ground were measured at specific points along the line. Gaps in vegetation canopy were measured along the same tape line. Density quadrants were placed adjacent the line at specific points.

A 25-meter tape was used as the baseline transect for collecting data from the 4 rolling loam reference areas and from the 6 reclaimed sites. One transect line was used to collect data from each of the 4 reference areas. Three transect lines were used to collect data from each of the 6 reclaimed sites.

The following techniques were used to collect the sample data:

- The beginning and ending points of each transect were recorded using a GPS receiver. Azimuths from the 0-meter to the 25-meter point were recorded.
- Photographs were taken at each transect that show vegetation features at the time of sampling.
- Point count data were collected at one half-meter intervals along a 25-meter tape using a thin, straight metal rod (pin flag) for a total of fifty samples taken along each transect.
    - The first plant species in the canopy hit by the drop of a pin flag at each sample point was recorded by species in the "Top Layer". The total of top layer hits was used to determine total foliar cover for the study site and the total foliar cover for each species hit in the top layer.
    - Subsequent plant species encountered at each sample point and vegetative litter hits were recorded in the "Lower Canopy Layers". Vegetative litter was recorded as either unattached herbaceous or woody litter.
    - Species composition based upon total of all plant species encountered in the top layer and the lower layers at each sample point and recorded by species and summarized by plant group.
    - Soil surface hits were recorded as plant species basal intercepts, lichen crust, moss, embedded litter, duff, rock, or bare soil. Bare ground percent was determined by a bare soil hit with no canopy intercepts in the top and lower canopy layers.
- Canopy gaps were recorded directly below the transect tape line. Only perennial plant species were used in the vegetative canopy. Non-native species if present were not included as part of the canopy. Gaps larger than 20 centimeters were recorded for the length of each transect. Gaps were totaled into gap sizes (21 to 50; 51 to 100; 101 to 200; >200). Though the gap data is not used in evaluating reclamation criteria, it was collected as a visualization of perennial species distribution and cover.
- Forb and shrub density data were taken from one-meter square density quadrants alongside the same line-point intercept transect line used for the other sampling techniques. Quadrants were placed at every 5th sample point along the transect tape for a total of 10 one-meter density quads for each transect. Only desirable forb and shrub densities are required in the criteria for successful reclamation. The total number of desirable forb and shrub species rooted in each quad were counted and recorded by species and summarized by plant group. Densities for grasses or trees were not collected.
- A plot-level plant species inventory was conducted within a search area at each site. The search area for reclaimed sites was within the original disturbance at the site. In addition to those plant species recorded during sampling, other species not encountered during sampling but were observed in the sample area were recorded for species richness.

Vegetation Sampling Results for Nearby Native Rangeland Reference Areas

Vegetation cover, species composition, species density and ground cover data were collected from four rolling loam rangeland sites from September 20 thru September 26, 2022. Transects were established in the 4 rolling loam sites which represent the site characteristics near the reclaimed sites being evaluated. The vegetative data collected from the 4 reference areas were used to evaluate the success of the plant community on each reclaimed site in achieving the reclamation criteria.

Values for foliar cover, basal cover, species composition and bare ground were collected from four 25 meter transects for a total of 200 sample points. Values for forb and shrub densities were collected from 40 one-meter square quadrants. Table 2 summarizes the data collected in 2022 from the 4 reference areas. A comparison to the data collected in 2021 is included in the table.

Table 2- Rolling Loam Native Rangeland Reference Areas
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]								Density Data [2]	
	Number of Species		% Foliar Cover		% Basal Cover		Species Composition		Forb/Shrub Density (#/m²)	
Plant Group	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**
Perennial Grasses	5	5	40.4	38.5	6.8	6.5	71.52	63.45	n/a	n/a
Invasive Non-Native Grasses	1	1	1.6	4.0	0	0	2.42	6.90	n/a	n/a
Desirable Forbs	17	22	2.4	4.50	0	0	3.64	8.97	5.98	5.03
Invasive and Non-Native Forbs	0	1	0	0	0	0	0	0	n/a	n/a
Shrubs	5	5	14.4	13.5	0.4	0.5	22.42	20.68	1.84	1.74
Vegetation Totals	**28**	**34**	**58.8**	**60.5**	**7.2**	**7.0**	**100.0**	**100.0**	**7.82**	**6.77**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground		Biotic Crust		Herbaceous Litter		Woody Litter		Duff		Rock	
	2021	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**
	34.8	**27.5**	**0.0**	**2.5**	**37.6**	**38.0**	**0.8**	**2.5**	**0.0**	**0.0**	**0.0**	**0.0**

[1] Sum of data from 4 randomly placed transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The data collected from the 4 reference areas showed a 3 percent increase in total foliar cover in 2022. However, small declines in total cover and composition of desirable species occurred as compared to the values measured in 2021. Foliar cover of native species measured on the reference sites declined one percent in 2022. Foliar cover of perennial grasses declined 4.7 percent and shrub cover declined 6 percent. The cover of desirable forbs increased 88 percent from values measured in 2021. The foliar cover of invasive nonnative grasses doubled in 2022. from the values measured in 2021.

There was a 21 percent decline in the amount of bare ground measured in 2022 because of a one percent increase in amount of herbaceous litter and the three percent increase in total foliar cover. The canopy gaps between perennial species also an indicator of ground cover, declined only 2 percent in 2022.

The specific vegetation sampling data collected from the 4 rolling loam rangeland sites are presented in Appendix A. Data in the appendix include (1) vegetation cover, ground cover, species composition, and forb and shrub densities; (2) the scientific and common names of each plant species encountered; (3) GPS coordinate data for the transect start and end points; (4) inter-canopy gaps and (5) photographs of each transect.

Monitoring Results and Evaluation of Criteria for Sites in Final Reclamation Status

Vegetation cover, species composition, species density and ground cover data were collected from the area of disturbance for 6 sites in final reclamation status (pads 93-2M, BG-8 and corehole pads G, IRI-3+, T and U). Locations are noted on the attached location maps.

Vegetation sampling data collected for the 6 reclaimed sites are presented in the Appendix B through Appendix G.

- Appendix B – reclaimed pad 93-2M.
- Appendix C – reclaimed pad BG-8.
- Appendix D – reclaimed corehole pad G.
- Appendix E – combined reclaimed corehole pads IRI-3, MW-1, PW-1, PW-2.
- Appendix F – reclaimed corehole pad T.
- Appendix G – reclaimed corehole pad U.

Vegetation sampling data in the appendixes include (1) vegetation cover, ground cover, species composition, and forb and shrub densities; (2) the scientific and common names of each plant species encountered; (3) GPS coordinate data for the transect start and end points; (4) inter-canopy gaps and (5) photographs of each transect.

Well Pad 93-2M

Data was collected for this site on September 23, 2022. Three 25 meter transects were placed in a spoke pattern on the pad with 50 sample points on each transect for a total of 150 points for cover data. Ten one-meter square density quadrants were placed along each transect for a total of 30 quadrants. Data collected from this site include vegetative foliar and basal cover, species composition, forb and shrub densities all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The data collected in 2022 is summarized in Table 3 from the sampling data presented in Appendix Table B1. Each plant species encountered at this site is listed in Table B1. As shown in Table B1 there is a good establishment of the perennial grasses with uniform distribution across much of the site.

Table 3 - Reclaimed Pad 93-2M Vegetation Cover, Species Composition, Species Density & Ground Cover					
	Line-Point Canopy Intercept Data [1]				Density Data [2]
Plant Group	Number of Species	% Foliar Cover	% Basal Cover	Species Composition	Desirable Forb/Shrub Density (#/m^2)
Perennial Grasses	8	39.4	6.0	65.96	n/a
Invasive Non-Native Grasses	1	8.0	0.0	19.15	n/a
Desirable Forbs	3	0.7	0.0	1.06	0.33
Invasive and Non-Native Forbs	1	2.7	0.0	4.26	n/a
Shrubs	4	6.0	0.0	9.57	1.00
Vegetation Totals	**17**	**56.8**	**6.0**	**100.0**	**1.33**

Line-Point Intercept Soil Surface Cover Data [3]						
Percent Cover by Type	Bare Ground	Biotic Crust	Herbaceous Litter	Woody Litter	Duff	Rock
	28.0	**0.0**	**56.3**	**1.3**	**0.0**	**0.0**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The foliar cover of desirable species on the site was 18 percent less than that measured on the reference areas. In comparison with values measured on the reference areas, the cover of perennial grasses was 2 percent greater, and their composition was 4 percent greater. The cover and composition of cheatgrass, a non-native invasive species, was two-times greater than measured on the reference areas.

Both the cover and composition of desirable forbs and shrubs well below that on the reference areas, only 15 percent for forbs and 44 percent for shrubs. The density of desirable forbs on the site was 7 percent and the density of shrubs was 57 percent of that on reference areas.

The amount of bare ground on this site was 2 percent greater than that measured on the reference areas. The amount of herbaceous litter on this site was 26 percent less than that on the reference areas. The canopy gaps between perennial species were 13 percent larger on the reference areas than measured on this site.

Table 4 is a comparison of the data collected for reclaimed well pad 93-2M with that of the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 4.

Table 4 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas					
Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Reclaimed Pad 93-2M	15 species	46.0	28.0	1.00	0.33
Reference Area [1]	33 species	56.5	27.5	1.74	5.03

[1] *The average of four native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

Evaluation of the reclamation efforts of the disturbance on Well Pad 93-2M:

- There are 15 desirable plant species established on the site (8 perennial grasses, 3 desirable forbs, and 4 shrubs) meeting the requirement of at least five plant species.
- Russian wildrye *(Psathyrostachys juncea*) was the desired species with the greatest relative cover at 18.7 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 82 percent of that on the native rangeland reference area exceeding the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 2 percent greater than that on the native rangeland reference area which equates to 98 percent similarity, exceeding the required 80 percent similarity.
- The density of desirable forbs and shrubs on the site in comparison with the native rangeland reference areas was 7 percent and 57 percent, respectively. Neither forb density nor shrub density have met the requirement of 80 percent similarity.

The plant community does meet the criteria for species diversity, desired foliar cover, and the amount of bare ground. The site does not meet the criteria for the densities of desirable forbs or shrubs. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Pad BG-8

Data was collected for this site on September 23, 2002. Three 25 meter transects were placed in a spoke pattern on the pad with 50 sample points on each transect for a total of 150 points for cover data. Ten one-meter square density quadrants were placed along each transect for a total of 30 quadrants. Data collected from this site include vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The data collected in 2022 is summarized in Table 5 from the sampling data presented in Appendix Table C1. Each plant species encountered at this site is listed in Table C1.

Table 5 - Reclaimed Pad BG-8
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]				Density Data [2]
Plant Group	Number of Species	% Foliar Cover	% Basal Cover	Species Composition	Desirable Forb/Shrub Density (#/m^2)
Perennial Grasses	9	41.4	12.0	66.00	n/a
Invasive Non-Native Grasses	1	4.7	0.0	8.00	n/a
Desirable Forbs	5	0.0	0.0	0.0	0.12
Invasive and Non-Native Forbs	1	14.0	0.0	24.00	n/a
Shrubs	4	1.4	0.0	2.00	0.50
Vegetation Totals	**20**	**61.5**	**12.0**	**100.0**	**0.62**

Line-Point Intercept Soil Surface Cover Data [3]						
Percent Cover by Type	Bare Ground	Biotic Crust	Herbaceous Litter	Woody Litter	Duff	Rock
	28.7	0.0	31.3	2.0	0.0	1.3

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The foliar cover of desirable species on the site was 24 percent less than that measured on the reference areas. In comparison with values measured on the reference areas, the cover of perennial grasses was 7.5 percent greater, and their composition was 4 percent greater. No cover of desirable forbs was encountered in data collected for this site. Shrubs cover and composition was only 10 percent of that on the reference areas. The density of desirable forbs on the site was 2 percent and the density of shrubs was 29 percent of that on reference areas.

A sizeable area within the center of this site appeared to not have been seeded with any reclamation species. As a result, nearly 19 percent of the cover measured on this site came from non-native and invasive species. Cheatgrass (*Bromus tectorum*) accounted for 7.5 percent and Russian thistle (*Salsola tragus*) accounted for 22.7 percent of the cover measured on this site. The foliar cover of Russian thistle was greater than any of the perennial species on the site.

The amount of bare ground on this site was 4 percent greater than that measured on the reference areas. The amount of herbaceous litter on this site was 18 percent less than that on the reference areas. The canopy gaps between perennial species were 9 percent larger on the reference areas than measured on this site.

Table 6 is a comparison of the data collected for reclaimed Pad BG-8 with that of the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 6.

Table 6 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas					
Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Reclaimed Pad BG-8	18 species	42.8	28.7	0.50	0.12
Reference Area [1]	33 species	56.5	27.5	1.74	5.03

[1] *The average of four native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

Evaluation of the reclamation efforts of the disturbance on Pad BG-8:

- There are 18 desirable plant species established on the site (9 perennial grasses, 5 desirable forbs, and 4 shrubs) meeting the requirement of at least five plant species.

- Slender wheatgrass (*Elymus trachycaulus*) was the desired species with the greatest relative cover at 14 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 76 percent of that on the native rangeland reference areas not meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 4 percent greater than that on the native rangeland reference areas which equates to 96 percent similarity, meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 2 percent and 29 percent, respectively. Neither forb density nor shrub density have met the requirement of 80 percent similarity.

The plant community meets only the species diversity and bare ground criteria but not the desired foliar cover, shrub density and desirable forb density criteria necessary for successful reclamation of the disturbance at this site. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Corehole Pad G

Vegetation sampling data was collected on September 20, 2022. Three 25 meter transects were randomly placed on the pad with 50 sample points on each transect for a total of 150 points for cover data. Ten one-meter square density quadrants were placed along each transect for a total of 30 quadrants. Data collected from this site include vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The 2022 data in the Table 7 is summarized from data presented in Appendix Table D1. Each plant species encountered at this site is listed in Table D1.

Table 7 - Reclaimed Exploration Pad G
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]				Density Data [2]
Plant Group	**Number of Species**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	**Desirable Forb/Shrub Density (#/m²)**
Perennial Grasses	9	33.3	7.4	53.62	n/a
Invasive Non-Native Grasses	1	3.3	0.0	8.25	n/a
Desirable Forbs	17	3.4	0.0	6.18	3.00
Invasive and Non-Native Forbs	1	13.3	0.0	23.71	n/a
Shrubs	6	5.4	0.0	8.24	1.04
Vegetation Totals	**34**	**58.7**	**7.4**	**100.00**	**4.04**

Line-Point Intercept Soil Surface Cover Data [3]						
Percent Cover by Type	**Bare Ground**	**Biotic Crust**	**Herbaceous Litter**	**Woody Litter**	**Duff**	**Rock**
	30.7	**0.0**	**23.7**	**4.0**	**0.0**	**0.7**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The foliar cover of desirable species on the site was 25 percent less than that measured on the reference areas. In comparison with values measured on the reference areas, the cover of perennial grasses was 13.5 percent lower, and their composition was 15.5 percent lower. The cover of desirable forbs on this site was 24 percent lower and their composition was 31 percent lower than on the reference areas. Shrubs cover and composition was only 40 percent of that on the reference areas. The density of desirable forbs and shrubs on the site were both 40 percent of that on reference areas.

Nearly 17 percent of the cover measured on this site came from non-native and invasive species. Cheatgrass (*Bromus tectorum*) accounted for 3.3 percent and Russian thistle (*Salsola tragus*) accounted for 13.3 percent of the cover measured on this site. The foliar cover of Russian thistle was greater than any of the perennial species on the site.

The amount of bare ground on this site was 12 percent greater than that measured on the reference areas. The amount of herbaceous litter on this site was 40 percent less than that on the reference areas. The canopy gaps between perennial species were 6 percent larger on the reference areas than measured on this site.

Table 8 is a comparison of the data collected for corehole pad G with that from the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 8.

Table 8 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Corehole Pad G	32 species	42.1	30.7	1.04	3.00
Reference Area [1]	33 species	56.5	27.5	1.74	5.03

[1] *The average of four native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

Evaluation of the reclamation efforts of the disturbance on Corehole Pad G:

- There are 32 desirable plant species established on the site (9 perennial grasses, 17 desirable forbs, and 6 shrubs) meeting the requirement of at least five plant species.
- Slender wheatgrass (*Elymus trachycaulus*) was the desired species with the greatest relative cover at 12 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 75 percent of that on the native rangeland reference areas, not meeting the required 80 percent similarity.

- The amount of unprotected bare ground on the site was 10 percent greater than that on the native rangeland reference areas which equates to 90 percent similarity, exceeding the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 60 percent and 60 percent, respectively. Neither desirable forbs nor shrub densities have met the requirement of 80 percent similarity.

The plant community on this site does meet the criteria for species diversity and bare ground, but does not meet the desired foliar cover, desirable forb density nor shrub density criteria for successful reclamation of the disturbance. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Corehole Pads IRI-3, MW-1, PW-1, PW-2

This site includes corehole pads IRI-3, MW-1, PW-1, and PW-2. Vegetation sampling data was collected on September 20, 2022. Three 25 meter transects were randomly placed on the site with 50 sample points on each transect for a total of 150 points for cover data. Ten one-meter square density quadrants were placed along each transect for a total of 30 quadrants. Data collected from this site include vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The 2022 data in the Table 9 is summarized from data presented in Appendix Table E1. Each plant species encountered at this site is listed in Table E1. As shown in Table E1 there is a good representation of the seeded species established on the site.

Table 9 - Reclaimed Corehole Pads IRI-3, MW-1, PW-1, and PW-2
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]				Density Data [2]
Plant Group	Number of Species	% Foliar Cover	% Basal Cover	Species Composition	Desirable Forb/Shrub Density (#/m²)
Perennial Grasses	9	42.7	6.1	83.75	n/a
Invasive Non-Native Grasses	1	6.0	0.0	11.25	n/a
Desirable Forbs	9	0.0	0.0	0.0	1.14
Invasive and Non-Native Forbs	1	0.0	0.0	0.0	n/a
Shrubs	4	2.7	0.0	5.00	0.76
Vegetation Totals	**24**	**51.4**	**6.1**	**100.0**	**1.90**

Line-Point Intercept Soil Surface Cover Data [3]						
Percent Cover by Type	Bare Ground	Biotic Crust	Herbaceous Litter	Woody Litter	Duff	Rock
	39.3	**0.0**	**31.3**	**0.6**	**0.0**	**1.3**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.

[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The foliar cover of desirable species on the site was 20 percent less than that measured on the reference areas. In comparison with values measured on the reference areas, the cover of perennial grasses was 11 percent greater, and their composition was 32 percent greater. Cheatgrass, a non-native invasive species, has a foliar cover 33 percent greater and a composition 39 percent greater than that measured on the reference areas.

No desirable forb species were encountered in the canopy intercept data collected at this site. However, they were encountered in the density data at 23 percent of that measured on the reference areas. The foliar cover of shrubs was 20 percent of that on the reference areas.

The amount of bare ground on this site was 30 percent greater than that measured on the reference areas. The amount of herbaceous litter on this site was 18 percent less than that on the reference areas. The canopy gaps between perennial species were 13 percent larger on the reference areas than measured on this site.

Table 10 is a comparison of the data collected for exploration corehole pad IRI-3, MW-1, PW-1 and PW-2 with that from the rolling loam rangeland reference area. Only the data required to access the success of achieving successful reclamation is used in Table 10.

Table 10 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Corehole IRI-3, MW-1, PW-1 and PW-2	22 species	45.4	39.3	0.76	1.14
Reference Area [1]	33 species	56.5	27.5	1.74	5.03

[1] *The average of four native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

Evaluation of the reclamation efforts of the disturbance on Corehole Pads IRI-3, MW-1, PW-1, and PW-2:

- There are 22 desirable plant species established on the site (9 perennial grasses, 9 desirable forbs, and 4 shrubs) meeting the requirement of at least five plant species.
- Russian wildrye (*Psathyrostachys juncea*) was the desired species with the greatest relative cover at 20.7 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 80 percent of that on the native rangeland reference areas meeting the 80 percent similarity criteria.
- The amount of unprotected bare ground on this site was 30 percent greater than on the native rangeland reference areas which equates to 70 percent similarity, not meeting the required 80 percent similarity.

- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 23 percent and 44 percent, respectively. Neither desirable forbs nor shrub densities have met the requirement of 80 percent similarity.

The plant community does meet the criteria of species diversity and desired foliar cover, but does not meet the criteria for bare ground, desirable forb density nor shrub density for successful reclamation of the disturbance at the site. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Corehole Pad T

Vegetation sampling data was collected on September 26, 2022. Three 25 meter transects were randomly placed on the pad with 50 sample points on each transect for a total of 150 points for cover data. Ten one-meter square density quadrants were placed along each transect for a total of 30 quadrants. Data collected from this site include vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The 2022 data in the Table 11 is summarized from data presented in Appendix Table F1. Each plant species encountered at this site is listed in Table F1. As shown in Table F1 there is poor representation of the seeded species established on the site.

Table 11 - Reclaimed Corehole Pad T
Vegetation Cover, Species Composition, Species Density & Ground Cover

	Line-Point Canopy Intercept Data [1]				Density Data [2]
Plant Group	**Number of Species**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	**Desirable Forb/Shrub Density (#/m²)**
Perennial Grasses	7	11.4	4.0	15.25	n/a
Invasive Non-Native Grasses	1	6.7	0.0	12.71	n/a
Desirable Forbs	9	3.3	0.0	5.08	1.93
Invasive and Non-Native Forbs	1	34.0	0.0	52.54	n/a
Shrubs	5	11.3	0.0	14.42	1.49
Vegetation Totals	**23**	**66.7**	**4.0**	**100.0**	**3.42**

Line-Point Intercept Soil Surface Cover Data [3]

Percent Cover by Type	Bare Ground	Biotic Crust	Herbaceous Litter	Woody Litter	Duff	Rock
	26.0	**0.0**	**19.3**	**8.0**	**0.0**	**0.0**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The foliar cover of desirable species on the site was 46 percent less than that measured on the reference areas. In comparison with values measured on the reference areas, the cover of perennial grasses was 70 percent lower, and their composition was 76 percent lower. The foliar cover of desirable forbs on this site was 27 percent lower and their composition was 43 percent lower than on the reference areas. The foliar cover of shrubs was only 84 percent, and their composition was 70 percent of that on the reference areas.

The density of desirable forbs on the site was 38 percent of that on reference areas. The density of shrubs on the site was 86 percent of that on reference areas.

Sixty-one (61) percent of the cover measured on this site came from non-native and invasive species. Cheatgrass (*Bromus tectorum*) accounted for 6.7 percent and Russian thistle (*Salsola tragus*) accounted for 34 percent of the cover measured on this site.

The amount of bare ground on the reference areas was 5 percent greater than that measured on this site. The amount of herbaceous litter on this site was 51 percent less than that on the reference areas. The canopy gaps between perennial species were 35 percent larger on this site than that measured on the reference areas.

There is poor distribution across the site of the perennial species used in the seed mix. Most of the perennial species on the site are grazing tolerant grasses and shrubs that have pioneered the site from adjacent stands. The foliar cover of Russian thistle, an invasive non-native species, is 24 percent greater than the total cover of all the perennial species on the site.

Table 12 is a comparison of the data collected for exploration corehole pad T with that from the rolling loam rangeland reference areas. Only the data required to access the success of achieving successful reclamation is used in Table 12.

Table 12 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Corehole Pad T	21 species	25.9	26.0	1.50	1.93
Reference Area [1]	33 species	56.5	27.5	1.74	5.03

[1] *The average of four native rangelands reference areas were used as the base for evaluating success of the reclamation criteria.*

Evaluation of the reclamation efforts of the disturbance on Corehole Pad T:

- There are 21 desirable plant species observed on the site (7 perennial grasses, 9 desirable forbs, and 5 shrubs) meeting the requirement of at least five plant species.
- Yellow rabbitbrush (*Chrysothamnus viscidiflorus*) was the desired species with the greatest relative cover at 9.3 percent meeting the requirement that no one species can exceed 70 percent relative cover.
- The foliar cover of desirable species on the site was 46 percent of that on the native rangeland reference areas not meeting the requirement of 80 percent similarity.

- The amount of unprotected bare ground on the site was 5 percent below that on the native rangeland reference areas which equates to 105 percent similarity, meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 38 percent and 86 percent, respectively. The criteria only require either forb density or shrub density meet the requirement of 80 percent similarity. Shrub density has met the required criteria.

The plant community only meets the criteria for species diversity, density of shrubs and bare ground. The criteria for the desired foliar cover and desirable forb density have not been met. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Corehole Pad U

Vegetation sampling data was collected on September 26, 2022. Three 25 meter transects were randomly placed on the pad with 50 sample points on each transect for a total of 150 points for cover data. Ten one-meter square density quadrants were placed along each transect for a total of 30 quadrants. Data collected from this site include vegetative foliar and basal cover, species composition, forb and shrub densities and ground cover all summarized by plant group. In addition, ground cover data was collected for dead vegetative litter, bare ground, and surface rock.

The 2022 data in the Table 13 is summarized from data presented in Appendix Table G1. Each plant species encountered at this site is listed in Table G1. As shown in Table G1 there is a poor representation of the seeded species established on the site.

Table 13 - Reclaimed Corehole Pad U
Vegetation Cover, Species Composition, Species Density & Ground Cover

Plant Group	Line-Point Canopy Intercept Data [1]				Density Data [2]
	Number of Species	% Foliar Cover	% Basal Cover	Species Composition	Desirable Forb/Shrub Density (#/m²)
Perennial Grasses	4	12.7	0.7	23.16	n/a
Invasive Non-Native Grasses	1	6.7	0.0	13.68	n/a
Desirable Forbs	3	0.7	0.6	1.05	0.50
Invasive and Non-Native Forbs	1	28.0	0.0	47.37	n/a
Shrubs	5	8.7	0.7	14.74	0.90
Vegetation Totals	**14**	**56.8**	**2.0**	**100.0**	**1.40**

Line-Point Intercept Soil Surface Cover Data [3]						
Percent Cover by Type	Bare Ground	Biotic Crust	Herbaceous Litter	Woody Litter	Duff	Rock
	33.3	**0.0**	**26.7**	**5.3**	**0.0**	**0.7**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from ten 1-meter square quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.

[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

The foliar cover of desirable species on the site was 39 percent of that measured on the reference areas. In comparison with values measured on the reference areas, the cover of perennial grasses was 67 percent lower, and their composition was 76 percent lower. The foliar cover of desirable forbs on this site was 16 percent and their composition was 12 percent of that on the reference areas. The foliar cover of shrubs was 64 percent, and their composition was 71 percent of that on the reference areas.

The density of desirable forbs on the site was 10 percent of that on reference areas. The density of shrubs on the site was 52 percent of that on reference areas.

Sixty-one (61) percent of the cover measured on this site came from non-native and invasive species. Cheatgrass (*Bromus tectorum*) accounted for 6.7 percent and Russian thistle (*Salsola tragus*) accounted for 28 percent of the cover measured on this site.

The amount of bare ground on this site was 21 percent greater than that measured on the reference areas. The amount of herbaceous litter on this site was 30 percent lower than that on the reference areas. The canopy gaps between perennial species were 37 percent larger on this site than that measured on the reference areas.

There is poor distribution across the site of the perennial species used in the seed mix. Most of the perennial species on the site are grazing tolerant grasses and shrubs that have pioneered the site from adjacent stands. The foliar cover of Russian thistle, an invasive non-native species, is 21 percent greater than the total cover of all the perennial species on the site.

Table 14 is a comparison of the data collected for corehole pad U with that from the rolling loam rangeland reference area. Only the data required to access the success of achieving successful reclamation is used in Table 14.

Table 14 – Comparison of Reclamation Criteria Elements with Native Rangeland Reference Areas

Site	# desired plant species	% desired foliar cover	% bare ground	shrub density (#/m^2)	forb density (#/m^2)
Corehole Pad U	12 species	22.1	33.3	0.90	0.50
Reference Area [1]	33 species	56.5	27.5	1.74	5.03

[1] *The average of four native rangelands reference areas were used as the baseline for evaluating success of the reclamation criteria.*

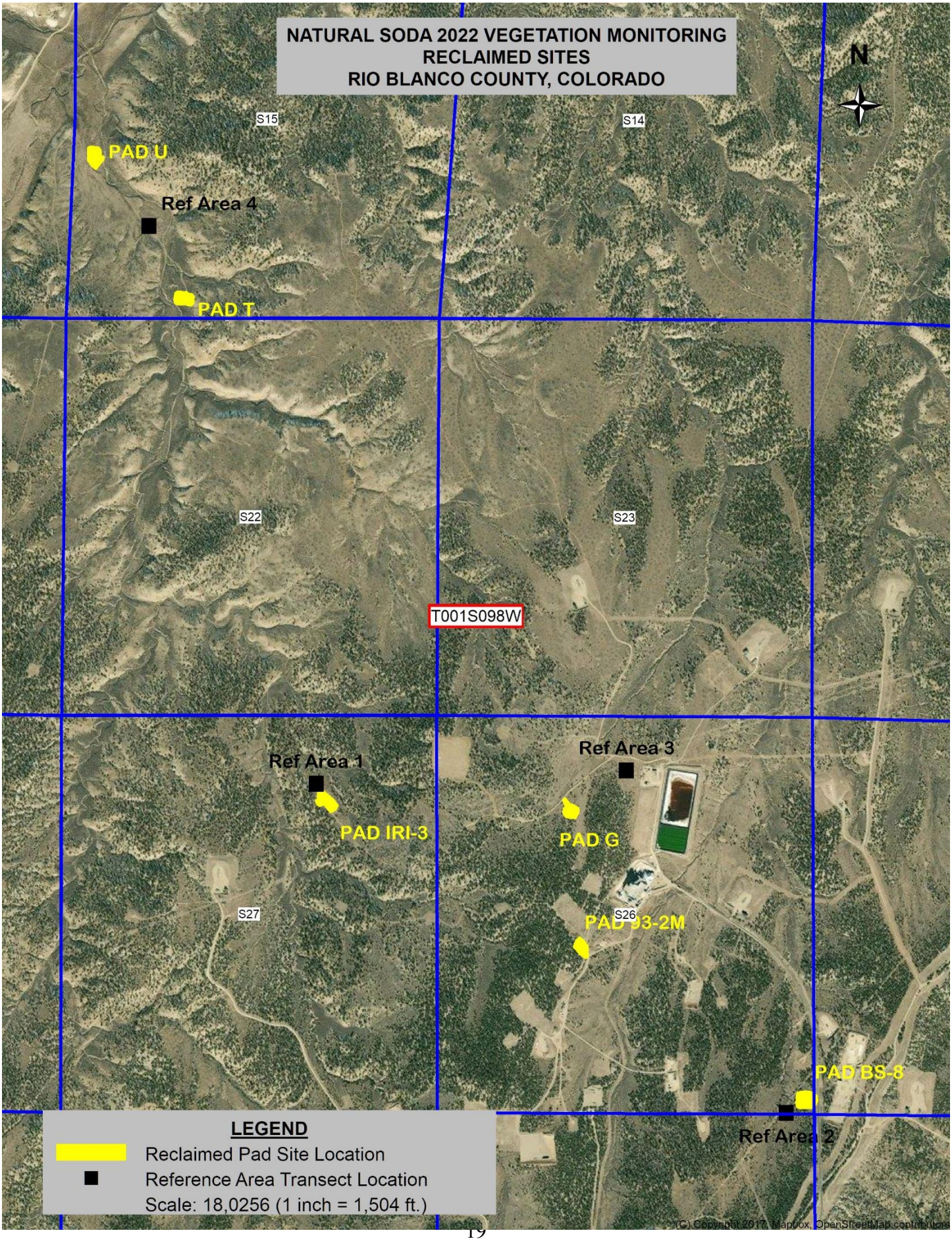
Evaluation of the reclamation efforts of the disturbance on Corehole Pad U:

- There are 12 desirable plant species established on the site (4 perennial grasses, 3 desirable forbs, and 5 shrubs) meeting the requirement of at least five plant species.
- Yellow rabbitbrush (*Chrysothamnus viscidiflorus*) was the desired species with the greatest relative cover at 7.3 percent meeting the requirement that no one species can exceed 70 percent relative cover.

- The foliar cover of desirable species on the site was 39 percent of that on the native rangeland reference areas not meeting the requirement of 80 percent similarity.
- The amount of unprotected bare ground on the site was 21 percent greater than on the native rangeland reference areas which equates to 79 percent similarity, not meeting the required 80 percent similarity.
- The density of forbs and shrubs on the site in comparison with the native rangeland reference areas was 10 percent and 52 percent, respectively. Neither desirable forbs nor shrub densities have met the requirement of 80 percent similarity.

The plant community only meets the criteria for species diversity. The criteria for bare ground, desired foliar cover, desirable forb density and shrub density have not been met. This site does not meet all the criteria for successful reclamation of the disturbance at the site.

Location Map:


NATURAL SODA 2022 VEGETATION MONITORING
RECLAIMED SITES
RIO BLANCO COUNTY, COLORADO
N
S15
S14
PAD U
Ref Area 4
PAD T
S22
S23
T001S098W
Ref Area 1
PAD IRI-3
Ref Area 3
PAD G
S27
S26
PAD 33-2M
PAD BS-8
Ref Area 2
LEGEND
Reclaimed Pad Site Location
Reference Area Transect Location
Scale: 18,0256 (1 inch = 1,504 ft.)
(C) Copyright 2017, Mapbox, OpenStreetMap contributors

Appendix A – Vegetation Sampling Data Native Rangeland Reference Areas

Table A1 - Vegetation Cover, Species Composition, Species Density & Ground Cover
Rolling Loam Native Rangeland Reference Areas

Plant Species Observed within Study Area			Line-Point Canopy Intercept Data [1]			Density Data [2]
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	**Desirable Forb/Shrub Density (#/m²)**
ACHY	*Achnatherum hymenoides*	Indian ricegrass	4.50	2.00	7.59	
HECO26	*Hesperostipa comata*	needle & thread needlegrass	12.50	3.00	17.24	
KOMA	*Koeleria macrantha*	prairie junegrass	7.00	1.00	13.10	
PASM	*Pascopyrum smithii*	western wheatgrass	13.00	0.50	20.69	
POSE	*Poa secunda*	Sandberg bluegrass	1.50	0.00	4.83	
		Perennial Grass Totals	**38.50**	**6.50**	**63.45**	
ANRO2	*Antennaria rosea*	rosey pussytoes	0.00	0.00	0.00	0.08
ASCH	*Astragalus chamaeleuce*	cicada milkvetch	0.00	0.00	0.00	0.03
ASCO12	*Astragalus convallarius*	lesser-rushy mlkvetch	0.50	0.00	0.69	0.13
ASSP6	*Astragalus spatulatus*	tufted milkvetch	0.00	0.00	0.00	0.05
CAFI	*Carex filifolia*	threadleaf sedge	1.00	0.00	1.38	0.35
CALI4[3]	*Castilleja linariifolia*	Wyoming Indian paintbrush	0.00	0.00	0.00	0.00
CHAL	*Chenopodium album*	lambsquarter	0.00	0.00	0.00	0.08
COUM[3]	*Comandra umbellata*	bastard toadflax	0.00	0.00	0.00	0.00
CRFL6	*Cryptantha flavoculata*	roughseed cryptanth	0.00	0.00	0.00	0.30
EREA	*Erigeron eatonii*	Eaton's fleabane	0.00	0.00	0.00	0.28
EUFE[3]	*Euphorbia fendleri*	Fendler spurge	0.00	0.00	0.00	0.00
LEER	*Leucelene ericoides*	heath aster	0.00	0.00	0.00	0.28
LEMO2	*Lepidium montanum*	mountain pepperwed	0.50	0.00	0.69	0.18
LIPU[3]	*Linanthus pungens*	pricky phlox	0.00	0.00	0.00	0.00
LUAR3[3]	*Lupinus argenteus*	silvery lupine	0.00	0.00	0.00	0.00
MACA2[3]	*Machaeranthera canescens*	hoary tansyaster	0.00	0.00	0.00	0.00
MAGR2	*Machaeranthera grindelioides*	rayless tansyaster	0.50	0.00	1.38	0.78
OPPO	*Opuntia polyacantha*	plains pricklypear cactus	0.50	0.00	1.38	0.00
PEFRF5	*Penstemon fremontii var. fremontii*	Fremont beardtongue	0.00	0.00	0.00	0.03
PHHO	*Phlox hoodii*	Hood's phlox	1.00	0.00	1.38	1.13
PHLO2[3]	*Phlox longifolia*	longleaf phlox	0.00	0.00	0.00	0.00
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	0.50	0.00	2.07	1.33
		Desirable Forb Totals	**4.50**	**0.0**	**8.97**	**5.03**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	9.00	0.00	13.10	1.56
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	4.00	0.50	6.20	0.02
GUSA2	*Gutierrezia sarothrae*	broom snakeweed	0.50	0.00	1.38	0.14
JUOS	*Juniperus osteosperma*	Utah juniper	0.00	0.00	0.00	0.02
SAVE4[3]	*Sarcobatus vermiculatus*	greasewood	0.00	0.00	0.00	0.00
		Shrub Totals	**13.50**	**0.50**	**20.68**	**1.74**
BRTE	*Bromus tectorum*	cheatgrass	4.00	0.00	6.90	
LEDE[3]	*Lepidium densiflorum*	common pepperweed	0.00	0.00	0.00	
		Totals for Invasive and Non-Native Species	**4.00**	**0.00**	**6.90**	
		Vegetation Totals	**60.50**	**7.00**	**100.0**	**6.77**

[1] Sum of data from 5 randomly placed transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at reach sample point.

[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.

[3] Plant species not encountered in sampling data but were present within the study area.

[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface.

Soil Surface Cover Type (%)[4]	
Bare Ground	**27.5**
Biotic Crust	**2.5**
Herbaceous Litter	**38.0**
Woody Litter	**2.5**
Duff	**0.0**
Rock	**0.0**

Table A2 - Canopy Gap Intercept Data Rolling Loam Native Rangeland Reference Area										
Canopy Gaps > 20 centimeters	**Total of Gaps > 20 cm**		**Gaps 21-50 cm**		**Gaps 51-100 cm**		**Gaps 101-200 cm**		**Gaps >200 cm**	
	2021	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**
Transect 1	1378	881	282	488	326	393	770	0	0	0
Transect 2	996	1153	335	297	661	593	0	263	0	0
Transect 3	1113	939	358	512	755	173	0	254	0	0
Transect 4	691	835	528	465	163	265	0	105	0	0
Transect 5	485		345		140		0		0	
Total Gaps (cm)	**4663**	**3808**	**1848**	**1762**	**2045**	**1424**	**770**	**622**	**0**	**0**
% Line in Gaps	**37.30**	**38.08**	**14.78**	**17.62**	**16.36**	**14.24**	**6.16**	**6.22**	**0.00**	**0.00**
Line length for each transect was 25 meters for site total length of 125 meters.										

Table A3 - Transect Coordinates Native Rangeland Reference Areas (Datum: UTM Zone 12, WGS 84)						
Site	**Azimuth from starting point (true N)**	**Transect Starting Point**		**Transect Ending Point**		**Length**
		Northing (mN)	**Easting (mE)**	**Northing (mN)**	**Easting (mE)**	
Transect 1	083 º	4424307.68298	724269.47505	4424316.99063	724291.26662	25 meters
Transect 2	103 º	4423048.79583	726230.32726	4423054.88211	726251.95974	25 meters
Transect 3	166 º	4424447.61936	725521.11199	4424427.03500	725527.62247	25 meters
Transect 4	244 º	4426608.51207	723511.42468	4426600.72543	723488.39757	25 meters

Transect Photos -- Native Rangeland Reference Areas

Figure A1 - Rolling Loam Rangeland Reference Area Transect #1

Figure A2 - Rolling Loam Rangeland Reference Area Transect #2

Figure A3 - Rolling Loam Rangeland Reference Area Transect #3

Figure A4 - Rolling Loam Rangeland Reference Area Transect #4

Appendix B – Vegetation Sampling Data Reclaimed Well Pad 93-2M

Table B1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Pad 93-2M						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
AGCR	*Agropyron cristatum*	crested wheatgrass	1.3	0.0	2.13	
ELLAL	*Elymus lanceolatus*	thickspike wheatgrass	0.7	0.7	1.06	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	10.7	3.3	18.09	
LECI4	*Leymus cinereus*	basin wildrye	1.3	0.0	2.13	
NAVI4	*Nassella viridula*	green needlegrass	0.7	0.0	1.06	
PASM	*Pascopyrum smithii*	western wheatgrass	5.3	0.0	8.51	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	18.7	2.0	31.92	
THIN6	*Thinopyrum intermedium*	pubescent wheatgrass	0.7	0.0	1.06	**Forb/Shrub Density (#/m²)**
		Perennial Grass Totals	**39.4**	**6.0**	**65.96**	
MACA2[3]	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.00
MAGR2[3]	*Machaeranthera grindelioides*	rayless tansyaster	0.0	0.0	0.00	0.00
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	0.7	0.0	1.06	0.33
		Desirable Forb Totals	**0.7**	**0.0**	**1.06**	**0.33**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	0.7	0.0	1.06	0.37
ATCA2[3]	*Atriplex canescens*	four-wing saltbush	0.0	0.0	0.00	0.00
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	5.3	0.0	8.51	0.50
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	0.0	0.0	0.00	0.13
		Shrub Totals	**6.0**	**0.0**	**9.57**	**1.00**
BRTE	*Bromus tectorum*	cheatgrass	8.0	0.0	19.15	
DESO2	*Descurainia sophia*	yellow mustard	2.7	0.0	4.26	
		Totals for Invasive and Non-Native Species	**10.7**	**0.0**	**23.41**	
		Vegetation Totals	**56.8**	**6.0**	**100.0**	**1.33**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]	
Bare Ground	**28.0**
Biotic Crust	**0.0**
Herbaceous Litter	**56.3**
Woody Litter	**1.3**
Duff	**0.0**
Rock	**0.0**

Table B2 - Canopy Gap Intercept Data Reclaimed Pad 93-2M					
Canopy Gaps > 20 centimeters	**Total of Gaps > 20 cm**	**Gaps 21-50 cm**	**Gaps 51-100 cm**	**Gaps 101-200 cm**	**Gaps >200 cm**
Transect 1	1252	564	484	0	204
Transect 2	1341	123	420	376	422
Transect 3	730	576	154	0	0
Total Gaps (cm)	**3323**	**1263**	**1058**	**376**	**626**
% Line in Gaps	**44.31**	**16.84**	**14.11**	**5.01**	**8.35**
Line length for each transect was 25 meters for site total length of 75 meters					

Table B3 - Transect Coordinates Reclaimed Pad 93-2M (Datum: UTM Zone 12, WGS 84)						
	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		
Site		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	Length
Transect 1	165 °	4423686.18452	725370.26961	4423662.77191	725378.83102	25 meters
Transect 2	240 °	4423691.89403	725371.72592	4423686.50910	725351.18604	25 meters
Transect 3	312 °	4423699.19054	725374.24723	4423714.64547	725359.59171	25 meters

Transect Photos -- Reclaimed Pad 93-2M

Figure B1 Transect 1 Reclaimed Pad 93-2M

Figure B2 Transect 2 Reclaimed Pad 93-2M

Figure B3 Transect 3 Reclaimed Pad 93-2M

Appendix C – Vegetation Sampling Data Reclaimed Pad BG-8

Table C1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Pad BG-8						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	2.7	1.0	6.00	
AGCR	*Agropyron cristatum*	crested wheatgrass	0.7	0.0	1.00	
ELLAL	*Elymus lanceolatus*	thickspike wheatgrass	1.3	1.0	2.00	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	14.0	6.0	22.00	
LECI4	*Leymus cinereus*	basin wildrye	0.7	0.0	1.00	
PASM	*Pascopyrum smithii*	western wheatgrass	8.0	0.0	13.00	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	6.7	1.0	10.00	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	2.0	1.0	3.00	
THIN6	*Thinopyrum intermedium*	intermedate wheatgrass	5.3	2.0	8.00	**Forb/Shrub Density (#/m^2)**
		Perennial Grass Totals	**41.4**	**12.0**	**66.00**	
ASCI4	*Astragalus cicer*	cicer milkvetch	0.0	0.0	0.00	0.03
LILE3[3]	*Linum lewisii*	Lewis flax	0.0	0.0	0.00	0.00
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.03
MESA	*Medicago sativa*	alfalfa	0.0	0.0	0.00	0.03
PHHO	*Phlox hoodii*	Hood's phlox	0.0	0.0	0.00	0.03
		Desirable Forb Totals	**0.0**	**0.0**	**0.00**	**0.12**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	0.7	0.0	1.00	0.07
ATCA2[3]	*Atriplex canescens*	four-wing saltbush	0.0	0.0	0.00	0.00
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	0.7	0.0	1.00	0.10
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	0.0	0.0	0.0	0.33
		Shrub Totals	**1.4**	**0.0**	**2.00**	**0.50**
BRTE	*Bromus tectorum*	cheatgrass	4.7	0.0	8.00	
SATR12	*Salsola tragus*	Russian thistle	14.0	0.0	24.00	
		Totals for Invasive and Non-Native Species	**18.7**	**0.0**	**32.00**	
		Vegetation Totals	**61.5**	**12.0**	**100.0**	**0.62**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]	
Bare Ground	**28.7**
Biotic Crust	**0.0**
Herbaceous Litter	**31.3**
Woody Litter	**2.0**
Duff	**0.0**
Rock	**1.3**

Table C2 - Canopy Gap Intercept Data Reclaimed Pad BG-8					
Canopy Gaps > 20 centimeters	**Total of Gaps > 20 cm**	**Gaps 21-50 cm**	**Gaps 51-100 cm**	**Gaps 101-200 cm**	**Gaps >200 cm**
Transect 1	836	258	0	122	456
Transect 2	1555	110	334	628	483
Transect 3	1080	385	128	567	0
Total Gaps (cm)	**3471**	**753**	**462**	**1317**	**939**
% Line in Gaps	**46.28**	**10.04**	**6.16**	**17.56**	**12.52**
Line length for each transect was 25 meters for site total length of 75 meters					

Table C3 - Transect Coordinates Reclaimed Pad BG-8 (Datum: UTM Zone 12, WGS 84)						
Site	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		Length
		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	
Transect 1	127 º	4423097.10425	726315.63233	4423083.39549	726336.65478	25 meters
Transect 2	228 º	4423094.34867	726312.63466	4423075.74408	726295.99316	25 meters
Transect 3	288 º	4423102.87169	726315.29003	4423107.09647	726292.92393	25 meters

Transect Photos – Reclaimed Pad BG-8

Figure C1 Transect 1 Reclaimed Pad BG-8

Figure C2 Transect 2 Reclaimed Pad BG-8

Figure C3 Transect 3 Reclaimed Pad BG-8

Appendix D – Vegetation Sampling Data Reclaimed Corehole Pad G

Table D1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Corehole Pad G						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	0.7	0.0	1.03	
ELLAL	*Elymus lanceolatus*	thickspike wheatgrass	1.3	0.0	2.06	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	12.0	4.0	18.56	
HECO26	*Hesperostipa comata*	needle & thread needlegrass	6.0	2.0	9.28	
LECI4	*Leymus cinereus*	basin wildrye	1.3	0.0	2.06	
NAVI4	*Nassella viridula*	green needlegrass	1.3	0.7	3.09	
PASM	*Pascopyrum smithii*	western wheatgrass	6.0	0.0	9.28	
KOMA	*Koeleria macrantha*	prairie junegrass	0.7	0.7	1.03	
PSSPS	*Pseudoroegneria spicata ssp. spicata*	bearded bluebunch wheatgrass	4.0	0.0	7.23	**Desirable Forb/Shrub Density (#/m²)**
		Perennial Grass Totals	**33.3**	**7.4**	**53.62**	
ACLAA	*Achillea lanulosa var.*	common yarrow	0.0	0.0	0.00	0.03
ASCH	*Astragalus chamaeleuce*	cicada milkvetch	0.0	0.0	0.00	0.07
ASCO12	*Astragalus convallarius*	lesser-rushy mlkvetch	0.7	0.0	1.03	0.07
CHAL	*Chenopodium album*	lambsquarter	0.0	0.0	0.00	0.03
CLSE	*Cleome serrulata*	Rocky Mtn. beeplant	0.0	0.0	0.00	0.03
CRFL6	*Cryptantha flavoculata*	roughseed cryptanth	0.0	0.0	0.00	0.03
EREA	*Erigeron eatonii*	Eaton fleabane	0.0	0.0	0.00	0.03
ERUM	*Eriogonum umbellatum*	sulphur buckwheat	0.0	0.0	0.00	0.10
HEBO	*Hedysarum boreale*	Utah sweetvetch	0.7	0.0	1.03	0.17
LILE3	*Linum lewisii*	Lewis flax	0.0	0.0	0.00	0.07
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.10
MAGR2	*Machaeranthera grindelioides*	rayless tansyaster	0.7	0.0	1.03	0.27
MESA	*Medicago sativa*	alfalfa	1.3	0.0	3.09	0.90
PEFRF5	*Penstemon fremontii var.*	Fremont beardtongue	0.0	0.0	0.00	0.03
PEPA8	*Penstemon palmeri*	Palmer's beardtongue	0.0	0.0	0.00	0.03
PHHO	*Phlox hoodii*	Hood's phlox	0.0	0.0	0.00	0.07
SPCO	*Sphaeralcea coccinea*	scarlet globemallow	0.0	0.0	0.00	0.97
		Desirable Forb Totals	**3.4**	**0.0**	**6.18**	**3.00**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	0.0	0.0	0.00	0.10
ATCA2	*Atriplex canescens*	four-wing saltbush	2.0	0.0	3.09	0.30
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	0.7	0.0	1.03	0.07
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	2.0	0.0	3.09	0.47
KRLA2	*Krascheninnikovia lanata*	winterfat	0.7	0.0	1.03	0.03
PUTR2	*Purshia tridentata*	antelope bittrebrush	0.0	0.0	0.00	0.07
		Shrub Totals	**5.4**	**0.0**	**8.24**	**1.04**
BRTE	*Bromus tectorum*	cheatgrass	3.3	0.0	8.25	
SATR12	*Salsola tragus*	Russian thistle	13.3	0.0	23.71	
		Totals for Invasive and Non-Native Species	**16.6**	**0.0**	**31.96**	
		Vegetation Totals	**58.7**	**7.4**	**100.0**	**4.04**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.

[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.

[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [3]	
Bare Ground	**30.7**
Biotic Crust	**0.0**
Herbaceous Litter	**23.7**
Woody Litter	**4.0**
Duff	**0.0**
Rock	**0.7**

Table D2 - Canopy Gap Intercept Data Reclaimed Corehole Pad G					
Canopy Gaps > 20 centimeters	**Total of Gaps > 20 cm**	**Gaps 21-50 cm**	**Gaps 51-100 cm**	**Gaps 101-200 cm**	**Gaps >200 cm**
Transect 1	873	378	495	0	0
Transect 2	1482	137	223	639	483
Transect 3	1216	193	672	351	0
Total Gaps (cm)	**3571**	**708**	**1390**	**990**	**483**
% Line in Gaps	**47.61**	**9.44**	**18.53**	**13.20**	**6.44**
Line length for each transect was 25 meters for site total length of 75 meters					

Table D3 - Transect Coordinates Reclaimed Corehole Pad G (Datum: UTM Zone 12, WGS 84)						
	Azimuth from starting point (true N)	**Transect Starting Point**		**Transect Ending Point**		
Site		**Northing (mN)**	**Easting (mE)**	**Northing (mN)**	**Easting (mE)**	**Length**
Transect 1	230 º	4424258.03185	725298.19446	4424240.58501	725283.05880	25 meters
Transect 2	117 º	4424254.39631	725299.24274	4424248.56697	725327.55352	25 meters
Transect 3	328 º	4424266.73863	725299.56205	4424288.10498	725285.67370	25 meters

Transect Photos -- Reclaimed Corehole Pad G

Figure E1 Transect 1 Reclaimed Corehole Pad G

Figure E2 Transect 2 Reclaimed Corehole Pad G

Figure E3 Transect 3 Reclaimed Corehole Pad G

Appendix E – Vegetation Sampling Data Reclaimed Corehole Pads IRI-3, MW1, PW1, PW2

Table E1 - Vegetation Cover, Species Composition, Species Density & Ground Cover
Reclaimed Corehole Pads IRI-3, MW-1, PW-1, and PW-2

Plant Species Observed within Study Area			Line-Point Canopy Intercept Data [1]			Density Data [2]
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	0.7	0.7	1.25	
AGCR	*Agropyron cristatum*	crested wheatgrass	5.3	1.3	10.00	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	2.7	0.0	5.00	
HECO26	*Hesperostipa comata*	needle & thread needlegrass	2.7	0.7	5.00	
LECI4[3]	*Leymus cinereus*	basin wildrye	0.0	0.0	0.00	
PASM	*Pascopyrum smithii*	western wheatgrass	5.3	0.0	10.00	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	20.7	2.7	42.50	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	1.3	0.0	2.50	**Desirable Forb/Shrub Density (#/m²)**
THIN6	*Thinopyrum intermedium*	pubescent wheatgrass	4.0	0.7	7.50	
		Perennial Grass Totals	**42.7**	**6.1**	**83.75**	
ANRO2	*Antennaria rosea*	rosey pussytoes	0.0	0.0	0.00	0.10
ASCH	*Astragalus chamaeleuce*	cicada milkvetch	0.0	0.0	0.00	0.03
CHAL	*Chenopodium album*	lambsquarter	0.0	0.0	0.00	0.17
EREA	*Erigeron eatonii*	Eaton's fleabane	0.0	0.0	0.00	0.07
LILE3	*Linum lewisii*	Lewis flax	0.0	0.0	0.00	0.17
MACA2[3]	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.00
MAGR2[3]	*Machaeranthera grindelioides*	rayless tansyaster	0.0	0.0	0.00	0.00
MESA	*Medicago sativa*	alfalfa	0.0	0.0	0.00	0.57
PHHO	*Phlox hoodii*	Hood's phlox	0.0	0.0	0.00	0.03
		Desirable Forb Totals	**0.0**	**0.0**	**0.00**	**1.14**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	0.0	0.0	0.00	0.10
ATCA2	*Atriplex canescens*	four-wing saltbush	2.7	0.0	5.00	0.53
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	0.0	0.0	0.00	0.10
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	0.0	0.0	0.00	0.03
		Shrub Totals	**2.7**	**0.0**	**5.00**	**0.76**
ALDE[3]	*Alyssum desertorum*	desert madwort	0.0	0.0	0.00	
BRTE	*Bromus tectorum*	cheatgrass	6.0	0.0	11.25	
		Totals for Invasive and Non-Native Species	**6.0**	**0.0**	**11.25**	
		Vegetation Totals	**51.4**	**6.1**	**100.0**	**1.90**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [4]	
Bare Ground	**39.3**
Biotic Crust	**0.0**
Herbaceous Litter	**31.3**
Woody Litter	**0.6**
Duff	**0.0**
Rock	**1.3**

Table E2 - Canopy Gap Intercept Data
Reclaimed Corehole Pads IRI-3, MW-1, PW-1, and PW-2

Canopy Gaps > 20 centimeters	Total of Gaps > 20 cm	Gaps 21-50 cm	Gaps 51-100 cm	Gaps 101-200 cm	Gaps >200 cm
Transect 1	732	322	173	237	0
Transect 2	1519	290	506	246	477
Transect 3	1061	518	367	176	0
Total Gaps (cm)	**3312**	**1130**	**1046**	**659**	**477**
% Line in Gaps	**44.16**	**15.07**	**13.95**	**8.79**	**6.36**

Line length for each transect was 25 meters for site total length of 75 meters

Table E3 - Transect Coordinates Reclaimed Corehole Pads IRI-3, MW-1, PW-1, and PW-2 (Datum: UTM Zone 12, WGS 84)						
Site	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		Length
		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	
Transect 1	120 º	4424245.40627	724301.49859	4424237.07351	724324.15171	25 meters
Transect 2	358 º	4424257.94819	724297.28076	4424281.61625	724293.59071	25 meters
Transect 3	274 º	4424256.52370	724286.63195	4424258.58470	724262.28194	25 meters

Transect Photos -- Reclaimed Corehole Pads IRI3, MW1, PW1, PW2

Figure E1 Transect 1 Reclaimed Pads IRI3, MW1, PW1, PW2

Figure E2 Transect 2 Reclaimed Pads IRI3, MW1, PW1, PW2

Figure E3 Transect 3 Reclaimed Pads IRI3, MW1, PW1, PW2

Appendix F – Vegetation Sampling Data Reclaimed Corehole Pad T

Table F1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Corehole Pad T						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	3.3	1.3	4.24	
ELTR7	*Elymus trachycaulus*	slender wheatgrass	2.0	0.7	3.39	
HECO26[3]	*Hesperostipa comata*	needle & thread needlegrass	0.0	0.0	0.00	
LECI4	*Leymus cinereus*	basin wildrye	0.7	0.7	0.85	
PASM	*Pascopyrum smithii*	western wheatgrass	0.7	0.0	0.85	
PSJU3	*Psathyrostachys juncea*	Russian wildrye	0.7	0.0	0.85	
PSSPI	*Pseudoroegneria spicata ssp. inermis*	beardless bluebunch wheatgrass	4.0	1.3	5.07	**Desirable Forb/Shrub Density (#/m²)**
		Perennial Grass Totals	**11.4**	**4.0**	**15.25**	
ARDR4[3]	*Artemisia dracunculus*	tarragon	0.0	0.0	0.00	0.00
ARFR4	*Artemisia frigida*	fringed sage	1.3	0.0	1.69	0.23
ASCH	*Astragalus chamaeleuce*	cicada milkvetch	0.0	0.0	0.00	0.07
CHAL	*Chenopodium album*	lambsquarter	0.0	0.0	0.00	0.07
EREA	*Erigeron eatonii*	Eaton fleabane	0.0	0.0	0.00	0.03
LILE3	*Linum lewisii*	Lewis flax	0.0	0.0	0.00	0.23
MACA2	*Machaeranthera canescens*	hoary tansyaster	0.0	0.0	0.00	0.23
MESA	*Medicago sativa*	alfalfa	2.0	0.0	3.39	1.07
SPCO[3]	*Sphaeralcea coccinea*	scarlet globemallow	0.0	0.0	0.00	0.00
		Desirable Forb Totals	**3.3**	**0.0**	**5.08**	**1.93**
ARTRW	*Artemisia tridentata var. wyomingensis*	Wyoming big sagebrush	0.7	0.0	0.9	0.33
ATCA2[3]	*Atriplex canescens*	four-wing saltbush	0.0	0.0	0.00	0.00
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	9.3	0.0	11.84	0.80
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	1.3	0.0	1.68	0.33
PUTR2	*Purshia tridentata*	antelope bittrebrush	0.0	0.0	0.0	0.03
		Shrub Totals	**11.3**	**0.0**	**14.42**	**1.49**
BRTE	*Bromus tectorum*	cheatgrass	6.7	0.0	12.71	
SATR12	*Salsola tragus*	Russian thistle	34.0	0.0	52.54	
		Totals for Invasive and Non-Native Species	**40.7**	**0.0**	**65.25**	
		Vegetation Totals	**66.7**	**4.0**	**100.0**	**3.42**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Plant species not encountered in sampling data but were present within the study area.
[4] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type 4	
Bare Ground	**26.0**
Biotic Crust	**0.0**
Herbaceous Litter	**19.3**
Woody Litter	**8.0**
Duff	**0.0**
Rock	**0.0**

Table F2 - Canopy Gap Intercept Data Reclaimed Corehole Pad T					
Canopy Gaps > 20 centimeters	**Total of Gaps > 20 cm**	**Gaps 21-50 cm**	**Gaps 51-100 cm**	**Gaps 101-200 cm**	**Gaps >200 cm**
Transect 1	2298	0	386	509	1403
Transect 2	1809	228	447	1134	0
Transect 3	1775	177	390	972	236
Total Gaps (cm)	**5882**	**405**	**1223**	**2615**	**1639**
% Line in Gaps	**78.43**	**5.40**	**16.31**	**34.87**	**21.85**
Line length for each transect was 25 meters for site total length of 75 meters					

Table F3 - Transect Coordinates Locations Reclaimed Corehole Pad T (Datum: UTM Zone 12, WGS 84)						
	Azimuth from starting point (true N)	Transect Starting Point		Transect Ending Point		
Site		Northing (mN)	Easting (mE)	Northing (mN)	Easting (mE)	Length
Transect 1	138 º	4426312.72700	723662.04020	4426297.73512	723681.20553	25 meters
Transect 2	202 º	4426312.40211	723658.54415	4426290.00694	723652.61820	25 meters
Transect 3	234 º	4426316.01716	723660.57553	4426304.48838	723638.76904	25 meters

Transect Photos -- Reclaimed Corehole Pad T

Figure F1 Transect 1 Reclaimed Corehole Pad T

Figure F2 Transect 2 Reclaimed Corehole Pad T

Figure F3 Transect 3 Reclaimed Corehole Pad T

Appendix G – Vegetation Sampling Data Reclaimed Corehole Pad U

Table G1 - Vegetation Cover, Species Composition, Species Density & Ground Cover Reclaimed Corehole Pad U						
Plant Species Observed within Study Area			**Line-Point Canopy Intercept Data [1]**			**Density Data [2]**
Species Symbol	**Scientific Name**	**Common Name**	**% Foliar Cover**	**% Basal Cover**	**Species Composition**	
ACHY	*Achnatherum hymenoides*	Indian ricegrass	2.0	0.0	4.21	
HECO26	*Hesperostipa comata*	needle & thread needlegrass	0.7	0.0	1.05	
PASM	*Pascopyrum smithii*	western wheatgrass	8.7	0.0	15.79	**Desirable Forb/Shrub Density (#/m²)**
PSJU3	*Psathyrostachys juncea*	Russian wildrye	1.3	0.7	2.11	
		Perennial Grass Totals	**12.7**	**0.7**	**23.16**	
CHAL	*Chenopodium album*	lambsquarter	0.0	0.0	0.00	0.13
LEMO2	*Lepidium montanum*	mountain pepperwed	0.0	0.0	0.00	0.04
MESA	*Medicago sativa*	alfalfa	0.7	0.6	1.05	0.33
		Desirable Forb Totals	**0.7**	**0.6**	**1.05**	**0.50**
ARTRT	*Artemisia tridentata var. tridentata*	basin big sagebrush	0.7	0.0	1.05	0.07
CHVI8	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	7.3	0.7	11.59	0.60
GUSA2	*Gutierrezia sarothrae*	broom Snakeweed	0.0	0.0	1.05	0.17
PUTR2	*Purshia tridentata*	antelope bittrebrush	0.0	0.0	0.00	0.03
SAVE4	*Sarcobatus vermiculatus*	greasewood	0.7	0.0	1.05	0.03
		Shrub Totals	**8.7**	**0.7**	**14.74**	**0.90**
BRTE	*Bromus tectorum*	cheatgrass	6.7	0.0	13.68	
SATR12	*Salsola tragus*	Russian thistle	28.0	0.0	47.37	
		Totals for Invasive and Non-Native Species	**34.7**	**0.0**	**61.05**	
		Vegetation Totals	**56.8**	**2.0**	**100.0**	**1.40**

[1] Sum of data from 3 randomly placed 25 meter transects with 50 sample points collected from each transect. Foliar cover based upon 1st plant species encountered in the canopy at each sample point. Species composition based upon total of all plant species encountered at each sample point.
[2] Sum of density data collected from 10 one-square meter quadrants along each transect. Only desirable forb and shrub densities were recorded based upon reclamation criteria.
[3] Percentages are not cumulative with vegetation totals, rather a measure by layer of ground cover from the top layer thru the lower layers to the soil surface. Values for bare ground have no vegetative, litter or rock cover above the soil surface.

Percent Ground Cover by Cover Type [3]	
Bare Ground	**33.3**
Biotic Crust	**0.0**
Herbaceous Litter	**26.7**
Woody Litter	**5.3**
Duff	**0.0**
Rock	**0.7**

Table G2 - Canopy Gap Intercept Data Reclaimed Corehole Pad U					
Canopy Gaps > 20 centimeters	**Total of Gaps > 20 cm**	**Gaps 21-50 cm**	**Gaps 51-100 cm**	**Gaps 101-200 cm**	**Gaps >200 cm**
Transect 1	1768	79	853	244	592
Transect 2	2370	46	78	492	1754
Transect 3	1909	41	220	269	1379
Total Gaps (cm)	**6047**	**166**	**1151**	**1005**	**3725**
% Line in Gaps	**80.63**	**2.21**	**15.35**	**13.40**	**49.67**
Line length for each transect was 25 meters for site total length of 75 meters					

Table G3 - Transect Coordinates Reclaimed Corehole Pad U (Datum: UTM Zone 12, WGS 84)						
Site	**Azimuth from starting point (true N)**	**Transect Starting Point**		**Transect Ending Point**		**Length**
		Northing (mN)	**Easting (mE)**	**Northing (mN)**	**Easting (mE)**	
Transect 1	137 º	4426858.28988	723258.12137	4426841.14028	723275.72340	25 meters
Transect 2	070 º	4426865.78186	723263.54439	4426878.24608	723283.18483	25 meters
Transect 3	355 º	4426867.98031	723258.94866	4426893.34648	723256.32396	25 meters

Transect Photos -- Reclaimed Corehole Pad U

Figure G1 Transect 1 Reclaimed Corehole Pad U

Figure G2 Transect 2 Reclaimed Corehole Pad U

Figure G3 Transect 3 Reclaimed Corehole Pad U