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60565355

Mr. Brian Fettin
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U.S. Army Corps of Engineers
1616 Capitol Avenue
Omaha, NE 68102

Subject: **Final OU1 Rebound Study Letter Report – Quarter 8 Event**
Remedial Action Operation Groundwater Treatment Facility at OU1
and Groundwater Monitoring at OU1 and OU3
Cornhusker Army Ammunition Plant, Grand Island, Nebraska
Contract W9128F-18-D-0020, Delivery Order Number F0041

Dear Mr. Fettin:

This Operable Unit (OU) 1 Rebound Study Letter Report – Quarter 8 (Q8) Event summarizes the eighth quarter of field activities completed for the OU1 Rebound Study and 2020 subsurface injections performance monitoring. The Letter Report presents the Q8 analytical results and evaluation for the OU1 Rebound Study and performance monitoring, a statistical trend evaluation for OU1 Rebound Study, and presents conclusions and recommendations for upcoming OU1 Rebound Study and performance monitoring activities at Cornhusker Army Ammunition Plant (CHAAP).

1.0 INTRODUCTION

1.1 PROJECT WORK AUTHORITY

Brice Engineering, LLC (Brice) and AECOM Technical Services (AECOM) have prepared this document as the OU1 Rebound Study Letter Report – Quarter 8 Event for CHAAP located at Grand Island, Nebraska (**Figures 1-1** and **1-2**). This work is being conducted under contract W9128F-18-D-0020, Delivery Order Number F0041 to the United States Army Corps of Engineers (USACE), Omaha District.

Conceptual basis for performing the OU1 Rebound Study was provided in the *CHAAP OU1 2018 Groundwater Monitoring Results and Program Recommendations Technical Memorandum* (Program Recommendations Tech Memo [Brice-AECOM 2019a]), the Final *2018 Annual Groundwater Monitoring Report, Remedial Action Operations (RAO) Groundwater Treatment Facility (GWTF) at OU1 and Groundwater Monitoring at OU1/OU3* (2018 Annual Groundwater Monitoring Report [Brice-AECOM 2019c]), and presented at several stakeholder meetings (April and November 2019). The approved OU1 Rebound Study work planning details are provided in the Final *Addendum 3, Uniform Federal Policy – Quality Assurance Project Plan (UFP-QAPP) for RAO GWTF at OU1 and Groundwater Monitoring at OU1/OU3 at CHAAP* (OU1 Rebound Study Work Plan) (Addendum 3, UFP-QAPP [Brice-AECOM 2019b]). The approved 2019 and

2020 OU1 subsurface injection work planning details are provided in the Final UFP-QAPP (Bay West LLC and URS Group Inc. [BW-URS] 2014), its Final Addendum 2 (Brice-AECOM 2018), and the recommendations provided in the Final 2018 Annual Groundwater Monitoring Report (Brice-AECOM 2019c) and the Final 2019 Annual Groundwater Monitoring Report (Brice-AECOM 2020b).

1.2 PROJECT PURPOSE AND OBJECTIVE

OU1 consists of explosives-contaminated groundwater plumes (explosives concentrations exceeding regulatory action levels) at CHAAP. Health Advisory Levels (HALs) were established for the following explosives compounds: hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), 2,4,6-trinitrotoluene (TNT), and octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX). The HALs were established as regulatory action levels for CHAAP in the OU1 Record of Decision (ROD) (United States Army Environmental Center [USAEC] 1994) and the subsequent OU1 ROD Amendment (URS Greiner Woodward-Clyde Federal Services [URSGWCFS] 2001). The HALs for RDX and TNT are 2 micrograms per liter (µg/L) and 400 µg/L for HMX. The primary compounds of concern (i.e., compounds with historic concentrations in groundwater exceeding their corresponding HAL) are RDX and TNT. HMX has not exceeded the HAL during any past groundwater monitoring events. The current OU1 RAO are on-post pump/treatment and off-post monitoring for natural attenuation with institutional controls.

Historically, due to the reduction in on-post concentrations and/or the implementation of supplemental remediation efforts (i.e., subsurface injections), operation of extraction wells (EW) 1 through EW6 (that began operation in 1998) have been discontinued since 2009. At the former facility boundary, EW7 began operation in 2000 and has been the only operating extraction well since 2009. Historic groundwater monitoring and subsequent statistical analysis have shown that concentrations of RDX and TNT near the former facility boundary between EW6 and EW7 have significantly declined over the past 24 years due to the existing on-post RAO. Numerical groundwater modeling predictions with EW7 not pumping indicate that the on-post plume will not migrate further downgradient (Brice-AECOM 2019c). Based on these results and simulations, an OU1 Rebound Study is being performed to temporarily discontinue pumping at EW7 and monitor groundwater near the former facility boundary. Eight total groundwater sampling events (one baseline and seven quarterly events) will be completed to closely monitor potential migration of the RDX and TNT plumes and to document any increases/decreases in explosives concentrations in groundwater. The objective of the OU1 Rebound Study is to establish a sufficient data set to initiate further identified Decision Points and Contingency Actions as presented in the OU1 Rebound Study Work Plan (i.e., groundwater extraction is no longer needed, groundwater extraction should be resumed, alternative actions) (Brice-AECOM 2019b).

Concurrent with the OU1 Rebound Study, subsurface injections (a voluntary action) were completed in 2019 (in the area of highest RDX and TNT concentrations near the former facility boundary) and in 2020 (for on-post areas with remaining residual RDX and TNT concentrations above HALs) to accelerate remedial timeframes. Four total groundwater sampling events (at approximate quarterly frequency) will be completed for each injection event to closely monitor performance of the subsurface injections and remediation of the RDX and TNT plumes, and to document any increases/decreases in explosives concentrations in groundwater. The 2019 and 2020 OU1 subsurface injection details and design were included in the Final 2018 Annual Groundwater Monitoring Report (Brice-AECOM 2019c), Final 2019 Annual Groundwater

Monitoring Report (Brice-AECOM 2020b), respectively; with the approved procedures outlined in the Final UFP-QAPP (BW-URS 2014). Following the OU1 Rebound Study and the OU1 subsurface injections with associated performance monitoring activities, long-term monitoring (LTM) will continue at OU1.

2.0 FIELD ACTIVITIES

This section summarizes the Q8 OU1 Rebound Study and the 2020 subsurface injection performance monitoring field activities completed at CHAAP. All field activities were completed in accordance with field protocols and standard operating procedures (SOPs) presented in the Groundwater Recovery and Treatment System Operation and Maintenance (O&M) Manual (GWTF O&M Manual [Brice 2019]), the Final UFP-QAPP (BW-URS 2014) and its Final Addendum 2 (Brice-AECOM 2018), the Final OU1 Rebound Study Work Plan (Brice-AECOM 2019b), and the OU1 subsurface injection recommendations provided in the Final 2019 Annual Groundwater Monitoring Report (Brice-AECOM 2020b).

2.1 OU1 REBOUND STUDY FIELD ACTIVITIES

The Q8 field activities were completed in February/March 2022 to continue monitoring explosives concentrations following shutdown of EW7. The baseline, Q2, Q3, Q4, Q5, Q6, and Q7 events are summarized in the Final OU1 Rebound Study Letter Report – Baseline Event (Brice-AECOM 2020a), Final OU1 Rebound Study Letter Report – Quarter 2 Event (Brice-AECOM 2020c), Final OU1 Rebound Study Letter Report – Quarter 3 Event (Brice-AECOM 2020d), Final OU1 Rebound Study Letter Report – Quarter 4 Event (Brice-AECOM 2021a), Final OU1 Rebound Study Letter Report – Quarter 5 Event (Brice-AECOM 2021b), Final OU1 Rebound Study Letter Report – Quarter 6 Event (Brice-AECOM 2022a), and Final OU1 Rebound Study Letter Report – Quarter 7 Event (Brice-AECOM 2022b), respectively.

2.1.1 Quarter 8 Direct Push Groundwater Sampling Activities (Off-Post)

A total of nine direct push groundwater samples were collected on February 22 and 23, 2022 from three off-post locations (OS001, OS003, and NW050R) as shown on **Figure 2-1**. Off-post direct push groundwater sampling was completed to collect screening data to continue monitoring explosives concentrations from the select OU1 off-post locations where permanent monitoring wells are not present and are not able to be installed due to private land ownership. In accordance with the OU1 Rebound Study Work Plan (Brice-AECOM 2019b), off-post location OS001 was selected to evaluate existing explosives concentrations that migrated off-post, and off-post location OS003 was selected to delineate the furthest extent off-post of explosives concentrations above HALs. Off-post location NW050R was selected for direct push groundwater sampling due to private landowner no longer allowing property access to six OU1 Rebound Study off-post monitoring wells (NW050, NW051, NW052, NW080, NW081R, NW082R) (shown on **Figure 2-1**). These six off-post monitoring wells are no longer sampled and are scheduled for future abandonment. To continue monitoring groundwater in the area of these wells, quarterly (Q5 through Q8) direct push groundwater sampling is conducted in the right-of-way (ROW) adjacent to off-post well cluster NW050 (with Hall County permitting). Samples are collected at similar depths to NW050, NW051, and NW052 following the same procedures currently used for the area downgradient of EW7 (see **Table 2-1**).

Direct push groundwater sampling was completed for all locations at predetermined vertical intervals within the unconfined shallow aquifer (Grand Island Formation) to verify the vertical extent of the explosives plume. The OS001 and OS003 depth intervals included: shallow – screened approximately 21 to 25 feet below ground surface (bgs), shallow-intermediate – screened approximately 31 to 35 feet bgs, and intermediate – screened approximately 41 to 45 feet bgs. The NW050R depth intervals included: shallow – screened approximately 16 to 20 feet bgs, shallow-intermediate – screened approximately 31 to 35 feet bgs, and intermediate – screened approximately 56 to 60 feet bgs.

Brice-AECOM obtained utility clearances prior to the start of intrusive direct push activities. The Nebraska One Call Diggers Hotline was contacted for utility clearances, which were requested a minimum of 48 hours prior to intrusive work. All identified underground utilities were marked with flagging, stakes, and/or paint. Utility locate tasks were documented in field logbooks to aid in subsequent clearance work. No intrusive work was completed within 5 feet of a marked utility.

The direct push locations OS001 and OS003 were sited using predetermined horizontal coordinates and a global positioning system (GPS) unit to ensure completion in the planned locations. The final sampling locations have been vertically surveyed and referenced to previously surveyed locations (i.e., monitoring wells). Due to proximity, the direct push location NW050R utilizes the approximate horizontal coordinates and vertical elevations of the existing well cluster NW050. The approximate ground surface elevation and sample interval elevations are provided in **Table 2-1**.

The direct push groundwater samples were collected using a Geoprobe® rig (model 7720DT) by Plains Environmental Services (PES) of Salina, Kansas, with full-time oversight by AECOM. Nebraska well drilling contractor licenses for PES and AECOM are provided in **Appendix A**.

Direct push groundwater samples were completed using direct push technology with a Geoprobe™ stainless steel screen point sampler (SP15 with exposed screen) and collected from the screened interval using a Geotech Geopump™ peristaltic pump and a check valve. Prior to groundwater sample collection, approximately 7 liters (3 to 5 rod volumes) were purged typically at rates of 0.5 to 1.0 liter per minute (lpm) for each sampling interval. Direct push groundwater samples were analyzed for explosives (including mono-nitroso-RDX [MNX]) using United States Environmental Protection Agency Method 8330A. Quality control (QC) samples (field duplicates) and matrix spike/matrix spike duplicate (MS/MSD) samples were collected at a 5-percent rate (i.e., one per 20 samples collected). Direct push groundwater sample locations, sample identification (ID) numbers, sample screened intervals, sample collection dates, QC sample locations, and sample parameters are provided in **Table 2-1**. Direct push groundwater sample collection field sheets (SCFSs) are provided in **Appendix B**.

2.1.2 Quarter 8 OU1 Monitoring Well Sampling Activities (Off-Post and On-Post)

During the Q8 OU1 Rebound Study sampling event, 12 off-post and 18 on-post monitoring wells were sampled from February 27 through March 2, 2022. A summary of the OU1 off-post and on-post sampling locations is presented in **Table 2-2** and shown on **Figure 2-1**.

The monitoring wells were purged and sampled with stainless steel ProActive Monsoon® submersible pumps. The decontaminated ProActive Monsoon® pump with new disposable tubing was lowered to the middle of the screened interval prior to purging. Modified low-flow purging

techniques were completed at each monitoring well location, maintaining less than (<) 0.3 feet of water level drawdown at a pumping rate of 0.5 lpm or less. Field water quality parameters, including dissolved oxygen (DO), oxidation/reduction potential (ORP), temperature, pH, conductivity, and turbidity were measured at monitoring wells using an In-Situ Aqua TROLL® 500 MPS water quality probe fitted with a flow-through cell. Turbidity was measured with a LaMotte 2020 turbidity meter and ferrous iron (Fe^{2+}) was measured using a HACH DR820 colorimeter. Purging continued until field water quality parameters stabilized (i.e., three consecutive readings) within criteria ranges specified in the Final UFP-QAPP: SOP 3, Monitoring Well and Piezometer Groundwater Sampling (BW-URS 2014) and provided below.

- pH: plus or minus (±) 0.2 units
- Specific conductance: ± 3 percent of previous readings
- DO: ± 10 percent of previous readings
- ORP: ± 20 millivolts (mV)
- Turbidity: less than or equal (≤) to 5 nephelometric turbidity units or 10 percent of previous readings, whichever is greater
- Temperature: ± 10 percent of previous readings

After purging was completed, sample containers were filled from the discharge line at a rate of 0.5 lpm or less. Samples were collected and analyzed for explosives (including MNX) and laboratory monitored natural attenuation (MNA) parameters: alkalinity by Method 2320B, ammonia by Method 350.1, carbon dioxide (CO_2) back calculated by Method 2320B, nitrate/nitrite by Method 353.2, sulfate by Method 9056A, sulfide by Method 9034, total Kjeldahl nitrogen (TKN) by Method 351.2, dissolved organic carbon (DOC) by Method 9060A, and methane by Method Robert S. Kerr Environmental Research Laboratory 175 (RSK-175). QC samples (field duplicates) and MS/MSDs were collected at a 5-percent rate (i.e., one per 20 samples collected) for all parameters (**Table 2-2**). Off-post and on-post monitoring well SCFSs are provided in **Appendix B**.

2.2 OU1 SUBSURFACE INJECTION PERFORMANCE MONITORING FIELD ACTIVITIES

This section presents the Q8 subsurface injection performance monitoring activities completed at Load Line (LL) 1, LL2, the Decant Station, and at select locations between EW6 and EW7. The Q8 performance monitoring is the fourth monitoring event following the 2020 subsurface injection activities. The 2020 subsurface injection activities and the performance monitoring activities completed for the 2019 subsurface injections (baseline through Q4) are summarized in the Final OU1 Rebound Study Letter Report – Quarter 4 Event (Brice-AECOM 2021a).

2.2.1 Quarter 8 Subsurface Injection Performance Monitoring

At LL1, LL2, the Decant Station, and between EW6 and EW7, 20 performance monitoring locations (10 LTM monitoring wells and 10 temporary wells) were sampled in February/March 2022, as shown on **Figures 2-2** through **2-4**. The Q8 event is the fourth of four quarterly performance monitoring events planned at these performance monitoring wells to evaluate the effectiveness of the 2020 subsurface injection activities completed in October/November 2020.

Groundwater samples collected from the temporary monitoring wells and LTM wells were analyzed for explosives (including MNX), laboratory water quality parameters: alkalinity, ammonia, nitrate/nitrite, sulfate, sulfide, TKN, DOC, and methane; and field water quality parameters (as described in **Section 2.1.2**). During the Q8 event, turbidity stabilization was not met at sampling locations G0096, G0121, EW7-PM21A, EW7-PM24A, and EW7-PM26A; however, based on the additional stabilization parameter criteria being met (provided in **Section 2.1.2**), professional field judgements were made deeming stabilization acceptable, and the wells were sampled. QC samples (field duplicates) and MS/MSDs were collected at a 5-percent rate (i.e., one per 20 samples collected) for all parameters. Performance monitoring groundwater sampling locations and parameters are listed in **Table 2-3**. Performance monitoring SCFSs are provided in **Appendix B**. The Q8 performance monitoring included:

- Ten new temporary wells (EW7-PM21A, EW7-PM24A, EW7-PM25A/B, EW7-PM26A/B, EW7-PM27B, EW7-PM28A, EW7-PM29A/B) at seven locations between EW6 and EW7
- Ten existing (permanent) monitoring wells
    - LL1: G0094, G0096
    - LL2: G0111, G0121, G0122, G0123
    - Decant Station: G0102
    - Between EW6 and EW7: G0022 and piezometers PZ017R and PZ018

As completed during the baseline through Q7 events, temporary monitoring wells were used to provide a higher quality groundwater sample that has lower turbidity (compared to direct push screen point samples) and is representative of the aquifer. Temporary monitoring wells were installed using direct push technology. The temporary monitoring wells were screened at select vertical intervals based on past direct push vertical profile sampling results. Six shallow temporary wells (screened 20 to 30 feet bgs [temporary well IDs ending in A]) and four shallow-intermediate temporary wells (screened 30 to 40 feet bgs [temporary well IDs ending in B]) were installed within the interpreted groundwater explosives plume or within areas of historically higher concentrations identified during the Q3 event. Temporary well construction details are provided in **Table 2-4**. Surveyed ground surface elevations for both temporary wells and monitoring wells are provided in **Tables 2-3** and/or **2-4**.

2.2.1.1 Groundwater Sampling from Temporary Wells

The 10 temporary monitoring wells (at seven locations) were installed, developed, purged, and sampled from February 23 through February 26, 2022. Abandonment of the wells was completed on March 2, 2022. Temporary performance monitoring well development, purging, and sampling were completed using a Geotech Geopump^{TM} peristaltic pump. Temporary wells were developed by purging approximately 10 well volumes (purge rates between 0.5 and 1.0 lpm) and samples were collected after all field water quality parameters had stabilized.

Per Nebraska Administrative Code (NAC) Title 178, Chapter 12 (NAC 2014), temporary wells (i.e., test holes) can be used in conjunction with groundwater investigations but may be retained for no more than 10 days unless a surface seal is used and a pre-notification document is submitted to Nebraska Department of Health and Human Services within 30 days prior to construction, then a temporary well may be retained for up to 90 days. Upon completion of sample collection, all

temporary monitoring wells were abandoned within 10 days of installation by a Nebraska-licensed well driller. Temporary monitoring wells were abandoned by removing approximately the top 3 feet of the well casing below the ground surface and grouting from the bottom of the well up to ground surface following the procedures outlined in SOP 4, Boring and Monitoring Well Abandonment in the Final UFP-QAPP (BW-URS 2014).

2.2.1.2 Groundwater Sampling from OU1 Monitoring Wells

Ten existing monitoring wells at LL1, LL2, the Decant Station, and between EW6 and EW7 were purged and sampled on March 2, 2022. These wells were purged and sampled in accordance with **Section 2.1.2**. Performance monitoring groundwater sampling locations and parameters are listed in **Table 2-3**. Performance monitoring SCFSs are provided in **Appendix B**.

2.3 INVESTIGATION-DERIVED WASTE DISPOSAL PROCEDURES

Investigation-derived waste (IDW) from the Q8 sampling events consisted of purge, decontamination, and development water. IDW disposal was completed in accordance with Nebraska Department of Environment and Energy (NDEE) IDW procedures as outlined in the Final UFP-QAPP (BW-URS 2014), as follows:

- A visual inspection of the IDW was conducted for evidence of potential contamination (i.e., discoloration, sheen, etc.). No visual evidence of potential contamination was observed.
- All IDW water was containerized in an IDW-labeled poly tank located at the GWTF and sampled for site waste characterization analysis (Explosives [including MNX] only [Method 8330A]). All IDW analytical results were below HALs, as summarized in **Table 2-5** (included in **Appendix D**) and discharged to ground surface.

2.4 FIELD DOCUMENTATION, SAMPLE IDENTIFICATION, SAMPLE HANDLING, AND SHIPPING

The observations and data collected during field activities were recorded with waterproof ink in a permanently bound, waterproof logbook with consecutively numbered pages, and/or on field sheets (provided in **Appendix B**), if applicable. A photographic record of site activities and progress was maintained throughout the course of the OU1 Rebound Study and subsurface injection performance monitoring activities and is provided in **Appendix C**.

Samples were collected in laboratory-provided containers and given discrete ID codes that included the sample location number (sample depth for direct push groundwater samples) and collection date. Sample ID labels were attached to each sample container and completed using waterproof, permanent ink. The labels were completed with the sampler's name, sample ID number, date and time of sample collection, preservation type, analyses requested, and sampling matrix. Sample containers were placed into coolers, packed with wet ice (to achieve a temperature of 6 degrees Celsius [°C] or less), and made ready for shipment. Chain-of-custody (CoC) forms were included in each cooler. A copy of each CoC was maintained to document sample handling between the field and the laboratory. Sample coolers were shipped to Eurofins TestAmerica Laboratories in Arvada, Colorado during each sampling event. All samples were shipped via FedEx Priority Overnight.

2.5 FIELD REPORTING

2.5.1 Daily Quality Control Reports

Daily Quality Control Reports (DQCRs) were completed for each day of fieldwork associated with the OU1 Rebound Study and subsurface injection activities. DQCRs include a summary of daily field activities, safety activities, quality assurance/QC activities pertaining to all features of work, problems encountered in the field, and any corrective actions that were taken to correct these problems. Copies of the completed DQCRs are provided in **Appendix B**.

2.5.2 Weekly Progress Reports

Weekly progress reports were completed and submitted to the USACE Project Manager throughout the duration of the field activities. The weekly reports included a summary of the work performed in a particular week including mobilization, site preparation, site access, surveying, groundwater sampling, injection, and demobilization actions. The reports also included a summary of the problems encountered, deviations from the scope of work, percentage of work performed, and records of conversations or other correspondence among CHAAP team members. Copies of the weekly progress reports are provided in **Appendix B**.

3.0 SUMMARY OF QUARTER 8 RESULTS AND DATA QUALITY REVIEW

3.1 QUARTER 8 ANALYTICAL RESULTS

Groundwater samples for the Q8 OU1 Rebound Study and 2020 OU1 subsurface injection performance monitoring activities were analyzed in accordance with the Final Addendum 2, UFP-QAPP (Brice-AECOM 2018) for various compounds depending on sample location. Groundwater samples for the OU1 Rebound Study off-post direct push locations were analyzed for explosives (including MNX) (see **Table 2-1**). Groundwater samples for the OU1 Rebound Study off-post and on-post monitoring wells and the 2020 subsurface injection performance monitoring activities were analyzed for explosives (including MNX) and laboratory MNA/water quality parameters: alkalinity, ammonia, nitrate/nitrite, sulfate, CO_2, sulfide, TKN, DOC, and methane (see **Tables 2-2** and **2-3**). All laboratory analyses were completed by Eurofins TestAmerica. A summary of all Q8 analytical results is presented below.

Tables 3-1 (off-post direct push samples), **3-2** (off-post and on-post monitoring wells), and **3-3** (performance monitoring wells) summarize the explosives compounds detected in groundwater during the Q8 OU1 Rebound Study and 2020 OU1 subsurface injection performance monitoring sampling activities. The primary explosives compounds detected in groundwater were RDX, HMX, and TNT (the only compounds having HALs). Additionally, the explosives breakdown products 1,3,5-trinitrobenzene, 1,3-dinitrobenzene, 2,4-dinitrotoluene, 2-amino-4,6-dinitrotoluene (2-Am-DNT), 4-amino-2,6-dinitrotoluene (4-Am-DNT), and MNX were detected.

- One off-post direct push location (OS001) had a concentration of TNT (21 µg/L) above the HAL (2 µg/L) and small detections of RDX (0.7 µg/L) and HMX (0.2 µg/L), both being below the HALs (2 µg/L and 400 µg/L, respectively). Downgradient off-post direct push location OS003 had a small detection of TNT (0.14 µg/L) below the HAL, but no detections of RDX

or HMX. Off-post direct push locations had detections of explosives breakdown products 1,3,5-trinitrobenzene, 2-Am-DNT, and 4-Am-DNT (**Table 3-1**).

- Four OU1 Rebound Study on-post monitoring wells (G0077, G0086, PZ017R, PZ020) had TNT concentrations above the HAL ranging from 4.2 µg/L to 5.8 µg/L, and no OU1 Rebound Study on-post monitoring wells had an RDX concentration above the HAL. Five OU1 Rebound Study on-post monitoring wells had small detections of HMX ranging from 0.32 µg/L to 0.74 µg/L but were below the HAL. No OU1 Rebound Study off-post monitoring wells had RDX or TNT concentrations above the HALs, or any detections of HMX. OU1 Rebound Study off-post and on-post monitoring wells had detections of explosives breakdown products 1,3,5-trinitrobenzene, 2-Am-DNT, and 4-Am-DNT (**Table 3-2**).
- Four performance monitoring wells (G0094, G0111, PZ017R, and EW7-PM21A) had TNT concentrations above the HAL ranging from 4.1 µg/L to 48 µg/L and three performance monitoring wells (G0094, G0096, G0122) had RDX concentrations above the HAL ranging from 5.6 µg/L to 47 µg/L. Three performance monitoring wells had small detections of HMX ranging from 0.85 µg/L to 27 µg/L but were below the HAL. Performance monitoring wells had detections of explosives breakdown products 1,3,5-trinitrobenzene, 1,3-dinitrobenzene, 2,4-dinitrotoluene, 2-Am-DNT, 4-Am-DNT, and MNX (**Table 3-3**).

The data collected during the Q8 OU1 Rebound Study and 2020 subsurface injection performance monitoring were used to update the explosives plume boundaries in these areas. Data for the Q8 off-post direct push groundwater sample locations and off-post and on-post monitoring wells are shown on **Figure 2-1** and data for the Q8 2022 subsurface injection performance monitoring are shown on **Figure 2-2** through **2-4**.

Tables 3-2 and **3-3** also summarize the laboratory MNA/water quality parameters detected in groundwater at off-post and on-post monitoring wells and performance monitoring wells, respectively. Field duplicate sample pairs were collected to assess both field and laboratory precision. Three field duplicate samples were collected and submitted to the laboratory for analysis. Analytical results for the Q8 OU1 Rebound Study and 2020 OU1 subsurface injection performance monitoring field duplicate sample pairs are presented in **Table 3-4**.

3.2 FIELD WATER QUALITY PARAMETERS

Field water quality parameter measurements were taken at the time of sample collection during Q8 OU1 Rebound Study (off-post and on-post monitoring wells) and 2020 OU1 subsurface injection performance monitoring sampling activities. Field water quality parameter measurements included ORP, DO, pH, conductivity, temperature, turbidity, and Fe^{2+}. Groundwater purging stabilization was successfully accomplished using these field water quality parameter criteria; however, at some wells select parameters were not met but stabilization was deemed acceptable using professional field judgement (see **Section 2.2.1**). All field results were recorded on the SCFSs (included in **Appendix B**). OU1 off-post and on-post monitoring well and subsurface injection performance monitoring well field water quality parameter measurements are presented in **Tables 3-5** and **3-6**, respectively.

3.3 DATA QUALITY REVIEW/VALIDATION PROCESS

Analytical data were reviewed and verified in accordance with the Final Addendum 2, UFP-QAPP (Brice-AECOM 2018). The data review process included evaluations of the elements listed below, as required, including validation of raw data by an AECOM chemist. The validation software ADR.NET was used to supplement the manual validation.

- Laboratory case narrative/cooler receipt form
- Sample documentation
- Sample preservation and holding time compliance
- Instrument performance check (tuning)
- Initial calibration
- Initial calibration verification second source
- Second column confirmation
- Primary and secondary column relative percent difference (RPD)
- Continuing calibration verification (CCV)
- Internal standards
- Blank samples
- Laboratory control samples (LCS)
- Surrogate compounds
- MS/MSDs
- Field duplicates
- Sensitivity
- Additional qualifications, including professional judgment
- Completeness

3.3.1 Analytical Results Verification

The laboratory data reports, complete ADR.NET, and data verification reports from Q8 sampling event are provided in **Appendix D**. Qualifications applied to the analytical results based on the data review findings are included in **Table D-1** (**Appendix D**). The data quality review only discusses the Q8 OU1 Rebound Study and 2020 OU1 subsurface injection performance monitoring activities.

General trends regarding the data validation are as follows:

- Some explosives results for samples OS001-DP08-25, EW7-PM26A-8-25, EW7-PM24A-8-25, G0096-8, G0077-8, G00296-8, G0094-8, PZ021-8, G0022-8, WATER-WC-Q8-MAR22, G0121-8, G0122-8 were qualified as estimated (**J**) due to RPDs greater than (>) 40% between the primary and confirmation columns. Data were qualified using professional judgment.

- The sulfide results for samples G0076-8 and G0086-8 were qualified as nondetect (**U**) due to method blank contamination.
- All detected explosives for sample G0087-8; 2-Am-DNT, 4-Am-DNT, MNX and RDX for sample WATER-WC-Q8-MAR22 were qualified as **J** due to surrogate recoveries above evaluation criteria. Data were qualified using professional judgement.
- The 3-nitrotoluene and 4-Am-DNT results for samples OS003-DP08-35, OS003-DP08-45, OS001-DP08-25, OS501-DP08-25, OS001-DP08-35, OS001-DP08-45, EW7-PM29B-8-35, EW7-PM25A-8-25, EW7-PM25B-8-35, EW7-PM26A-8-25, EW7-PM26B-8-35, G0311-8, and G0111-8 were qualified as estimated/estimated nondetect (**J/UJ**) due to LCS/LCSD recoveries below evaluation criteria.
- The sulfate results for samples EW7-PM29B-8-35, G0076-8 and G0122-8; and the ammonia result for sample G0070-8 qualified as **J** due to MS/MSD recoveries above evaluation criteria.
- The methane result for sample EW7-PM25A-8-25 had head space > 6mm; the result was qualified as **J.**
- The TKN results for samples PZ019-8, G0122-8, NW071-8, NW060-8, NW061-8, EW7-PM24A-8-25, EW7-PM21A-8-25, NW070-8, CA210-8, CA212-8, CA213-8, G0092-8, G0091-8, CA211-8, EW7-PM28A-8-25, EW7-PM29A-8-25, EW7-PM27B-8-25, NW062-8 were qualified as **J/UJ** due to MS/MSD recoveries below evaluation criteria.
- The nitrate/nitrite results for sample PZ021-8 were qualified as **J** due to MS/MSD recoveries below evaluation criteria.
- The HMX results for samples OS001-DPO8-25 and OS501-DP08-25 were qualified as **J/UJ** due to field duplicate RPD exceedances.
- The TKN results for samples G0096-8 and G0296-8 were qualified as **J/UJ** due to field duplicate RPD exceedances.

3.3.2 Conclusions of Data and Quality Review

The analytical data were found to be acceptable for the intended use based on the data validation and the automated data review. Completeness, defined to be the percentage of analytical results judged to be valid, including estimated data, was 100 percent for the sampling events. No analytical data were rejected during the data validation. Generally, good precision was noted in the field duplicate samples for analytes reported above the laboratory limits of quantitation.

4.0 OU1 STATISTICAL TREND EVALUATION (OU1 REBOUND STUDY WELLS)

Following the OU1 Rebound Study Q8 event (eighth sampling event for all respective wells), a statistical trend evaluation of RDX and TNT concentrations was completed. The OU1 Rebound Study statistical trend evaluation includes only the off-post and on-post OU1 Rebound Study monitoring wells (shown on **Figure 2-1**). While all OU1 Rebound Study wells are considered for trend evaluations, only the wells with detections are included in the quarterly report statistical trend figures, currently illustrated as two sets of wells (former facility boundary wells provided on **Figure 4-1** and upgradient wells provided on **Figure 4-2**).

4.1 STATISTICAL TREND EVALUATION PROCESS

OU1 Rebound Study analytical results were evaluated using Mann-Kendall analysis in Monitoring and Remediation Optimization System (MAROS) Version 3.0 (Air Force Civil Engineer Center [AFCEC] 2012). Statistical trend analysis of RDX and TNT was completed using the Mann-Kendall analysis to assess the potential for future RDX and TNT concentration increases. Mann-Kendall is a non-parametric statistical procedure that is well suited for analyzing trends in data over time, that do not follow a normal distribution, and focus on the location of the probability distribution of the sampled population, rather than specific parameters of the population (AFCEC 2012). The linear regression analysis, modeling, and empirical functions were not used during this evaluation.

Using the three statistical metrics for Mann-Kendall analysis (Mann-Kendall statistic [S], Confidence in Trend [CT], and Coefficient of Variation [COV]), the Mann-Kendall analyzes the trend in the data over time and is utilized in the analysis of groundwater plume stability. A concentration trend category is then determined following the Mann-Kendall Analysis Decision Matrix. Generally, positive S values indicate an increase in analyte concentrations over time and negative S values indicate a decrease in analyte concentrations over time. The CT provides a percentage value of confidence for the S validity, and the COV provides a general indicator of the degree of variability. Mann-Kendall analysis will be applied to RDX and TNT results to assess the potential for future RDX and TNT concentration increases.

Individual monitoring well concentration trends are categorized into one of seven categories based on the decision matrix:

MANN-KENDALL ANALYSIS DECISION MATRIX

Mann-Kendall Statistic (S)	Confidence in Trend (CT)	Concentration Trend
S > 0	> 95%	Increasing (I)
S > 0	90% to 95%	Probably Increasing (PI)
S > 0	< 90%	No Trend (NT)
S ≤ 0	< 90% and COV greater than or equal (≥) 1	No Trend (NT)
S ≤ 0	< 90% and COV < 1	Stable (S)
S < 0	90% to 95%	Probably Decreasing (PD)
S < 0	> 95%	Decreasing (D)
Dataset where all values are nondetect		Nondetect (ND)

Notes:
No Trend – No statistically significant trend with more variability in concentrations over time (COV)
Stable – No statistically significant trend with less variability in concentrations over time (COV)

4.1.1 Program Input

4.1.1.1 Data Management

Groundwater monitoring data at each set of wells were tabulated into an importable format recognized by the MAROS software, as summarized and presented in **Appendix E** (**Tables E.1**, **E.2**, and **E.3**). The groundwater monitoring data set included:

- Well names
- Well location coordinates
- Chemical constituent(s)
- Sample results
- Sample dates
- Detection limits (used to estimate values for non-detects)
- Data flags (nondetect or **J** values)

4.1.2 Program Output

Mann-Kendall Statistics Summary result sheets output for each well set are included in **Appendix E** with results discussed below.

4.2 STATISTICAL RESULTS SUMMARY

The Mann-Kendall Statistics Summary sheets lists monitoring wells used in the evaluation. General sampling information, such as the number of samples and average detected constituent concentration, is also presented. A contaminant concentration trend is determined for each well using the Mann-Kendall technique.

Data for the Mann-Kendall analysis for wells at the 'former facility boundary' (near operating EW7) were used from 12 total wells (three off-post monitoring wells, six on-post monitoring wells, and three piezometers) and are shown on the Mann-Kendall Statistics Summary result sheet in **Appendix E**. Due to no RDX and TNT detections at four of the former facility boundary wells during OU1 Rebound Study sampling events (i.e., baseline through Q8), only eight wells were included for evaluation and shown on **Figure 4-1**. The Mann-Kendall trend analysis results for each of the eight wells including: detections, detection frequency, minimum, maximum, mean, median, Mann-Kendall statistic result, and concentration trend are provided on **Figure 4-1** and yielded the following summarized results for TNT and RDX:

- TNT – increasing (I) at NW020 (less that HAL), G0024 (less than HAL), G0077 (slightly above HAL – 4.2 µg/L), and PZ020 (slightly above HAL – 4.8 µg/L); decreasing (D) at PZ017R and PZ018, and nondetect (ND) at NW021 and G0091.
- RDX – no trend (NT) at NW021, G0077, PZ017R, PZ018, and PZ020; stable (S) at NW020, probably decreasing at G0024, and decreasing (D) at G0091.

Data for the Mann-Kendall analysis for 'upgradient wells' of EW7 were used from nine on-post monitoring wells and are shown on the Mann-Kendall Statistics Summary result sheet in **Appendix E**. Due to no RDX and TNT detections at three of the upgradient wells during OU1 Rebound Study sampling events (i.e., baseline through Q8), only six wells were included for evaluation and shown on **Figure 4-2**. The Mann-Kendall trend analysis results for each of the six wells including: detections, detection frequency, minimum, maximum, mean, median, Mann-Kendall statistic result, and concentration trend are provided on **Figure 4-2** and yielded the following summarized results for TNT and RDX:

- TNT – no trend (NT) at G0081, G0082 and G0086; and nondetect (ND) at G0075, G0076, and G0087.
- RDX – increasing (I) at G0086 and G0087 (both less than HAL), no trend (NT) at G0076, G0081, and G0082; and stable (S) at G0075.

Data for the remaining OU1 Rebound Study 'downgradient' wells (15 wells downgradient of EW7 and feedlot) are included in **Appendix E** (**Tables E.3**); however, these wells were not included in Mann-Kendall analysis, analysis figures, or summary sheets due to all having no detections of RDX or TNT during OU1 Rebound Study sampling events (i.e., baseline through Q8).

The trend analysis results for the two sets of wells (shown on **Figures 4-1** and **4-2**) indicated that six wells had increasing trends (I), one well had probably decreasing (PD), and three wells had decreasing trends (D). All other wells yielded no trend (NT), stable (S), or nondetect (ND) results for Mann-Kendall statistical analysis. Of the six wells with increasing trends, four 'former facility boundary' wells (NW020, G0024, G0077, and PZ020) showed increasing TNT trends and two 'upgradient' wells (G0086 and G0087) had an increasing trend for RDX. During the OU1 Rebound Study sampling events, G0077 and PZ020 have remained slightly above the TNT HAL for all events and NW020 and G0024 have increased but have remained below the TNT HAL for all events. At 'upgradient' wells G0086 and G0087, RDX had increasing trends but have remained below the HAL for all events during the OU1 Rebound Study. Three 'former facility boundary' wells (G0091 for RDX and PZ017R, PZ018 for TNT) had decreasing trends. G0091 has remained below the RDX/TNT HALs for all events. PZ017R and PZ018 have decreased for TNT but have been above the TNT HAL for all events except the Q7 event at PZ017R, and the Q3 and Q8 events at PZ018. One 'former facility boundary' well (G0024 for RDX) had a probably decreasing trend but has remained below the RDX HAL for all events during the OU1 Rebound Study. The tabulated groundwater monitoring data for each well are included in **Appendix E**.

5.0 OU1 REBOUND STUDY AND INJECTION PERFORMANCE EVALUATION

This section presents an evaluation of the Q8 data compared to the previous seven quarters of data for the OU1 Rebound Study and the subsurface injection performance monitoring for the OU1 groundwater explosives plume, as summarized in **Tables 5-1** through **5-4**. This evaluation compares RDX and TNT concentrations and key MNA/water quality parameters in groundwater and qualitatively discusses any concentration trends observed. Although baseline through Q4 performance monitoring was specifically completed for evaluating the 2019 subsurface injection event, select locations were added (or continued) for Q5 through Q8 for performance monitoring of the 2020 subsurface injection event.

Previous baseline, Q2, Q3, Q4, Q5, Q6, Q7 event data are provided in the Final OU1 Rebound Study Letter Report – Baseline Event (Brice-AECOM 2020a), the Final OU1 Rebound Study Letter Report – Quarter 2 Event (Brice-AECOM 2020c), the Final OU1 Rebound Study Letter Report – Quarter 3 Event (Brice-AECOM 2020d), Final OU1 Rebound Study Letter Report – Quarter 4 Event (Brice-AECOM 2021a), Final OU1 Rebound Study Letter Report – Quarter 5 Event (Brice-AECOM 2021b), the Final OU1 Rebound Study Letter Report – Quarter 6 Event (Brice-AECOM 2022a), and the Final OU1 Rebound Study Letter Report – Quarter 7 Event (Brice-AECOM 2022b), respectively. Additionally, for comparison, historic RDX and TNT plume interpretation figures from previous OU1 Rebound Study monitoring events (baseline through Q7) are included in **Appendix F**.

5.1 OU1 REBOUND STUDY EVALUATION

5.1.1 RDX and TNT Concentrations

RDX and TNT concentrations for all OU1 Rebound Study locations are presented in **Table 5-1**. Of the 18 on-post wells sampled during the Q8 event, four wells (G0077, G0086, PZ017R, and PZ020) had TNT concentrations above its HAL (2 µg/L) ranging from 4.2 µg/L to 5.8 µg/L, and no wells had RDX concentrations above its HAL (2 µg/L). For the four on-post wells, the RDX and TNT concentrations decreased slightly at G0077 and PZ020 from Q7 to Q8 but were comparable to previous events (remaining slightly above the TNT HAL and slightly below the RDX HAL or nondetect). G0077 had RDX and TNT concentrations of 1.7 µg/L and 4.5 µg/L, respectively during the Q7 event and 0.5 µg/L and 4.2 µg/L, respectively during the Q8 event. PZ020 had RDX and TNT concentrations of 0.62 µg/L and 5.1 µg/L, respectively during the Q7 event and nondetect and 4.5 µg/L, respectively during the Q8 event. The RDX and TNT concentrations increased slightly at G0086 and PZ017R from Q7 to Q8 but were also comparable to previous events (remaining slightly above the TNT HAL and slightly below the RDX HAL). G0086 had RDX and TNT concentrations of 0.95 µg/L and 5.5 µg/L, respectively during the Q7 event and 1.3 µg/L and 5.8 µg/L, respectively during the Q8 event. PZ017R had RDX and TNT concentrations of nondetect and 0.37 µg/L, respectively during the Q7 event and 1.2 µg/L and 5 µg/L, respectively during the Q8 event. However, G0086 was nondetect for TNT in Q4 only and PZ017R was below the TNT HAL in Q7 only. PZ018 was the only on-post well to see a TNT concentration decrease to below the HAL from Q7 (4 µg/L) to Q8 (nondetect). PZ018 was also used as a subsurface injection performance monitoring location (see **Section 5.2.1**); therefore, this decrease in concentration is likely attributed to nearby subsurface injections completed in 2020. At the on-post wells, only minor fluctuations of RDX were observed from Q7 to Q8 (**Figures 4-1** and **4-2**).

For the 12 off-post wells, concentrations continued to be nondetect for RDX and TNT during the Q8 event, with the exception of NW020 and NW021 (located at the former facility boundary). NW020 has had minor RDX and TNT detections in most events, was above the RDX HAL only during Q4 event (2.3 µg/L) but has decreased and remained below the RDX HAL since: Q5 (1.2 µg/L), Q6 (1 µg/L), Q7 (0.44 µg/L), and Q8 (0.22 µg/L). TNT concentrations have remained below the HAL for all events at NW020. At slightly deeper well NW021 RDX concentrations decreased slightly from Q7 to Q8 and has remained below the HAL during all events.

At off-post direct push location OS001 during the Q8 event, all RDX concentrations were below the HAL (2 µg/L) and one TNT concentration was above the HAL (2 µg/L) at the shallow interval.

At OS001, a comparison of TNT concentrations indicates that TNT has generally decreased since Q3 in the shallow interval (approximately 25 feet bgs) from 32 µg/L, to 29 µg/L, to 20 µg/L, to 26 µg/L, to 26 µg/L again, to 21 µg/L, but still remains above the baseline concentration of 12 µg/L. TNT concentrations in the shallow-intermediate interval (approximately 35 feet bgs) were below the HAL during the Q8 and have fluctuated since baseline event from 11 µg/L, to 8.2 µg/L, to 11 µg/L, to 15 µg/L, to 2 µg/L, to 4.9 µg/L, to 8.7 µg/L, to 1.1 µg/L. TNT concentrations in the shallow-intermediate interval have remained below the baseline concentration from Q5 through Q8. In the intermediate interval (approximately 45 feet bgs) TNT concentrations have been below the HAL or nondetect for all events except Q3; from nondetect, to 1.1 µg/L, to 2.2 µg/L, to nondetect, to 0.25 µg/L, to 0.34 µg/L, to nondetect, to nondetect again. Off-post direct push locations OS003 (farther downgradient) and NW050R (downgradient of feedlot/adjacent to previous OU1 Rebound well cluster NW050) had no RDX detections during any events, and no TNT detections at well cluster NW050R. At OS003 (sampled during baseline and Q4 through Q8 events), a comparison of TNT concentrations detected indicates that TNT concentrations have remained nondetect or below the HAL in the shallow interval (approximately 25 feet bgs) from nondetect for baseline and Q4 events, 0.2 ug/L in Q5, nondetect for Q6, 0.24 ug/L in Q7, and nondetect in Q8. The TNT concentrations decreased to below the HAL in the shallow-intermediate interval (approximately 35 feet bgs) from 3 µg/L, to nondetect, nondetect, nondetect, to 0.17 µg/L, to 0.14 µg/L. The intermediate interval (approximately 45 feet bgs) was nondetect for all sampled events, baseline and Q4 through Q8 events.

Q8 data indicate that TNT concentrations above its HAL (2 µg/L) are present on-post slightly upgradient of the former facility boundary and extend off-post approximately 1,000 feet downgradient of the former facility boundary in a narrow and shallow plume. There are no RDX concentrations above its HAL (2 µg/L) present off-post or on-post at the former facility boundary (**Figure 2-1**).

5.1.2 MNA Parameter Measurements

MNA parameters for all OU1 Rebound Study wells are presented in **Table 5-2**. MNA occurs through both destructive (biodegradation) and non-destructive (dispersion and dilution) processes. The Q8 MNA parameter results for the OU1 Rebound Study wells were comparable to baseline through Q7 parameters at the same off-post and on-post wells. In general, the data indicate these OU1 Rebound Study off-post and on-post wells continue to have higher ORP, DO (with the exception of the lower portion of the aquifer which has low DO concentrations), nitrate/nitrite, and sulfate measurements and low ammonia, TKN, DOC, CO_2, methane, alkalinity, sulfide, and Fe^{2+} measurements. Geochemical conditions most conducive to biodegradation include negative ORP values, DO concentrations < 0.5 mg/L, low nitrate/nitrite concentrations, low sulfate concentrations, and DOC concentrations > 10 mg/L. Correspondingly, higher concentrations of sulfide, Fe^{2+}, and methane can indicate an environment in which biodegradation is occurring. With the exception of the deeper portion of the aquifer and at OU1 Rebound Study wells that are used for subsurface injection performance monitoring (i.e., PZ017R and PZ018), the data does not provide strong evidence that biodegradation is the primary mechanism of MNA for RDX and TNT for the OU1 Rebound Study wells. Given the low and generally decreasing concentrations of RDX and TNT in the areas where the OU1 Rebound Study wells are located (generally surrounding the plume; upgradient, cross gradient, and downgradient), it is likely that dispersion and dilution play a stronger role in MNA for the OU1 Rebound Study wells than biodegradation. Overall, conditions

at the OU1 Rebound Study wells continue to indicate the effectiveness of MNA at reducing RDX and TNT concentrations.

5.2 OU1 SUBSURFACE INJECTION PERFORMANCE MONITORING EVALUATION

5.2.1 RDX and TNT Concentrations

RDX and TNT concentrations for all OU1 subsurface injection performance monitoring locations are presented in **Table 5-3**. The Q8 performance monitoring includes locations specific for evaluating the 2020 subsurface injection event that was completed in October-November 2020 at LL1, LL2, the Decant Station, and between EW6 and EW7. Although the 2019 subsurface injection event (October-November 2019) was evaluated using baseline through Q4 performance monitoring events, select locations are again included (for Q5 through Q8 events) for performance monitoring of the 2020 subsurface injection event. The Q8 event performance monitoring results continued to verify that RDX and/or TNT concentrations above the HALs (2 µg/L) remain at LL1, LL2, and between EW6 and EW7; however, concentrations have been substantially reduced (including multiple locations decreasing to below HALs) within the 2020 subsurface injection areas (shown on **Figures 2-2** through **2-4**).

At LL1, performance monitoring was completed in Q8 to evaluate the 2020 subsurface injection at two on-post monitoring wells (G0094 and G0096) which had RDX and/or TNT concentrations above the HALs (2 µg/L) during the Q3 event (annual OU1 LTM event – June 2020). Neither monitoring well was sampled during baseline, Q2, and Q4 events. During the Q8 event, both monitoring wells continue to have RDX concentrations above the HALs. At G0094, a comparison of RDX and TNT concentrations detected during the Q3, Q5, Q6, Q7, Q8 sampling events indicates RDX concentrations increased from 2.7 µg/L to 16 µg/L, to 8.1 µg/L, to 8.6 µg/L, to 9 µg/L and TNT concentrations fluctuated from 8.5 µg/L to 4.9 µg/L, to 19 µg/L, to 0.25 µg/L, to 48 µg/L. At G0096, a comparison of RDX and TNT concentrations detected during the Q3, Q5, Q6, Q7, Q8 sampling events indicates RDX concentrations fluctuated from 36 µg/L to 87 µg/L, to 58 µg/L, to 18 µg/L, to 47 µg/L and TNT concentrations decreased from 0.96 µg/L to 0.24 µg/L, to 0.38 µg/L, to nondetect, to nondetect again.

At LL2, performance monitoring was completed in Q8 to evaluate the 2020 subsurface injection at four on-post monitoring wells (G0111, G0121, G0122, and G0123) which had RDX or TNT concentrations above the HALs (2 µg/L) during the Q3 event (annual OU1 LTM event – June 2020). None of the monitoring wells were sampled during baseline, Q2, and Q4 events. During the Q8 event, only monitoring wells G0111 and G0122 continue to have RDX or TNT concentrations above the HALs. At G0111, a comparison of RDX and TNT concentrations detected during the Q3, Q5, Q6, Q7, Q8 sampling events indicates RDX concentrations fluctuated, but overall increased slightly from nondetect, to nondetect, to 6.5 µg/L, to nondetect, to 0.64 µg/L and TNT concentrations decreased from 12 µg/L to 3.7 µg/L, to 6.6 µg/L, to 5.5 µg/L, to 6.4 µg/L. At G0122, a comparison of RDX and TNT concentrations detected during the Q3, Q5, Q6, Q7, Q8 sampling events indicates RDX concentrations fluctuated, but overall decreased from 12 µg/L to nondetect, to 82 µg/L, to nondetect, to 5.6 µg/L and TNT concentrations were all nondetect.

At the Decant Station, performance monitoring was completed in Q8 to evaluate the 2020 subsurface injection at one on-post monitoring well (G0102) which had an RDX concentration above the HAL (2 µg/L) during the Q3 event (annual OU1 LTM event – June 2020). G0102 was

not sampled during the baseline, Q2, and Q4 events. During the Q8 event, G0102 was nondetect for RDX and TNT. At G0102, a comparison of RDX and TNT concentrations detected during the Q3, Q5, Q6, Q7, Q8 sampling events indicates RDX concentrations decreased from 41 µg/L to nondetect, to 8.5 µg/L, to nondetect, to nondetect again and TNT concentrations have all been nondetect.

Between EW6 and EW7, performance monitoring was completed in Q8 to evaluate the 2020 subsurface injection at three on-post (permanent) wells (G0022, PZ017R, and PZ018) and 10 temporary wells (EW7-PM21A, PM24A, PM25A, PM25B, PM26A, PM26B, PM27B, PM28A, PM29A, and PM29B) which locations had RDX and/or TNT concentrations above the HALs (2 µg/L) during the Q3 event (annual OU1 LTM event – June 2020) or Q4 event. During the Q8 event, one of the three on-post wells continued to have TNT concentrations above the HALs (PZ017R). At PZ017R, a comparison of RDX and TNT concentrations detected during the baseline through Q8 sampling events indicates RDX concentrations generally decreased from 0.87 µg/L to 1.4 µg/L, to 1.4 µg/L, to 1.8 µg/L, to 2.2 µg/L, to 2.1 µg/L, to nondetect, to 1.2 µg/L and TNT concentrations decreased from 15 µg/L to 17 µg/L, to 11 µg/L, to 15 µg/L, to 10 µg/L, to 10 µg/L again, to 0.37 µg/L, to 5 µg/L. At PZ018, a comparison of RDX and TNT concentrations detected during the baseline through Q8 sampling events indicates RDX decreased from 0.88 µg/L to nondetect, to 1 µg/L, to nondetect from Q4 through Q8, and TNT concentrations generally decreased from 8 µg/L to 19 µg/L, to nondetect, 17 µg/L, to 6 µg/L, to 4.6 µg/L, to 4 µg/L, to nondetect. At the 10 temporary wells, three locations had detections of RDX and/or TNT during Q8 event, of which only one location remains above the TNT HAL (2 µg/L) (EW7-PM21A). At EW7-PM21A, a comparison of TNT concentrations detected during the baseline through Q8 sampling events indicate TNT concentrations have decreased from 29 µg/L to 17 µg/L, to 11 µg/L, to 11 µg/L, to 5.8 µg/L, to 8.3 µg/L, to 10 µg/L to 4.1 µg/L. The on-post groundwater explosives plumes at LL1, LL2, the Decant Station, and between EW6 and EW7 were refined based on the Q8 subsurface injection performance monitoring results as shown on **Figures 2-2** through **2-4**.

5.2.2 Water Quality Parameter Measurements

Water quality parameters for all OU1 subsurface injection performance monitoring locations are presented in **Table 5-4**. The Q8 water quality parameters for the performance monitoring wells indicate a continued anaerobic environment is present due to the 2020 subsurface injections. During the Q8 event, ORP and DO measurements remained low at all locations directly impacted by the 2020 injections, indicating that significant anaerobic conditions are present. Q8 nitrate and sulfate concentrations generally remained low. Concentrations of DOC, methane, and Fe^{2+} remain elevated which indicates that anaerobic conditions are present within the treatment zone.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents the conclusions for the Q8 OU1 Rebound Study and the 2020 OU1 subsurface injection performance monitoring activities, and recommendations following the OU1 Rebound Study and subsurface injection activities completed for 2019/2020. For comparison, historic RDX and TNT plume interpretation figures from previous OU1 Rebound Study monitoring events (baseline through Q7) are included in **Appendix F**.

6.1 CONCLUSIONS

6.1.1 OU1 Rebound Study

All Q8 OU1 Rebound Study sampling activities were completed successfully, 28 months after EW7 shutdown (October 2019). The Q8 analytical results indicate that the OU1 on-post TNT plume generally maintains a similar shape and extent from previous sampling events, with detections below HALs to the north and south of EW7 (near well cluster NW020 and PZ019). During Q8, all RDX detections at OU1 Rebound Study monitoring wells and off-post direct push locations were below the HAL (2 µg/L).

During Q8, TNT concentrations above its HAL (2 µg/L) ranging from 4.2 µg/L to 5.8 µg/L were identified at four OU1 Rebound Study on-post wells (G0077, G0086, PZ017R, PZ020) (four on-post wells above the TNT HAL in Q7, five wells each in Q6 and Q5, four wells each in Q4 and Q3, and five wells each in Q2 and the baseline). The four wells above the TNT HAL during Q8 have been above the TNT HAL a majority of the eight OU1 Rebound Study events and concentrations have generally remained similar: G0077 – 8/8 events (ranging from 2.7 µg/L to 4.5 µg/L), G0086 – 7/8 events (ranging from nondetect to 5.9 µg/L), PZ017R – 7/8 events (ranging from 0.37 µg/L to 17 µg/L), and PZ020 – 8/8 events (ranging from 2.2 µg/L to 5.1 µg/L). During Q8, one OU1 Rebound Study on-post well (PZ018) had a noteworthy decrease in its TNT concentration to below the HAL (from 4 µg/L to nondetect), which hasn't been below the TNT HAL since Q3. OU1 Rebound Study on-post wells have been below the RDX HAL (2 µg/L) or nondetect for all events, with exception to PZ017R during Q5 (2.2 µg/L) and Q6 (2.1 µg/L) events. At PZ017R and PZ018, TNT concentrations are lowest since well installations in 2001. At OU1 Rebound Study off-post monitoring wells, RDX and TNT detections were below the HALs and continued to decrease or remain nondetect during Q8. All OU1 Rebound Study off-post wells have been below the RDX and TNT HALs for all events, with exception to NW020 during the Q4 event (2.3 µg/L).

Mann Kendall trend analysis yielded increasing trends for RDX and/or TNT at six OU1 Rebound Study wells (i.e., NW020, G0024, G0077, G0086, G0087, and PZ020), with the remaining wells having no trends, stable, or decreasing trends. Concentrations from wells with the increasing trends are either currently below HALs (at NW020 [for TNT], G0024 [for TNT], G0086 [for RDX], G0087 [for RDX]) or have low concentrations only slightly above the HALs (G0077 [for TNT] and PZ020 [for TNT]) ranging from 4.2 µg/L to 4.8 µg/L TNT in Q8.

During Q8, a TNT concentration above its HAL (2 µg/L) was identified at off-post direct push location OS001, at the shallow interval only (25 feet bgs) (21 µg/L). TNT concentrations have generally decreased at the shallow interval (25 feet bgs) from Q3 to Q8: 32 µg/L, 29 µg/L, 20 µg/L, 26 µg/L, 26 µg/L again, to 21 µg/L. TNT concentrations have also generally decreased at the shallow-intermediate interval (35 feet bgs) from Q4 to Q8: 15 µg/L, 2 µg/L, 4.9 µg/L, 8.7 µg/L, to 1.1 µg/L. At the intermediate interval (45 feet bgs) all events, with exception to Q3 (2.2 µg/L), have been below the TNT HAL or nondetect. TNT concentrations at all OS001 interval depths continue to be lower than the highest observed concentrations (shallow: 32 µg/L – Q3 event, shallow-intermediate: 15 µg/L – Q4 event, and intermediate: 2.2 µg/L – Q3 event).

At off-post direct push locations OS003 and NW050R, all sample intervals were nondetect for RDX and only one minor TNT detection (0.14 µg/L) below the HAL was observed at off-post direct push location OS003 shallow-intermediate interval (35 feet bgs). The Q8 off-post direct

push sample results indicate that the interpreted TNT plume is similar in size to Q5 (approximately 1,000 feet downgradient of former facility boundary), generally stable, and is naturally attenuating. Additionally, off-post monitoring wells downgradient of the feedlot (which have been below HALs since 2012 or longer) continue to remain nondetect for both RDX and TNT.

Based on results of the eight quarterly sampling rounds of the Rebound Study, conclusions can be made regarding the three Decision Points as outlined in the OU1 Rebound Study Work Plan (Brice-AECOM 2019b). The three decision points and the inputs evaluated to make the final Rebound Study conclusions are as follows:

- Decision Point #1: Quarterly data identify explosives concentrations above HALs at an off-post direct push sampling location.
    - Input #1a: The current extent of off-post TNT concentrations above the HAL (2 µg/L) and RDX concentrations below the HAL (2 µg/L) are defined by the quarterly off-post direct push sample results.
    - Input #1b: Concentrations of TNT above the HAL in off-post direct push locations are decreasing and no plume migration has been observed. The TNT plume with concentrations above the HAL are directly adjacent to the feedlot, where historical sampling has shown strong anaerobic-reducing conditions exist in groundwater. Based on annual groundwater modeling, and the anaerobic conditions underlying the feedlot (with explosives degradation rates 5 to 10 time higher compared to the surrounding areas), plume migration beyond the feedlot is unlikely.
    - Input #1c: Existing institutional controls (ICs) (i.e., off-post City Ordinance extending to facility boundary [maintained by City of Grand Island and Central Platte Natural Resources District (CPNRD)], on-post deed restrictions) remain protective.
- Decision Point #2: Quarterly data identify explosives concentrations above HALs at an off-post existing monitoring well.
    - Input #2a: The current extent of off-post TNT concentrations above the HAL (2 µg/L) and RDX concentrations below the HAL (2 µg/L) are defined by the quarterly off-post monitoring well results.
    - Input #2b: Concentrations of TNT and RDX in off-post monitoring well locations (and on-post OU1 Rebound Study monitoring well locations) have been evaluated using the Mann-Kendall statistical analysis. For wells with concentrations above the HALs (TNT only), the trend analysis indicates decreasing or no trend for all but two wells (G0077 and PZ020). Concentrations at G0077 and PZ020 during Q8 were 4.2 µg/L and 4.8 µg/L, respectively. Wells G0077 and PZ020 are also located upgradient and directly adjacent to the feedlot, where historical sampling has shown strong anaerobic-reducing conditions exist in groundwater. The overall plume concentrations are decreasing, and no plume migration has been observed. Based on annual groundwater modeling, and the anaerobic conditions underlying the feedlot (with explosives degradation rates 5 to 10 time higher compared to the surrounding areas), plume migration beyond the feedlot is unlikely.
    - Input #2c: Existing ICs (i.e., off-post City Ordinance extending to facility boundary [maintained by City of Grand Island and CPNRD], on-post deed restrictions) remain protective.

- Decision Point #3: Quarterly data confirm that explosives concentrations above HALs have not migrated off-post at the end of OU1 Rebound Study.
    - Input #3a: Concentrations of TNT above the HAL (2 µg/L) in off-post direct push locations and monitoring wells are decreasing and no plume migration has been observed. Based on annual groundwater modeling, and the anaerobic conditions underlying the feedlot (with explosives degradation rates 5 to 10 time higher compared to the surrounding areas), plume migration beyond the feedlot is unlikely.

6.1.2 OU1 Subsurface Injection Performance Monitoring

All Q8 OU1 subsurface injection performance monitoring sampling was completed successfully approximately 16 months after the 2020 subsurface injection event (October/November 2020). Decreases in explosives concentrations were identified between EW6 and EW7 and remained nondetect at the Decant Station during the Q8 event due to the establishment of a highly anaerobic subsurface environment conducive to explosives biodegradation.

During Q8, four of the 20 performance monitoring locations (G0094 – LL1, G0111 – LL2, and PZ017R and EW7-PM21A – between EW6 and EW7) had TNT concentrations above the HAL (2 µg/L) (three locations in Q7, five locations in Q6, six locations in Q5, and seven locations prior to the 2020 injection [Q3 or Q4 events]). TNT concentrations have decreased at three of the four locations (EW7-PM21A, PZ017R, G0111) from prior to 2020 subsurface injections to Q8 event, and one additional location (PZ018) decreased to below the HAL. At G0094, the TNT concentration increased from Q7 to Q8 (0.25 µg/L to 48 µg/L, respectively) but has fluctuated from higher to lower concentrations since the 2020 subsurface injections (8.5 µg/L – Q4). The largest decrease in TNT concentrations at Q8 performance monitoring wells, from prior to 2020 subsurface injections to Q8 event, was at PZ018 (17 µg/L to nondetect, respectively).

During Q8, three of the 20 performance monitoring locations (G0094 and G0096 – LL1, G0122 – LL2) had RDX concentrations above the HAL (two locations in Q7, seven locations in Q6, three locations in Q5, and six locations prior to the 2020 injection {Q3 or Q4 events]). Of the three locations, RDX concentrations increased slightly at G0094 from Q7 to Q8 (8.6 µg/L to 9 µg/L, respectively), at G0096 from Q7 to Q8 (18 µg/L to 47 µg/L, respectively), and at G0122 from Q7 to Q8 (nondetect to 5.6 µg/L, respectively). The largest increase in RDX concentrations at Q8 performance monitoring wells, from prior to 2020 subsurface injections to Q8, was at G0096 (36 µg/L to 47 µg/L, respectively). These increases in RDX concentrations (and the increase of TNT concentration at one location discussed above) are likely due to the 2020 injection activities causing mobilization of dissolved explosives, as similarly identified following the 2019 injection activities (increases during the Q2 and Q3 sampling events then decreasing to below the HAL during Q4). These current concentrations of RDX and TNT are expected to quickly biodegrade within the established anaerobic treatment zones. Additionally, five performance monitoring wells (G0121, G0122, and G0123 – LL2; PZ017R – between EW6 and EW7; and G0102 – Decant Station) had decreases in RDX concentrations (three to below the HAL) from prior to 2020 subsurface injections to Q8. The largest decrease in RDX concentrations at Q8 performance monitoring wells, from prior to 2020 subsurface injections to Q8, was at G0123 (48 µg/L to nondetect, respectively).

6.2 RECOMMENDATIONS

6.2.1 OU1 Rebound Study

Results of the OU1 Rebound Study have shown on-post TNT concentrations above its HAL (2 µg/L) decrease or remain consistent with previous events, with only minor increases observed. During direct push groundwater sampling events, off-post TNT concentrations (above the HAL) were identified directly downgradient of EW7 that were likely present prior to the shutdown of EW7. These off-post concentrations generally decreased during the sampling events and did not show migration further downgradient. Off-post monitoring wells, downgradient of the feedlot, remained nondetect for RDX and TNT for all events. Based on the OU1 Rebound Study events, and in accordance with the OU1 Rebound Study Work Plan (Brice-AECOM 2019b) Decision Points, Contingency Actions, and Inputs it is recommended to discontinue the OU1 Rebound Study, continue annual groundwater monitoring at OU1 in accordance with the Final UFP-QAPP (BW-URS 2014) and its Final Addendum 2 UFP-QAPP (Brice-AECOM 2018), continue to sample the OU1 Rebound Study quarterly direct push sampling locations during annual sampling events to provide data for monitoring plume concentration trends and potential downgradient migration, and proceed with a Focused Feasibility Study (FFS). The FFS will summarize and evaluate the completed OU1 Rebound Study, present remedial action objectives and general response actions, identify and screen technologies, assemble selected technologies and process options into remedial alternatives, and evaluate those alternatives using the National Contingency Plan (NCP) criteria.

6.2.2 OU1 Subsurface Injection Performance Monitoring

Results of the OU1 subsurface injection performance monitoring have shown decreases in explosives concentrations between EW6 and EW7, and at the Decant Station as a result of the 2019 and 2020 subsurface injection events. Based on these results it is recommended to discontinue performance monitoring for the 2019 and 2020 subsurface injection events, continue with annual groundwater monitoring at OU1 in accordance with the Final UFP-QAPP (BW-URS 2014) and its Final Addendum 2 UFP-QAPP (Brice-AECOM 2018), and proceed with an FFS (as described above).

7.0 REFERENCES

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We appreciate the opportunity to provide services for this project. If you have any questions, please contact the undersigned.

Sincerely,

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ATTACHMENTS

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TABLE 2-1
DIRECT PUSH GROUNDWATER SAMPLES COLLECTED (OFF-POST)
OU1 REBOUND STUDY, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Sample Location ID	Coordinates[1] Northing	Coordinates[1] Easting	Ground Elevation (feet amsl)[1]	Screened Interval (feet bgs)	Sample Elevation (feet amsl)[1]	Sample ID	Sample Date	Parameters: Explosives[2]	Parameters: Field Duplicate Samples[3]	Parameters: MS/MSD Samples[4]
OU1 Rebound Study - Off-post Direct Push Samples[5]										
OS001	403802.28	2067828.63	1890.06	21 - 25	1865	OS001-DP08-25	2/23/2022	X	X	
				31 - 35	1855	OS001-DP08-35	2/23/2022	X		
				41 - 45	1845	OS001-DP08-45	2/23/2022	X		
OS003	403834.73	2069322.13	1886.57	21 - 25	1862	OS003-DP08-25	2/22/2022	X		
				31 - 35	1852	OS003-DP08-35	2/23/2022	X		
				41 - 45	1842	OS003-DP08-45	2/23/2022	X		X
NW050R	406567.11	2072396.24	1887.50	16 - 20	1868	NW050R-DP08-20	2/22/2022	X		
				31 - 35	1853	NW050R-DP08-35	2/22/2022	X		
				56 - 60	1828	NW050R-DP08-60	2/22/2022	X		
							Totals	**9**	**1**	**1**

Notes:

[1]Horizontal coordinates are in Nebraska State Plane, North American Datum of 1983. Elevation datum based on National Geodetic Vertical Datum of 1929. Coordinates and elevations for NW050R based upon adjacent well coordiantes and elevations (i.e., NW050, NW051, NW052).

[2]Explosives (+MNX) analysis (SW846 Method 8330A) only completed.

[3]Field duplicate samples were collected at a rate of 5% (1 per 20 samples collected) for explosives only. The 21-25 foot depth interval was chosen for a field duplicate sample because, if the explosives plume does extend to that location, it will most likely be observed at that depth.

[4]MS/MSD samples were collected at a rate of 5% (1 per 20 samples collected) for explosives only. The 41-45 foot depth interval was chosen for an MS/MSD sample since that interval is likely clean.

[5]OU1 Rebound Study off-post direct push groundwater samples will be collected over eight total sampling events (one baseline, seven follow-up) at an approximate quarterly frequency, over approximately 2 years. The follow-up direct push sampling events (seven events at approximate quarterly frequency) will be collected from the established baseline locations (i.e., OS001 and OS003), with selective sample depths based on the baseline and/or follow-up events sample results. Beginning Quarter 5, due to no longer having property access at OU1 Rebound Study monitoing well clusters NW050 and NW080, off-post direct push groundwater samples will be collected from adjacent ROW location (i.e., NW050R) with comparable sample depth intervals (i.e., NW050, NW051, and NW052).

% = percent
amsl = above mean sea level
bgs = below ground surface
DP = direct push
ID = identification number
MNX = mono-nitroso-RDX
MS/MSD = matrix spike/matrix spike duplicate
OS = off-post sample
OU = Operable Unit
ROW = right-of-way (ditch)
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

TABLE 2-2
OFF-POST AND ON-POST GROUNDWATER MONITORING WELLS SAMPLED
OU1 REBOUND STUDY, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Well Number	Sample Date	Explosives[1]	Laboratory MNA Parameters[2]	Field MNA Parameters[3]	Field Duplicate Sample ID[4]	Field MS/MSD Sample ID[5]
OU1 Off-Post Monitoring Wells						
CA210	2/28/2022	X	X	X		
CA211	2/28/2022	X	X	X		
CA212	2/28/2022	X	X	X		
CA213	2/28/2022	X	X	X		
NW020	2/28/2022	X	X	X		
NW021	2/28/2022	X	X	X		
NW022	2/28/2022	X	X	X		
NW060	2/27/2022	X	X	X		
NW061	2/27/2022	X	X	X		
NW062	2/27/2022	X	X	X		NW062-8 MS/MSD
NW070	2/27/2022	X	X	X		
NW071	2/27/2022	X	X	X		
Off-Post Totals		**12**	**12**	**12**	**0**	**1**
OU1 On-Post Monitoring Wells						
G0024	3/1/2022	X	X	X		
G0070	3/1/2022	X	X	X		G0070-8 MS/MSD
G0075	3/1/2022	X	X	X		
G0076	3/1/2022	X	X	X		
G0077	3/1/2022	X	X	X		
G0078	3/1/2022	X	X	X		
G0079	3/1/2022	X	X	X		
G0080	3/1/2022	X	X	X		
G0081	3/1/2022	X	X	X		
G0082	3/1/2022	X	X	X		
G0086	3/1/2022	X	X	X		

Notes:

[1]Explosives (+MNX) analysis (SW846 Method 8330A).

[2]Laboratory MNA parameters for OU1 (on- and off-post) include: methane (Method RSK 175), total Kjeldahl nitrogen (Method 351.2), nitrate/nitrite (Method 353.2), sulfate (Method 9056A), sulfide (Method 9034), ammonia (Method 350.1), dissolved organic carbon (Method 9060A), alkalinity (Method 2320B), and carbon dioxide (back calculated Method 2320B).

[3]Field MNA parameters include: dissolved oxygen, oxidation/reduction potential, ferrous iron, specific conductance, turbidity, pH, and temperature.

[4]Field duplicate samples were collected at a rate of 5% (1 per 20 samples collected) for the full suite of laboratory parameters. PZ017R were chosen for field duplicate samples based on presence of historic explosives concentrations at those locations.

[5]MS/MSD samples were collected at a rate of 5% (1 per 20 samples collected) for the full suite of laboratory parameters. NW062, G0070, and PZ019 werer chosen for MS/MSD samples based on the lack of historic explosives concentrations at these locations.

% = percent

ID = identification number

MNX = mono-nitroso-RDX

MS/MSD = matrix spike/matrix spike duplicate

MNA = monitored natural attenuation

OU = Operable Unit

PZ = piezometer

RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

RSK = Robert S. Kerr Environmental Research Laboratory

TABLE 2-2
OFF-POST AND ON-POST GROUNDWATER MONITORING WELLS SAMPLED
OU1 REBOUND STUDY, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Well Number	Sample Date	Explosives[1]	Laboratory MNA Parameters[2]	Field MNA Parameters[3]	Field Duplicate Sample ID[4]	Field MS/MSD Sample ID[5]
G0087	3/1/2022	X	X	X		
G0091	2/27/2022	X	X	X		
G0092	2/27/2022	X	X	X		
PZ017R	3/2/2022	X	X	X	PZ021-8	
PZ018	3/2/2022	X	X	X		
PZ019	3/2/2022	X	X	X		PZ019-8 MS/MSD
PZ020	3/1/2022	X	X	X		
On-Post Totals		**18**	**18**	**18**	**1**	**2**
Overall Totals		**30**	**30**	**30**	**1**	**3**

Notes:

[1]Explosives (+MNX) analysis (SW846 Method 8330A).

[2]Laboratory MNA parameters for OU1 (on- and off-post) include: methane (Method RSK 175), total Kjeldahl nitrogen (Method 351.2), nitrate/nitrite (Method 353.2), sulfate (Method 9056A), sulfide (Method 9034), ammonia (Method 350.1), dissolved organic carbon (Method 9060A), alkalinity (Method 2320B), and carbon dioxide (back calculated Method 2320B).

[3]Field MNA parameters include: dissolved oxygen, oxidation/reduction potential, ferrous iron, specific conductance, turbidity, pH, and temperature.

[4]Field duplicate samples were collected at a rate of 5% (1 per 20 samples collected) for the full suite of laboratory parameters. PZ017R were chosen for field duplicate samples based on presence of historic explosives concentrations at those locations.

[5]MS/MSD samples were collected at a rate of 5% (1 per 20 samples collected) for the full suite of laboratory parameters. NW062, G0070, and PZ019 werer chosen for MS/MSD samples based on the lack of historic explosives concentrations at these locations.

% = percent

ID = identification number

MNA = monitored natural attenuation

MNX = mono-nitroso-RDX

MS/MSD = matrix spike/matrix spike duplicate

OU = Operable Unit

PZ = piezometer

RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

RSK = Robert S. Kerr Environmental Research Laboratory

TABLE 2-3
PERFORMANCE MONITORING LOCATIONS SAMPLED
OU1 SUBSURFACE INJECTION, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Sample Location ID	Well Type	Coordinates[1]		Top of Casing Elevation (feet amsl)[1]	Screened Interval (feet bgs)	Sample Depth (feet bgs)	Sample Elevation (feet amsl)[1]	Sample ID	Sample Date	Analytical Parameters				
		Northing	Easting							Explosives[2]	Laboratory Water Quality Parameters[3]	Field Water Quality Parameters[4]	Field Duplicate Samples[5]	MS/MSD Samples[6]
Between EW6 and EW7														
G0022	Monitoring Well	403241.74	2064370.31	1899.16	18 - 33	25	1874	G0022-8	3/2/2022	X	X	X		
PZ017R	Piezometer	403469.08	2067255.25	1895.17	10 - 30	25	1870	PZ017R-8	3/2/2022	X	X	X	X	
PZ018	Piezometer	403293.15	2067256.61	1896.88	10 - 30	25	1872	PZ018-8	3/2/2022	X	X	X		
EW7-PM21A	Temp. Well	403407.45	2066429.65	1899.12	20 - 30	25	1874	EW7-PM21A-8-25	2/26/2022	X	X	X		
EW7-PM24A	Temp. Well	403412.74	2066751.85	1899.72	20 - 30	25	1875	EW7-PM24A-8-25	2/26/2022	X	X	X		
EW7-PM25A	Temp. Well	403432.36	2066962.17	1895.73	20 - 30	25	1871	EW7-PM25A-8-25	2/25/2022	X	X	X		
EW7-PM25B	Temp. Well				30 - 40	35	1861	EW7-PM25B-8-35	2/25/2022	X	X	X		
EW7-PM26A	Temp. Well	403248.72	2066662.06	1899.73	20 - 30	25	1875	EW7-PM26A-8-25	2/25/2022	X	X	X		
EW7-PM26B	Temp. Well				30 - 40	35	1865	EW7-PM26B-8-35	2/25/2022	X	X	X		
EW7-PM27B	Temp. Well	403170.77	2066860.69	1897.55	30 - 40	35	1863	EW7-PM27B-8-35	2/26/2022	X	X	X		
EW7-PM28A	Temp. Well	403302.80	2067019.15	1894.82	20 - 30	25	1870	EW7-PM28A-8-25	2/26/2022	X	X	X		

Notes:

[1]Horizontal coordinates are in Nebraska State Plane, North American Datum of 1983. Elevation datum based on National Geodetic Vertical Datum of 1929.

[2]Explosives (+MNX) analysis (SW846 Method 8330A).

[3]Laboratory water quality parameters for OU1 include: methane (Method RSK 175), total Kjeldahl nitrogen (Method 351.2), nitrate/nitrite (Method 353.2), sulfate (Method 9056A), sulfide (Method 9034), ammonia (Method 350.1), dissolved organic carbon (Method 9060A), alkalinity (Method 2320B), and carbon dioxide (back calculated Method 2320B).

[4]Field water quality parameters include: dissolved oxygen, oxidation/reduction potential, ferrous iron, turbidity, specific conductance, pH, and temperature.

[5]Field duplicate samples were collected at a rate of 5% (1 per 20 samples collected) for the full suite of laboratory parameters. PZ017R, G0096, and G0111 were chosen for field duplicate samples based on presence of historic explosives concentrations at those locations.

[6]MS/MSD samples were collected at a rate of 5% (1 per 20 samples collected) for the full suite of laboratory parameters. Various other wells (i.e., OU1 Rebound Study wells) were chosen for MS/MSD samples based on the lack of historic explosives concentrations at this location.

% = percent
amsl = above mean sea level
bgs = below ground surface
EW = extraction well
ID = identification
MNX = mono-nitroso-RDX
MS/MSD = matrix spike/matrix spike duplicate
OU = Operable Unit
PM = performance monitoring
PZ = piezometer
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RSK = Robert S. Kerr Environmental Research Laboratory

TABLE 2-3
PERFORMANCE MONITORING LOCATIONS SAMPLED
OU1 SUBSURFACE INJECTION, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Sample Location ID	Well Type	Coordinates[1]		Top of Casing Elevation (feet amsl)[1]	Screened Interval (feet bgs)	Sample Depth (feet bgs)	Sample Elevation (feet amsl)[1]	Sample ID	Sample Date	Analytical Parameters				
		Northing	Easting							Explosives[2]	Laboratory Water Quality Parameters[3]	Field Water Quality Parameters[4]	Field Duplicate Samples[5]	MS/MSD Samples[6]
EW7-PM29A	Temp. Well	403108.54	2067050.13	1895.35	20 - 30	25	1870	EW7-PM29A-8-25	2/26/2022	X	X	X		
EW7-PM29B	Temp. Well				30 - 40	35	1860	EW7-PM29B-8-35	2/24/2022	X	X	X		
								Between EW6 and EW7 Totals		**13**	**13**	**13**	**1**	**0**
Load Line 1														
G0094	Monitoring Well	401758.07	2063084.23	1903.72	15 - 25	20	1884	G0094-8	3/2/2022	X	X	X		
G0096	Monitoring Well	402127.49	2062746.66	1905.94	15 - 25	20	1886	G0096-8	3/2/2022	X	X	X	X	
								Load Line 1 Totals		**2**	**2**	**2**	**1**	**0**
Load Line 2														
G0111	Monitoring Well	401840.27	2059126.43	1911.94	15 - 25	20	1892	G0111-8	3/2/2022	X	X	X	X	
G0121	Monitoring Well	401466.39	2058974.24	1909.10	20 - 30	25	1884	G0121-8	3/2/2022	X	X	X		
G0122	Monitoring Well	401983.89	2058976.45	1909.68	20 - 30	25	1885	G0122-8	3/2/2022	X	X	X		
G0123	Monitoring Well	401358.55	2059055.22	1908.65	20 - 30	25	1884	G0123-8	3/2/2022	X	X	X		
								Load Line 2 Totals		**4**	**4**	**4**	**1**	**0**

Notes:

[1]Horizontal coordinates are in Nebraska State Plane, North American Datum of 1983. Elevation datum based on National Geodetic Vertical Datum of 1929.

[2]Explosives (+MNX) analysis (SW846 Method 8330A).

[3]Laboratory water quality parameters for OU1 include: methane (Method RSK 175), total Kjeldahl nitrogen (Method 351.2), nitrate/nitrite (Method 353.2), sulfate (Method 9056A), sulfide (Method 9034), ammonia (Method 350.1), dissolved organic carbon (Method 9060A), alkalinity (Method 2320B), and carbon dioxide (back calculated Method 2320B).

[4]Field water quality parameters include: dissolved oxygen, oxidation/reduction potential, ferrous iron, turbidity, specific conductance, pH, and temperature.

[5]Field duplicate samples were collected at a rate of 5% (1 per 20 samples collected) for the full suite of laboratory parameters. PZ017R, G0096, and G0111 were chosen for field duplicate samples based on presence of historic explosives concentrations at those locations.

[6]MS/MSD samples were collected at a rate of 5% (1 per 20 samples collected) for the full suite of laboratory parameters. Various other wells (i.e., OU1 Rebound Study wells) were chosen for MS/MSD samples based on the lack of historic explosives concentrations at this location.

% = percent
amsl = above mean sea level
bgs = below ground surface
EW = extraction well
ID = identification
MNX = mono-nitroso-RDX
MS/MSD = matrix spike/matrix spike duplicate
OU = Operable Unit
PM = performance monitoring
PZ = piezometer
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RSK = Robert S. Kerr Environmental Research Laboratory

TABLE 2-3
PERFORMANCE MONITORING LOCATIONS SAMPLED
OU1 SUBSURFACE INJECTION, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Sample Location ID	Well Type	Coordinates[1] Northing	Coordinates[1] Easting	Top of Casing Elevation (feet amsl)[1]	Screened Interval (feet bgs)	Sample Depth (feet bgs)	Sample Elevation (feet amsl)[1]	Sample ID	Sample Date	Analytical Parameters: Explosives[2]	Laboratory Water Quality Parameters[3]	Field Water Quality Parameters[4]	Field Duplicate Samples[5]	MS/MSD Samples[6]
Decant Station														
G0102	Monitoring Well	404235.26	2048906.45	1912.20	15 - 25	20	1892	G0102-8	3/2/2022	X	X	X		
									Decant Station Totals	**1**	**1**	**1**	**0**	**0**
									Overall Totals	**20**	**20**	**20**	**3**	**0**

Notes:

[1]Horizontal coordinates are in Nebraska State Plane, North American Datum of 1983. Elevation datum based on National Geodetic Vertical Datum of 1929.

[2]Explosives (+MNX) analysis (SW846 Method 8330A).

[3]Laboratory water quality parameters for OU1 include: methane (Method RSK 175), total Kjeldahl nitrogen (Method 351.2), nitrate/nitrite (Method 353.2), sulfate (Method 9056A), sulfide (Method 9034), ammonia (Method 350.1), dissolved organic carbon (Method 9060A), alkalinity (Method 2320B), and carbon dioxide (back calculated Method 2320B).

[4]Field water quality parameters include: dissolved oxygen, oxidation/reduction potential, ferrous iron, turbidity, specific conductance, pH, and temperature.

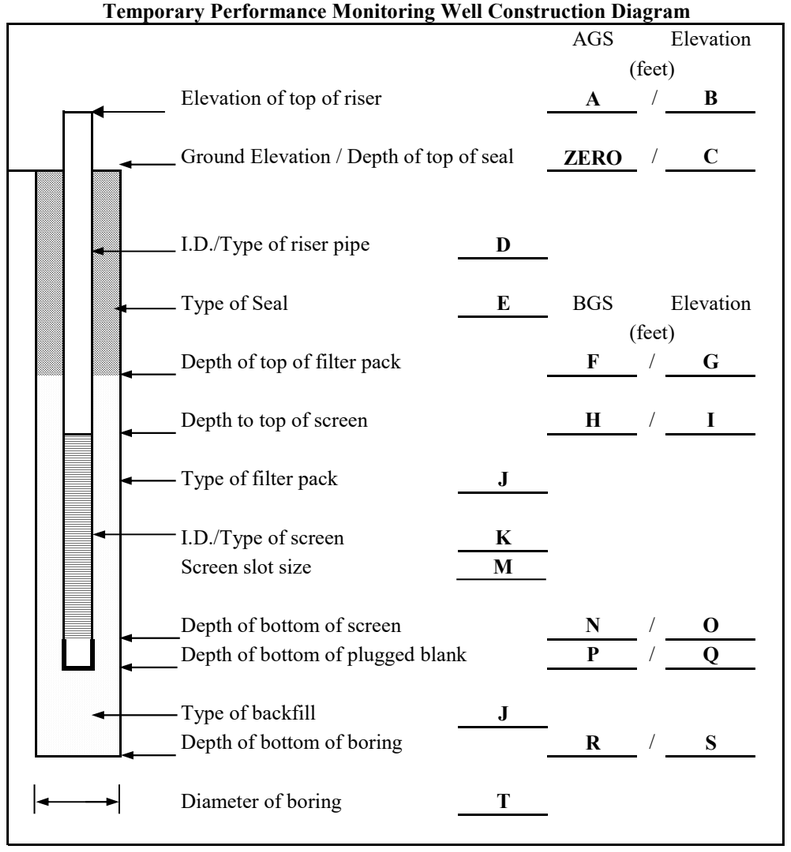
[5]Field duplicate samples were collected at a rate of 5% (1 per 20 samples collected) for the full suite of laboratory parameters. PZ017R, G0096, and G0111 were chosen for field duplicate samples based on presence of historic explosives concentrations at those locations.

[6]MS/MSD samples were collected at a rate of 5% (1 per 20 samples collected) for the full suite of laboratory parameters. Various other wells (i.e., OU1 Rebound Study wells) were chosen for MS/MSD samples based on the lack of historic explosives concentrations at this location.

% = percent
amsl = above mean sea level
bgs = below ground surface
EW = extraction well
ID = identification
MNX = mono-nitroso-RDX
MS/MSD = matrix spike/matrix spike duplicate
OU = Operable Unit
PM = performance monitoring
PZ = piezometer
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RSK = Robert S. Kerr Environmental Research Laboratory

TABLE 2-4
SUMMARY OF TEMPORARY PERFORMANCE MONITORING WELL CONSTRUCTION
OU1 SUBSURFACE INJECTION, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Temporary Performance Monitoring Well Construction Diagram



Well	Date Installed	Time	A	B	C	F	G	H	I	N	O	P	Q	R	S
EW7-PM21A	2/24/2022	0900	2.0	1899.12	1897.12	15.0	1882.1	20.0	1877.1	30.0	1867.1	30.1	1867.0	31.0	1866.1
EW7-PM24A	2/24/2022	1118	2.0	1899.72	1897.72	16.0	1881.7	20.0	1877.7	30.0	1867.7	30.1	1867.6	31.0	1866.7
EW7-PM25A	2/24/2022	1208	2.0	1895.73	1893.73	13.0	1880.7	20.0	1873.7	30.0	1863.7	30.1	1863.6	31.0	1862.7
EW7-PM25B	2/23/2022	1515	2.0	1895.73	1893.73	25.0	1868.7	30.0	1863.7	40.0	1853.7	40.1	1853.6	41.0	1852.7
EW7-PM26A	2/24/2022	0933	2.0	1899.73	1897.73	16.0	1881.7	20.0	1877.7	30.0	1867.7	30.1	1867.6	31.0	1866.7
EW7-PM26B	2/23/2022	1645	2.0	1899.73	1897.73	24.0	1873.7	30.0	1867.7	40.0	1857.7	40.1	1857.6	41.0	1856.7
EW7-PM27B	2/24/2022	1030	2.0	1897.55	1895.55	25.0	1870.6	30.0	1865.6	40.0	1855.6	40.1	1855.5	41.0	1854.6
EW7-PM28A	2/24/2022	1229	2.0	1894.82	1892.82	12.0	1880.8	20.0	1872.8	30.0	1862.8	30.1	1862.7	31.0	1861.8
EW7-PM29A	2/24/2022	1250	2.0	1895.35	1893.35	14.0	1879.4	20.0	1873.4	30.0	1863.4	30.1	1863.3	31.0	1862.4
EW7-PM29B	2/23/2022	1550	2.0	1895.35	1893.35	24.0	1869.4	30.0	1863.4	40.0	1853.4	40.1	1853.3	41.0	1852.4

Notes:

All temporary wells were installed by direct push methods (installation by Plains Environmental Services).
All temporary well installation activities were directed by AECOM.
Elevation datum based on National Geodetic Vertical Datum of 1929.

AGS = above ground surface
BGS = below ground surface
EW = extraction well
I.D. = inside diameter
OU = Operable Unit
PM = performance monitoring

The following information is the same for all temporary wells installed:
D = 1-inch inside diameter, Schedule 80, flush-threaded polyvinyl chloride
E = High-solids bentonite grout
J = Number 30-60, clean, washed, silica sand
K = 1-inch inside diameter, schedule 80, flush threaded, factory slotted polyvinyl chloride
M = Screen slot size standard 0.010-inch
T = 3.125-inch diameter

TABLE 2-5
SUMMARY OF EXPLOSIVES DETECTED, IDW - WATER
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

FIELD ID SAMPLE DATE	CHAAP HALs (µg/L)	Water-WC-Q8-MAR22 3/2/2022				
		Result	Qual	DL	LOD	LOQ
EXPLOSIVES (USEPA Method 8330A) (µg/L)						
1,3,5-Trinitrobenzene	NA	<	U	0.088	0.21	0.22
1,3-Dinitrobenzene	NA	<	U	0.039	0.11	0.12
TNT	2	<	U	0.047	0.11	0.12
2,4-Dinitrotoluene	NA	<	U	0.029	0.084	0.11
2,6-Dinitrotoluene	NA	<	U	0.042	0.084	0.11
2-Amino-4,6-dinitrotoluene	NA	2.3	J	0.053	0.11	0.12
2-Nitrotoluene	NA	<	U	0.09	0.21	0.22
3-Nitrotoluene	NA	<	U	0.2	0.42	0.42
4-Amino-2,6-dinitrotoluene	NA	1.4	J	0.061	0.13	0.16
4-Nitrotoluene	NA	<	U	0.11	0.42	0.43
HMX	400	<	U	0.092	0.21	0.22
MNX	NA	7.4	J	0.16	0.42	2.1
Nitrobenzene	NA	<	U	0.096	0.21	0.22
RDX	2	0.58	J	0.054	0.21	0.22
Tetryl	NA	<	U	0.033	0.11	0.12

Notes:

< = less than LOQ

µg/L = micrograms per liter

CHAAP = Cornhusker Army Ammunition Plant

DL = detection limit

HAL = health advisory level

HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine

ID = identification number

IDW = investigation-derived waste

J = estimated

LOD = limit of detection

LOQ = limit of quantification

MNX = mono-nitroso-RDX

NA = not available

OU = Operable Unit

Qual = qualifier

RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

TNT = 2,4,6-trinitrotoluene

U = nondetect

USEPA = United States Environmental Protection Agency

WC = waste characterization (water)

TABLE 3-1
SUMMARY OF EXPLOSIVES DETECTED, DIRECT PUSH GROUNDWATER LOCATIONS (OFF-POST)
OU1 REBOUND STUDY, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

FIELD ID	CHAAP	OS001-DP08-25					OS001-DP08-35					OS001-DP08-45					OS003-DP08-25					OS003-DP08-35					OS003-DP08-45					NW050R-DP08-20				
SAMPLE DATE	HALs	2/23/2022					2/23/2022					2/23/2022					2/22/2022					2/23/2022					2/23/2022					02/22/22				
	(µg/L)	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ
EXPLOSIVES (USEPA Method 8330A) (µg/L)																																				
1,3,5-Trinitrobenzene	NA	<	U	0.084	0.2	0.21	3.9		0.088	0.21	0.22	<	U	0.084	0.2	0.21	<	U	0.088	0.21	0.22	<	U	0.087	0.21	0.22	<	U	0.086	0.2	0.21	<	U	0.086	0.2	0.21
1,3-Dinitrobenzene	NA	<	U	0.037	0.1	0.11	<	U	0.039	0.1	0.12	<	U	0.037	0.1	0.11	<	U	0.039	0.1	0.11	<	U	0.038	0.1	0.11	<	U	0.038	0.1	0.11	<	U	0.038	0.1	0.11
TNT	2	21		0.045	0.1	0.11	1.1		0.047	0.1	0.12	<	U	0.045	0.1	0.11	<	U	0.047	0.1	0.11	0.14		0.047	0.1	0.11	<	U	0.046	0.1	0.11	<	U	0.046	0.1	0.11
2,4-Dinitrotoluene	NA	<	U	0.027	0.08	0.1	<	U	0.029	0.084	0.1	<	U	0.028	0.08	0.1	<	U	0.029	0.084	0.1	<	U	0.028	0.083	0.1	<	U	0.028	0.081	0.1	<	U	0.028	0.082	0.1
2,6-Dinitrotoluene	NA	<	U	0.04	0.08	0.1	<	U	0.042	0.084	0.1	<	U	0.04	0.08	0.1	<	U	0.042	0.084	0.1	<	U	0.042	0.083	0.1	<	U	0.041	0.081	0.1	<	U	0.041	0.082	0.1
2-Amino-4,6-dinitrotoluene	NA	3		0.051	0.1	0.11	<	U	0.053	0.1	0.12	<	U	0.051	0.1	0.11	<	U	0.053	0.1	0.11	<	U	0.053	0.1	0.11	<	U	0.052	0.1	0.11	<	U	0.052	0.1	0.11
2-Nitrotoluene	NA	<	U	0.085	0.2	0.21	<	U	0.09	0.21	0.22	<	U	0.086	0.2	0.21	<	U	0.089	0.21	0.22	<	U	0.089	0.21	0.22	<	UJ	0.087	0.2	0.21	<	U	0.087	0.2	0.21
3-Nitrotoluene	NA	<	UJ	0.19	0.4	0.4	<	UJ	0.2	0.42	0.42	<	UJ	0.2	0.4	0.4	<	U	0.2	0.42	0.42	<	UJ	0.2	0.42	0.42	<	UJ	0.2	0.41	0.41	<	U	0.2	0.41	0.41
4-Amino-2,6-dinitrotoluene	NA	3.7	J	0.058	0.12	0.15	1	J	0.061	0.13	0.16	<	UJ	0.058	0.12	0.15	<	U	0.06	0.13	0.16	<	UJ	0.06	0.12	0.16	<	UJ	0.059	0.12	0.15	<	U	0.059	0.12	0.15
4-Nitrotoluene	NA	<	U	0.1	0.4	0.41	<	U	0.1	0.42	0.43	<	U	0.1	0.4	0.41	<	U	0.1	0.42	0.43	<	U	0.1	0.42	0.43	<	U	0.1	0.41	0.42	<	U	0.1	0.41	0.42
HMX	400	0.2	J	0.087	0.2	0.21	<	U	0.092	0.21	0.22	<	U	0.088	0.2	0.21	<	U	0.091	0.21	0.22	<	U	0.091	0.21	0.22	<	U	0.089	0.2	0.21	<	U	0.09	0.2	0.21
MNX	NA	<	U	0.15	0.4	2	<	U	0.16	0.42	2.1	<	U	0.15	0.4	2	<	U	0.16	0.42	2.1	<	U	0.16	0.42	2.1	<	U	0.16	0.41	2	<	U	0.16	0.41	2
Nitrobenzene	NA	<	U	0.091	0.2	0.21	<	U	0.096	0.21	0.22	<	U	0.091	0.2	0.21	<	U	0.095	0.21	0.22	<	U	0.094	0.21	0.22	<	U	0.093	0.2	0.21	<	U	0.093	0.2	0.21
RDX	2	0.7		0.051	0.2	0.21	<	U	0.054	0.21	0.22	<	U	0.052	0.2	0.21	<	U	0.054	0.21	0.22	<	U	0.053	0.21	0.22	<	U	0.052	0.2	0.21	<	U	0.053	0.2	0.21
Tetryl	NA	<	U	0.032	0.1	0.11	<	U	0.033	0.1	0.12	<	U	0.032	0.1	0.11	<	U	0.033	0.1	0.11	<	U	0.033	0.1	0.11	<	U	0.032	0.1	0.11	<	U	0.033	0.1	0.11

Notes:

Concentrations exceed HALs

< = less than LOQ

µg/L = micrograms per liter

CHAAP = Cornhusker Army Ammunition Plant

DL = detection limit

DP = direct push

HAL = health advisory level

HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine

ID = identification number

J = estimated

LOD = limit of detection

LOQ = limit of quantification

MNX = mono-nitroso-RDX

NA = not available

OS = off-post sample

OU = Operable Unit

Qual = qualifier

RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

TNT = 2,4,6-trinitrotoluene

U = nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF EXPLOSIVES DETECTED, DIRECT PUSH GROUNDWATER LOCATIONS (OFF-POST)
OU1 REBOUND STUDY, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

FIELD ID SAMPLE DATE	CHAAP HALs (µg/L)	NW050R-DP08-35 2/22/2022					NW050R-DP08-60 2/22/2022				
		Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ
EXPLOSIVES (USEPA Method 8330A) (µg/L)											
1,3,5-Trinitrobenzene	NA	<	U	0.084	0.2	0.21	<	U	0.094	0.22	0.23
1,3-Dinitrobenzene	NA	<	U	0.037	0.1	0.11	<	U	0.041	0.11	0.12
TNT	2	<	U	0.045	0.1	0.11	<	U	0.05	0.11	0.12
2,4-Dinitrotoluene	NA	<	U	0.027	0.08	0.1	<	U	0.031	0.089	0.11
2,6-Dinitrotoluene	NA	<	U	0.04	0.08	0.1	<	U	0.045	0.089	0.11
2-Amino-4,6-dinitrotoluene	NA	<	U	0.051	0.1	0.11	<	U	0.057	0.11	0.12
2-Nitrotoluene	NA	<	U	0.085	0.2	0.21	<	U	0.095	0.22	0.23
3-Nitrotoluene	NA	<	U	0.19	0.4	0.4	<	U	0.22	0.45	0.45
4-Amino-2,6-dinitrotoluene	NA	<	U	0.058	0.12	0.15	<	U	0.064	0.13	0.17
4-Nitrotoluene	NA	<	U	0.1	0.4	0.41	<	U	0.11	0.45	0.46
HMX	400	<	U	0.087	0.2	0.21	<	U	0.098	0.22	0.23
MNX	NA	<	U	0.15	0.4	2	<	U	0.17	0.45	2.2
Nitrobenzene	NA	<	U	0.091	0.2	0.21	<	U	0.1	0.22	0.23
RDX	2	<	U	0.051	0.2	0.21	<	U	0.057	0.22	0.23
Tetryl	NA	<	U	0.032	0.1	0.11	<	U	0.035	0.11	0.12

Notes:

Concentrations exceed HALs

< = less than LOQ
µg/L = micrograms per liter
CHAAP = Cornhusker Army Ammunition Plant
DL = detection limit
DP = direct push
HAL = health advisory level
HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification number
J = estimated
LOD = limit of detection
LOQ = limit of quantification
MNX = mono-nitroso-RDX
NA = not available
OS = off-post sample
OU = Operable Unit
Qual = qualifier
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
TNT = 2,4,6-trinitrotoluene
U = nondetect
USEPA = United States Environmental Protection Agency

TABLE 3-2
SUMMARY OF EXPLOSIVES DETECTED AND LABORATORY MNA PARAMETERS, OFF-POST AND ON-POST MONITORING WELLS
OU1 REBOUND STUDY, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

FIELD ID / SAMPLE DATE	CHAAP HALs (µg/L)	OFF-POST																															
		CA210-8 2/28/2022					CA211-8 2/28/2022					CA212-8 2/28/2022					CA213-8 2/28/2022					NW020-8 2/28/2022					NW021-8 2/28/2022					NW022-8 2/28/2022				
		Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ
EXPLOSIVES (USEPA Method 8330A) (µg/L)																																			
1,3,5-Trinitrobenzene	NA	<	U	0.09	0.21	0.22	<	U	0.089	0.21	0.22	<	U	0.092	0.22	0.23	<	U	0.091	0.22	0.23	<	U	0.089	0.21	0.22	<	U	0.09	0.21	0.23	<	U	0.086	0.2	0.21
1,3-Dinitrobenzene	NA	<	U	0.04	0.11	0.12	<	U	0.039	0.11	0.12	<	U	0.04	0.11	0.12	<	U	0.04	0.11	0.12	<	U	0.039	0.11	0.12	<	U	0.04	0.11	0.12	<	U	0.038	0.1	0.11
TNT	2	<	U	0.048	0.11	0.12	<	U	0.048	0.11	0.12	<	U	0.049	0.11	0.12	<	U	0.049	0.11	0.12	1.1		0.048	0.11	0.12	<	U	0.048	0.11	0.12	<	U	0.046	0.1	0.11
2,4-Dinitrotoluene	NA	<	U	0.029	0.086	0.11	<	U	0.029	0.085	0.11	<	U	0.03	0.087	0.11	<	U	0.03	0.086	0.11	<	U	0.029	0.085	0.11	<	U	0.029	0.086	0.11	<	U	0.028	0.082	0.1
2,6-Dinitrotoluene	NA	<	U	0.043	0.086	0.11	<	U	0.042	0.085	0.11	<	U	0.044	0.087	0.11	<	U	0.043	0.086	0.11	<	U	0.043	0.085	0.11	<	U	0.043	0.086	0.11	<	U	0.041	0.082	0.1
2-Amino-4,6-dinitrotoluene	NA	<	U	0.054	0.11	0.12	<	U	0.054	0.11	0.12	<	U	0.055	0.11	0.12	<	U	0.055	0.11	0.12	1		0.054	0.11	0.12	1		0.054	0.11	0.12	<	U	0.052	0.1	0.11
2-Nitrotoluene	NA	<	U	0.092	0.21	0.22	<	U	0.091	0.21	0.22	<	U	0.094	0.22	0.23	<	U	0.092	0.22	0.23	<	U	0.091	0.21	0.22	<	U	0.092	0.21	0.23	<	U	0.087	0.2	0.21
3-Nitrotoluene	NA	<	U	0.21	0.43	0.43	<	U	0.21	0.42	0.42	<	U	0.21	0.44	0.44	<	U	0.21	0.43	0.43	<	U	0.21	0.42	0.42	<	U	0.21	0.43	0.43	<	U	0.2	0.41	0.41
4-Amino-2,6-dinitrotoluene	NA	<	U	0.062	0.13	0.16	<	U	0.061	0.13	0.16	<	U	0.063	0.13	0.16	<	U	0.062	0.13	0.16	0.91		0.061	0.13	0.16	0.92		0.062	0.13	0.16	<	U	0.059	0.12	0.15
4-Nitrotoluene	NA	<	U	0.11	0.43	0.44	<	U	0.11	0.42	0.43	<	U	0.11	0.44	0.45	<	U	0.11	0.43	0.44	<	U	0.11	0.42	0.44	<	U	0.11	0.43	0.44	<	U	0.1	0.41	0.42
HMX	400	<	U	0.094	0.21	0.22	<	U	0.093	0.21	0.22	<	U	0.096	0.22	0.23	<	U	0.094	0.22	0.23	<	U	0.093	0.21	0.22	<	U	0.094	0.21	0.23	<	U	0.089	0.2	0.21
MNX	NA	<	U	0.16	0.43	2.1	<	U	0.16	0.42	2.1	<	U	0.17	0.44	2.2	<	U	0.17	0.43	2.2	<	U	0.16	0.42	2.1	<	U	0.17	0.43	2.1	<	U	0.16	0.41	2
Nitrobenzene	NA	<	U	0.097	0.21	0.22	<	U	0.096	0.21	0.22	<	U	0.1	0.22	0.23	<	U	0.098	0.22	0.23	<	U	0.097	0.21	0.22	<	U	0.098	0.21	0.23	<	U	0.093	0.2	0.21
RDX	2	<	U	0.055	0.21	0.22	<	U	0.055	0.21	0.22	<	U	0.056	0.22	0.23	<	U	0.056	0.22	0.23	0.22		0.055	0.21	0.22	0.17	J	0.055	0.21	0.23	<	U	0.053	0.2	0.21
Tetryl	NA	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.035	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.032	0.1	0.11
LABORATORY MNA PARAMETERS																																			
Alkalinity SM 2320B (mg/L)		440		3.1	6.4	10	180		3.1	6.4	10	170		3.1	6.4	10	130		3.1	6.4	10	320		3.1	6.4	10	350		3.1	6.4	10	380		3.1	6.4	10
Sulfate USEPA 9056A (mg/L)		210		5.2	13	25	96		1	2.5	5	72		1	2.5	5	65		1	2.5	5	220		5.2	13	25	180		1	2.5	5	280		5.2	13	25
Ammonia USEPA 350.1 (mg/L)		0.15		0.022	0.05	0.1	<	U	0.022	0.05	0.1	<	U	0.022	0.05	0.1	0.026	J	0.022	0.05	0.1	<	U	0.022	0.05	0.1	2.4		0.022	0.05	0.1	1.1		0.022	0.05	0.1
Nitrate/Nitrite USEPA 353.2 (mg/L)		31		0.095	0.25	0.5	30		0.19	0.5	1	15		0.038	0.1	0.2	3.6		0.019	0.05	0.1	55		0.48	1.3	2.5	0.62		0.019	0.05	0.1	0.34		0.019	0.05	0.1
Total Kjeldahl Nitrogen USEPA 351.2 (mg/L)		<	UJ	0.69	1	1	<	UJ	0.69	1	1	<	UJ	0.69	1	1	<	UJ	0.69	1	1	<	U	0.69	1	1	2.7		0.69	1	1	1.5		0.69	1	1
Dissolved Organic Carbon SM 9060A (mg/L)		10		0.35	0.8	1	4.3		0.35	0.8	1	2.3		0.35	0.8	1	2.2		0.35	0.8	1	7.3		0.35	0.8	1	3.1		0.35	0.8	1	3.5		0.35	0.8	1
Sulfide SM 9034 (mg/L)		<	U	0.79	1.9	4	0.8	J	0.79	1.9	4	0.8	J	0.79	1.9	4	1.6	J	0.79	1.9	4	1.6	J	0.79	1.9	4	0.8	J	0.79	1.9	4	0.88	J	0.79	1.9	4
Methane RSK-175 (µg/L)		<	U	0.63	1.3	5	<	U	0.63	1.3	5	<	U	0.63	1.3	5	<	U	0.63	1.3	5	<	U	0.63	1.3	5	120		0.63	1.3	5	200		0.63	1.3	5
Carbon Dioxide SM 2320B (mg/L)[1]		196		3.1	6.4	10	80		3.1	6.4	10	76		3.1	6.4	10	58		3.1	6.4	10	142		3.1	6.4	10	156		3.1	6.4	10	169		3.1	6.4	10

Notes:

Concentrations exceed HALs

[1]Carbon dioxide back calculated from alkalinity SM 2320B.

< = less than LOQ
µg/L = micrograms per liter
CHAAP = Cornhusker Army Ammunition Plant
DL = detection limit
HAL = health advisory level
HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification number
J = estimated
LOD = limit of detection
LOQ = limit of quantification
mg/L = milligrams per liter
MNA = monitored natural attenuation
MNX = mono-nitroso-RDX
NA = not available
OU = Operable Unit
PZ = piezometer
Qual = qualifier
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RSK = Robert S. Kerr Environmental Research Laboratory
SM = Standard Method
TNT = 2,4,6-trinitrotoluene
U = nondetect
USEPA = United States Environmental Protection Agency

TABLE 3-2
SUMMARY OF EXPLOSIVES DETECTED AND LABORATORY MNA PARAMETERS, OFF-POST AND ON-POST MONITORING WELLS
OU1 REBOUND STUDY, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

FIELD ID / SAMPLE DATE	CHAAP HALs (µg/L)	OFF-POST																						ON-POST									
		NW060-8 2/27/2022					NW061-8 2/27/2022					NW062-8 2/27/2022					NW070-8 2/27/2022					NW071-8 2/27/2022					G0024-8 3/1/2022					G0070-8 3/1/2022				
		Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ
EXPLOSIVES (USEPA Method 8330A) (µg/L)																																	
1,3,5-Trinitrobenzene	NA	<	U	0.09	0.21	0.22	<	U	0.088	0.21	0.22	<	U	0.091	0.22	0.23	<	U	0.093	0.22	0.23	<	U	0.089	0.21	0.22	<	U	0.087	0.21	0.22	<	U	0.088	0.21	0.22
1,3-Dinitrobenzene	NA	<	U	0.039	0.11	0.12	<	U	0.039	0.11	0.12	<	U	0.04	0.11	0.12	<	U	0.041	0.11	0.12	<	U	0.039	0.11	0.12	<	U	0.038	0.1	0.11	<	U	0.039	0.1	0.12
TNT	2	<	U	0.048	0.11	0.12	<	U	0.047	0.11	0.12	<	U	0.049	0.11	0.12	<	U	0.05	0.11	0.12	<	U	0.048	0.11	0.12	0.66		0.047	0.1	0.11	<	U	0.047	0.1	0.12
2,4-Dinitrotoluene	NA	<	U	0.029	0.085	0.11	<	U	0.029	0.084	0.11	<	U	0.03	0.086	0.11	<	U	0.03	0.088	0.11	<	U	0.029	0.085	0.11	<	U	0.028	0.083	0.1	<	U	0.029	0.084	0.1
2,6-Dinitrotoluene	NA	<	U	0.043	0.085	0.11	<	U	0.042	0.084	0.11	<	U	0.043	0.086	0.11	<	U	0.044	0.088	0.11	<	U	0.042	0.085	0.11	<	U	0.042	0.083	0.1	<	U	0.042	0.084	0.1
2-Amino-4,6-dinitrotoluene	NA	<	U	0.054	0.11	0.12	<	U	0.053	0.11	0.12	<	U	0.055	0.11	0.12	<	U	0.056	0.11	0.12	<	U	0.054	0.11	0.12	1.5		0.053	0.1	0.11	<	U	0.053	0.1	0.12
2-Nitrotoluene	NA	<	U	0.091	0.21	0.22	<	U	0.09	0.21	0.22	<	U	0.092	0.22	0.23	<	U	0.094	0.22	0.23	<	U	0.09	0.21	0.22	<	U	0.089	0.21	0.22	<	U	0.089	0.21	0.22
3-Nitrotoluene	NA	<	U	0.21	0.43	0.43	<	U	0.2	0.42	0.42	<	U	0.21	0.43	0.43	<	U	0.21	0.44	0.44	<	U	0.21	0.42	0.42	<	U	0.2	0.42	0.42	<	U	0.2	0.42	0.42
4-Amino-2,6-dinitrotoluene	NA	<	U	0.061	0.13	0.16	<	U	0.061	0.13	0.16	<	U	0.062	0.13	0.16	<	U	0.063	0.13	0.17	<	U	0.061	0.13	0.16	0.82		0.06	0.12	0.16	<	U	0.06	0.13	0.16
4-Nitrotoluene	NA	<	U	0.11	0.43	0.44	<	U	0.11	0.42	0.43	<	U	0.11	0.43	0.44	<	U	0.11	0.44	0.45	<	U	0.11	0.42	0.43	<	U	0.1	0.42	0.43	<	U	0.1	0.42	0.43
HMX	400	<	U	0.093	0.21	0.22	<	U	0.092	0.21	0.22	<	U	0.095	0.22	0.23	<	U	0.096	0.22	0.23	<	U	0.093	0.21	0.22	<	U	0.091	0.21	0.22	<	U	0.092	0.21	0.22
MNX	NA	<	U	0.16	0.43	2.1	<	U	0.16	0.42	2.1	<	U	0.17	0.43	2.2	<	U	0.17	0.44	2.2	<	U	0.16	0.42	2.1	<	U	0.16	0.42	2.1	<	U	0.16	0.42	2.1
Nitrobenzene	NA	<	U	0.097	0.21	0.22	<	U	0.096	0.21	0.22	<	U	0.098	0.22	0.23	<	U	0.1	0.22	0.23	<	U	0.096	0.21	0.22	<	U	0.094	0.21	0.22	<	U	0.095	0.21	0.22
RDX	2	<	U	0.055	0.21	0.22	<	U	0.054	0.21	0.22	<	U	0.056	0.22	0.23	<	U	0.057	0.22	0.23	<	U	0.055	0.21	0.22	<	U	0.053	0.21	0.22	<	U	0.054	0.21	0.22
Tetryl	NA	<	U	0.034	0.11	0.12	<	U	0.033	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.035	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.033	0.1	0.11	<	U	0.033	0.1	0.12
LABORATORY MNA PARAMETERS																																	
Alkalinity SM 2320B (mg/L)	45			3.1	6.4	10	330		3.1	6.4	10	270		3.1	6.4	10	240		3.1	6.4	10	98		3.1	6.4	10	210		3.1	6.4	10	220		3.1	6.4	10
Sulfate USEPA 9056A (mg/L)	26			1	2.5	5	160		1	2.5	5	200		5.2	13	25	87		1	2.5	5	58		1	2.5	5	54		1	2.5	5	48		1	2.5	5
Ammonia USEPA 350.1 (mg/L)	<	U	0.022	0.05	0.1	4.6		0.022	0.05	0.1	1.8		0.022	0.05	0.1	<	U	0.022	0.05	0.1	<	U	0.022	0.05	0.1	0.04	J	0.022	0.05	0.1	0.029	J	0.022	0.05	0.1
Nitrate/Nitrite USEPA 353.2 (mg/L)	4.2		0.019	0.05	0.1	5.4		0.019	0.05	0.1	<	U	0.019	0.05	0.1	11		0.038	0.1	0.2	35		0.095	0.25	0.5	11		0.095	0.25	0.5	<	U	0.019	0.05	0.1
Total Kjeldahl Nitrogen USEPA 351.2 (mg/L)	<	UJ	0.69	1	1	4.8		0.69	1	1	2	J	0.69	1	1	<	UJ	0.69	1	1	<	UJ	0.69	1	1	1.1		0.69	0.8	1	<	U	0.69	1	1
Dissolved Organic Carbon SM 9060A (mg/L)	2		0.35	0.8	1	6		0.35	0.8	1	2.9		0.35	0.8	1	8.4		0.35	0.8	1	2.9		0.35	0.8	1	3.6		0.35	0.8	1	1.4		0.35	0.8	1
Sulfide SM 9034 (mg/L)	<	U	0.79	1.9	4	0.8	J	0.79	1.9	4	<	U	0.79	1.9	4	<	U	0.79	1.9	4	0.8	J	0.79	1.9	4	<	U	0.79	1.9	4	<	U	0.79	1.9	4
Methane RSK-175 (µg/L)	<	U	0.63	1.3	5	140		0.63	1.3	5	24		0.63	1.3	5	<	U	0.63	1.3	5	<	U	0.63	1.3	5	<	U	0.63	1.3	5	0.91	J	0.63	1.3	5
Carbon Dioxide SM 2320B (mg/L)[1]	20		3.1	6.4	10	147		3.1	6.4	10	120		3.1	6.4	10	107		3.1	6.4	10	44		3.1	6.4	10	93		3.1	6.4	10	98		3.1	6.4	10

Notes:

Concentrations exceed HALs

[1]Carbon dioxide back calculated from alkalinity SM 2320B.

< = less than LOQ
µg/L = micrograms per liter
CHAAP = Cornhusker Army Ammunition Plant
DL = detection limit
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TABLE 3-2
SUMMARY OF EXPLOSIVES DETECTED AND LABORATORY MNA PARAMETERS, OFF-POST AND ON-POST MONITORING WELLS
OU1 REBOUND STUDY, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

FIELD ID / SAMPLE DATE	CHAAP HALs (µg/L)	ON-POST																															
		G0075-8 3/1/2022					G0076-8 3/1/2022					G0077-8 3/1/2022					G0078-8 3/1/2022					G0079-8 3/1/2022					G0080-8 3/1/2022					G0081-8 3/1/2022				
		Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ
EXPLOSIVES (USEPA Method 8330A) (µg/L)																																			
1,3,5-Trinitrobenzene	NA	<	U	0.083	0.2	0.21	<	U	0.084	0.2	0.21	2.8		0.087	0.21	0.22	<	U	0.089	0.21	0.22	<	U	0.091	0.22	0.23	<	U	0.09	0.21	0.22	0.53		0.088	0.21	0.22
1,3-Dinitrobenzene	NA	<	U	0.037	0.099	0.11	<	U	0.037	0.1	0.11	<	U	0.038	0.1	0.11	<	U	0.039	0.11	0.12	<	U	0.04	0.11	0.12	<	U	0.039	0.11	0.12	<	U	0.038	0.1	0.11
TNT	2	<	U	0.045	0.099	0.11	<	U	0.045	0.1	0.11	4.2		0.046	0.1	0.11	<	U	0.048	0.11	0.12	<	U	0.049	0.11	0.12	<	U	0.048	0.11	0.12	0.11		0.047	0.1	0.11
2,4-Dinitrotoluene	NA	<	U	0.027	0.079	0.099	<	U	0.027	0.08	0.1	<	U	0.028	0.082	0.1	<	U	0.029	0.085	0.11	<	U	0.03	0.087	0.11	<	U	0.029	0.085	0.11	<	U	0.029	0.083	0.1
2,6-Dinitrotoluene	NA	<	U	0.04	0.079	0.099	<	U	0.04	0.08	0.1	<	U	0.041	0.082	0.1	<	U	0.043	0.085	0.11	<	U	0.043	0.087	0.11	<	U	0.043	0.085	0.11	<	U	0.042	0.083	0.1
2-Amino-4,6-dinitrotoluene	NA	0.88		0.05	0.099	0.11	<	U	0.051	0.1	0.11	2.6		0.052	0.1	0.11	<	U	0.054	0.11	0.12	<	U	0.055	0.11	0.12	<	U	0.054	0.11	0.12	<	U	0.053	0.1	0.11
2-Nitrotoluene	NA	<	U	0.085	0.2	0.21	<	U	0.085	0.2	0.21	<	U	0.088	0.21	0.22	<	U	0.091	0.21	0.22	<	U	0.093	0.22	0.23	<	U	0.091	0.21	0.22	<	U	0.089	0.21	0.22
3-Nitrotoluene	NA	<	U	0.19	0.4	0.4	<	U	0.19	0.4	0.4	<	U	0.2	0.41	0.41	<	U	0.21	0.43	0.43	<	U	0.21	0.43	0.43	<	U	0.21	0.43	0.43	<	U	0.2	0.42	0.42
4-Amino-2,6-dinitrotoluene	NA	0.95		0.057	0.12	0.15	<	U	0.058	0.12	0.15	2.7		0.059	0.12	0.15	<	U	0.061	0.13	0.16	<	U	0.062	0.13	0.16	0.082	J	0.061	0.13	0.16	<	U	0.06	0.12	0.16
4-Nitrotoluene	NA	<	U	0.099	0.4	0.41	<	U	0.1	0.4	0.41	<	U	0.1	0.41	0.42	<	U	0.11	0.43	0.44	<	U	0.11	0.43	0.44	<	U	0.11	0.43	0.44	<	U	0.1	0.42	0.43
HMX	400	0.32		0.087	0.2	0.21	<	U	0.087	0.2	0.21	<	U	0.09	0.21	0.22	<	U	0.093	0.21	0.22	<	U	0.095	0.22	0.23	<	U	0.093	0.21	0.22	<	U	0.091	0.21	0.22
MNX	NA	<	U	0.15	0.4	2	<	U	0.15	0.4	2	<	U	0.16	0.41	2.1	<	U	0.16	0.43	2.1	<	U	0.17	0.43	2.2	<	U	0.16	0.43	2.1	<	U	0.16	0.42	2.1
Nitrobenzene	NA	<	U	0.09	0.2	0.21	<	U	0.091	0.2	0.21	<	U	0.094	0.21	0.22	<	U	0.097	0.21	0.22	<	U	0.098	0.22	0.23	<	U	0.097	0.21	0.22	<	U	0.095	0.21	0.22
RDX	2	0.19	J	0.051	0.2	0.21	<	U	0.051	0.2	0.21	0.5	J	0.053	0.21	0.22	<	U	0.055	0.21	0.22	<	U	0.056	0.22	0.23	<	U	0.055	0.21	0.22	<	U	0.054	0.21	0.22
Tetryl	NA	<	U	0.032	0.099	0.11	<	U	0.032	0.1	0.11	<	U	0.033	0.1	0.11	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.033	0.1	0.11
LABORATORY MNA PARAMETERS																																			
Alkalinity SM 2320B (mg/L)		280		3.1	6.4	10	390		3.1	6.4	10	300		3.1	6.4	10	320		3.1	6.4	10	230		3.1	6.4	10	380		3.1	6.4	10	320		3.1	6.4	10
Sulfate USEPA 9056A (mg/L)		170		1	2.5	5	310	J	5.2	13	25	120		1	2.5	5	260		5.2	13	25	67		1	2.5	5	98		1	2.5	5	170		1	2.5	5
Ammonia USEPA 350.1 (mg/L)		0.047	J	0.022	0.05	0.1	2.3		0.022	0.05	0.1	<	U	0.022	0.05	0.1	0.19		0.022	0.05	0.1	<	U	0.022	0.05	0.1	2		0.022	0.05	0.1	0.48		0.022	0.05	0.1
Nitrate/Nitrite USEPA 353.2 (mg/L)		6.5		0.019	0.05	0.1	<	U	0.019	0.05	0.1	12		0.095	0.25	0.5	0.022	J	0.019	0.05	0.1	2.9		0.019	0.05	0.1	4.9		0.019	0.05	0.1	0.064	J	0.019	0.05	0.1
Total Kjeldahl Nitrogen USEPA 351.2 (mg/L)		<	U	0.69	1	1	2.5		0.69	1	1	4.6		0.69	0.8	1	3		0.69	0.8	1	<	U	0.69	1	1	1.6		0.69	1	1	4		0.69	0.8	1
Dissolved Organic Carbon SM 9060A (mg/L)		3		0.35	0.8	1	3.6		0.35	0.8	1	4.5		0.35	0.8	1	3.1		0.35	0.8	1	5.1		0.35	0.8	1	3.4		0.35	0.8	1	5.9		0.35	0.8	1
Sulfide SM 9034 (mg/L)		<	U	0.79	1.9	4	<	U	0.79	1.9	4	<	U	0.79	1.9	4	<	U	0.79	1.9	4	<	U	0.79	1.9	4	<	U	0.79	1.9	4	<	U	0.79	1.9	4
Methane RSK-175 (µg/L)		<	U	0.63	1.3	5	450		0.63	1.3	5	1800		0.63	1.3	5	200		0.63	1.3	5	<	U	0.63	1.3	5	7.8		0.63	1.3	5	920		0.63	1.3	5
Carbon Dioxide SM 2320B (mg/L)[1]		124		3.1	6.4	10	173		3.1	6.4	10	133		3.1	6.4	10	142		3.1	6.4	10	102		3.1	6.4	10	169		3.1	6.4	10	142		3.1	6.4	10

Notes:

Concentrations exceed HALs

[1]Carbon dioxide back calculated from alkalinity SM 2320B.

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CHAAP = Cornhusker Army Ammunition Plant
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PZ = piezometer
Qual = qualifier
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RSK = Robert S. Kerr Environmental Research Laboratory
SM = Standard Method
TNT = 2,4,6-trinitrotoluene
U = nondetect
USEPA = United States Environmental Protection Agency

TABLE 3-2
SUMMARY OF EXPLOSIVES DETECTED AND LABORATORY MNA PARAMETERS, OFF-POST AND ON-POST MONITORING WELLS
OU1 REBOUND STUDY, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

FIELD ID / SAMPLE DATE	CHAAP HALs (µg/L)	ON-POST																															
		G0082-8 3/1/2022					G0086-8 3/1/2022					G0087-8 3/1/2022					G0091-8 2/27/2022					G0092-8 2/27/2022					PZ017R-8 3/2/2022					PZ018-8 3/2/2022				
		Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ
EXPLOSIVES (USEPA Method 8330A) (µg/L)																																			
1,3,5-Trinitrobenzene	NA	<	U	0.091	0.22	0.23	21		0.09	0.21	0.23	<	U	0.09	0.21	0.22	<	U	0.089	0.21	0.22	<	U	0.089	0.21	0.22	1.4		0.087	0.21	0.22	<	U	0.091	0.22	0.23
1,3-Dinitrobenzene	NA	<	U	0.04	0.11	0.12	<	U	0.04	0.11	0.12	<	U	0.039	0.11	0.12	<	U	0.039	0.11	0.12	<	U	0.039	0.11	0.12	<	U	0.038	0.1	0.11	<	U	0.04	0.11	0.12
TNT	2	<	U	0.049	0.11	0.12	5.8		0.048	0.11	0.12	<	U	0.048	0.11	0.12	<	U	0.048	0.11	0.12	<	U	0.048	0.11	0.12	5		0.047	0.1	0.11	<	U	0.049	0.11	0.12
2,4-Dinitrotoluene	NA	<	U	0.03	0.086	0.11	<	U	0.029	0.086	0.11	<	U	0.029	0.085	0.11	<	U	0.029	0.084	0.11	<	U	0.029	0.085	0.11	<	U	0.028	0.083	0.1	<	U	0.03	0.087	0.11
2,6-Dinitrotoluene	NA	<	U	0.043	0.086	0.11	<	U	0.043	0.086	0.11	<	U	0.043	0.085	0.11	<	U	0.042	0.084	0.11	<	U	0.043	0.085	0.11	<	U	0.042	0.083	0.1	<	U	0.043	0.087	0.11
2-Amino-4,6-dinitrotoluene	NA	0.13		0.055	0.11	0.12	<	U	0.054	0.11	0.12	0.4	J	0.054	0.11	0.12	0.18		0.054	0.11	0.12	<	U	0.054	0.11	0.12	3		0.053	0.1	0.11	<	U	0.055	0.11	0.12
2-Nitrotoluene	NA	<	U	0.092	0.22	0.23	<	U	0.092	0.21	0.23	<	U	0.091	0.21	0.22	<	U	0.09	0.21	0.22	<	U	0.091	0.21	0.22	<	U	0.089	0.21	0.22	<	U	0.093	0.22	0.23
3-Nitrotoluene	NA	<	U	0.21	0.43	0.43	<	U	0.21	0.43	0.43	<	U	0.21	0.43	0.43	<	U	0.21	0.42	0.42	<	U	0.21	0.43	0.43	<	U	0.2	0.42	0.42	<	U	0.21	0.43	0.43
4-Amino-2,6-dinitrotoluene	NA	0.14	J	0.062	0.13	0.16	1.7		0.062	0.13	0.16	0.85	J	0.061	0.13	0.16	0.17		0.061	0.13	0.16	<	U	0.061	0.13	0.16	5.3		0.06	0.12	0.16	<	U	0.062	0.13	0.16
4-Nitrotoluene	NA	<	U	0.11	0.43	0.44	<	U	0.11	0.43	0.44	<	U	0.11	0.43	0.44	<	U	0.11	0.42	0.43	<	U	0.11	0.43	0.44	<	U	0.1	0.42	0.43	<	U	0.11	0.43	0.44
HMX	400	0.41		0.095	0.22	0.23	0.58		0.094	0.21	0.23	0.74	J	0.093	0.21	0.22	<	U	0.093	0.21	0.22	<	U	0.093	0.21	0.22	<	UJ	0.091	0.21	0.22	<	U	0.095	0.22	0.23
MNX	NA	<	U	0.17	0.43	2.2	<	U	0.17	0.43	2.1	<	U	0.16	0.43	2.1	<	U	0.16	0.42	2.1	<	U	0.16	0.43	2.1	<	U	0.16	0.42	2.1	<	U	0.17	0.43	2.2
Nitrobenzene	NA	<	U	0.098	0.22	0.23	<	U	0.098	0.21	0.23	<	U	0.097	0.21	0.22	<	U	0.096	0.21	0.22	<	U	0.097	0.21	0.22	<	U	0.095	0.21	0.22	<	U	0.098	0.22	0.23
RDX	2	0.59		0.056	0.22	0.23	1.3		0.055	0.21	0.23	0.19	J	0.055	0.21	0.22	0.21	J	0.054	0.21	0.22	<	U	0.055	0.21	0.22	1.2		0.054	0.21	0.22	<	U	0.056	0.22	0.23
Tetryl	NA	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.033	0.1	0.11	<	U	0.034	0.11	0.12
LABORATORY MNA PARAMETERS																																			
Alkalinity SM 2320B (mg/L)		300		3.1	6.4	10	310		3.1	6.4	10	290		3.1	6.4	10	240		3.1	6.4	10	390		3.1	6.4	10	450		3.1	6.4	10	550		3.1	6.4	10
Sulfate USEPA 9056A (mg/L)		160		1	2.5	5	170		1	2.5	5	130		1	2.5	5	200		5.2	13	25	390		5.2	13	25	72		1	2.5	5	12		1	2.5	5
Ammonia USEPA 350.1 (mg/L)		0.034	J	0.022	0.05	0.1	<	U	0.022	0.05	0.1	<	U	0.022	0.05	0.1	<	U	0.022	0.05	0.1	<	U	0.022	0.05	0.1	0.67		0.022	0.05	0.1	2.9		0.22	0.5	1
Nitrate/Nitrite USEPA 353.2 (mg/L)		4.4		0.019	0.05	0.1	5.1		0.019	0.05	0.1	6.8		0.019	0.05	0.1	38		0.19	0.5	1	<	U	0.019	0.05	0.1	5.8		0.019	0.05	0.1	<	U	0.019	0.05	0.1
Total Kjeldahl Nitrogen USEPA 351.2 (mg/L)		1.6		0.69	0.8	1	<	U	0.69	1	1	<	U	0.69	1	1	<	UJ	0.69	1	1	<	UJ	0.69	1	1	15	J	3.4	4	5	12		1.1	1.3	1.7
Dissolved Organic Carbon SM 9060A (mg/L)		3.8		0.35	0.8	1	3.2		0.35	0.8	1	3.3		0.35	0.8	1	3.2		0.35	0.8	1	3.3		0.35	0.8	1	7.4		0.35	0.8	1	22		0.35	0.8	1
Sulfide SM 9034 (mg/L)		0.8	J	0.79	1.9	4	<	U	0.79	1.9	4	<	U	0.79	1.9	4	<	U	0.79	1.9	4	0.8	J	0.79	1.9	4	<	UJ	0.79	1.9	4	<	U	0.79	1.9	4
Methane RSK-175 (µg/L)		140		0.63	1.3	5	18		0.63	1.3	5	<	U	0.63	1.3	5	<	U	0.63	1.3	5	90		0.63	1.3	5	17000		0.63	1.3	5	16000		0.63	1.3	5
Carbon Dioxide SM 2320B (mg/L)[1]		133		3.1	6.4	10	138		3.1	6.4	10	129		3.1	6.4	10	107		3.1	6.4	10	173		3.1	6.4	10	200		3.1	6.4	10	244		3.1	6.4	10

Notes:

Concentrations exceed HALs

[1]Carbon dioxide back calculated from alkalinity SM 2320B.

< = less than LOQ
µg/L = micrograms per liter
CHAAP = Cornhusker Army Ammunition Plant
DL = detection limit
HAL = health advisory level
HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification number
J = estimated
LOD = limit of detection
LOQ = limit of quantification
mg/L = milligrams per liter
MNA = monitored natural attenuation
MNX = mono-nitroso-RDX
NA = not available
OU = Operable Unit
PZ = piezometer
Qual = qualifier
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RSK = Robert S. Kerr Environmental Research Laboratory
SM = Standard Method
TNT = 2,4,6-trinitrotoluene
U = nondetect
USEPA = United States Environmental Protection Agency

TABLE 3-2
SUMMARY OF EXPLOSIVES DETECTED AND LABORATORY MNA PARAMETERS, OFF-POST AND ON-POST MONITORING WELLS
OU1 REBOUND STUDY, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

FIELD ID SAMPLE DATE	CHAAP HALs (µg/L)	ON-POST									
		PZ019-8 3/2/2022					PZ020-8 3/1/2022				
		Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ
EXPLOSIVES (USEPA Method 8330A) (µg/L)											
1,3,5-Trinitrobenzene	NA	<	U	0.082	0.2	0.21	2.7		0.089	0.21	0.22
1,3-Dinitrobenzene	NA	<	U	0.036	0.098	0.11	<	U	0.039	0.11	0.12
TNT	2	<	U	0.044	0.098	0.11	4.8		0.047	0.11	0.12
2,4-Dinitrotoluene	NA	<	U	0.027	0.078	0.098	<	U	0.029	0.084	0.11
2,6-Dinitrotoluene	NA	<	U	0.039	0.078	0.098	<	U	0.042	0.084	0.11
2-Amino-4,6-dinitrotoluene	NA	<	U	0.05	0.098	0.11	2.8		0.054	0.11	0.12
2-Nitrotoluene	NA	<	U	0.084	0.2	0.21	<	U	0.09	0.21	0.22
3-Nitrotoluene	NA	<	U	0.19	0.39	0.39	<	U	0.21	0.42	0.42
4-Amino-2,6-dinitrotoluene	NA	<	U	0.057	0.12	0.15	1.7		0.061	0.13	0.16
4-Nitrotoluene	NA	<	U	0.098	0.39	0.4	<	U	0.11	0.42	0.43
HMX	400	<	U	0.086	0.2	0.21	0.56		0.092	0.21	0.22
MNX	NA	<	U	0.15	0.39	2	<	U	0.16	0.42	2.1
Nitrobenzene	NA	<	U	0.089	0.2	0.21	<	U	0.096	0.21	0.22
RDX	2	<	U	0.05	0.2	0.21	<	U	0.054	0.21	0.22
Tetryl	NA	<	U	0.031	0.098	0.11	<	U	0.034	0.11	0.12
LABORATORY MNA PARAMETERS											
Alkalinity SM 2320B (mg/L)		140		3.1	6.4	10	330		3.1	6.4	10
Sulfate USEPA 9056A (mg/L)		83		1	2.5	5	140		1	2.5	5
Ammonia USEPA 350.1 (mg/L)		<	U	0.022	0.05	0.1	0.034	J	0.022	0.05	0.1
Nitrate/Nitrite USEPA 353.2 (mg/L)		48		0.38	1	2	16		0.095	0.25	0.5
Total Kjeldahl Nitrogen USEPA 351.2 (mg/L)		<	UJ	0.69	0.8	1	4.3		0.69	0.8	1
Dissolved Organic Carbon SM 9060A (mg/L)		2.2		0.35	0.8	1	4		0.35	0.8	1
Sulfide SM 9034 (mg/L)		0.8	J	0.79	1.9	4	0.8	J	0.79	1.9	4
Methane RSK-175 (µg/L)		<	U	0.63	1.3	5	<	U	0.63	1.3	5
Carbon Dioxide SM 2320B (mg/L)[1]		62		3.1	6.4	10	147		3.1	6.4	10

Notes:

Concentrations exceed HALs

[1]Carbon dioxide back calculated from alkalinity SM 2320B.

< = less than LOQ
µg/L = micrograms per liter
CHAAP = Cornhusker Army Ammunition Plant
DL = detection limit
HAL = health advisory level
HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification number
J = estimated
LOD = limit of detection
LOQ = limit of quantification
mg/L = milligrams per liter
MNA = monitored natural attenuation
MNX = mono-nitroso-RDX
NA = not available
OU = Operable Unit
PZ = piezometer
Qual = qualifier
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RSK = Robert S. Kerr Environmental Research Laboratory
SM = Standard Method
TNT = 2,4,6-trinitrotoluene
U = nondetect
USEPA = United States Environmental Protection Agency

TABLE 3-3
SUMMARY OF EXPLOSIVES DETECTED AND LABORATORY WATER QUALITY PARAMETERS, PERFORMANCE MONITORING WELLS
OU1 SUBSURFACE INJECTION, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

FIELD ID / SAMPLE DATE	CHAAP HALs (µg/L)	BETWEEN EW6 AND EW7																																				
		G0022-8 3/2/2022					PZ017R-8 3/2/2022					PZ018-8 3/2/2022					EW7-PM21A-8-25 2/26/2022					EW7-PM24A-8-25 2/26/2022					EW7-PM25A-8-25 2/25/2022					EW7-PM25B-8-35 2/25/2022				
		Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ
EXPLOSIVES (USEPA Method 8330A) (µg/L)																																						
1,3,5-Trinitrobenzene	NA	<	U	0.09	0.21	0.22	1.4		0.087	0.21	0.22	<	U	0.091	0.22	0.23	9.1		0.09	0.21	0.22	0.27		0.09	0.21	0.22	<	U	0.087	0.21	0.22	<	U	0.085	0.2	0.21
1,3-Dinitrobenzene	NA	<	U	0.039	0.11	0.12	<	U	0.038	0.1	0.11	<	U	0.04	0.11	0.12	<	U	0.04	0.11	0.12	<	U	0.039	0.11	0.12	<	U	0.038	0.1	0.11	<	U	0.037	0.1	0.11
TNT	2	0.081	J	0.048	0.11	0.12	5		0.047	0.1	0.11	<	U	0.049	0.11	0.12	4.1		0.048	0.11	0.12	<	U	0.048	0.11	0.12	<	U	0.047	0.1	0.11	<	U	0.046	0.1	0.11
2,4-Dinitrotoluene	NA	<	U	0.029	0.085	0.11	<	U	0.028	0.083	0.1	<	U	0.03	0.087	0.11	<	U	0.029	0.086	0.11	<	U	0.029	0.086	0.11	<	U	0.028	0.083	0.1	<	U	0.028	0.081	0.1
2,6-Dinitrotoluene	NA	<	U	0.043	0.085	0.11	<	U	0.042	0.083	0.1	<	U	0.043	0.087	0.11	<	U	0.043	0.086	0.11	<	U	0.043	0.086	0.11	<	U	0.042	0.083	0.1	<	U	0.041	0.081	0.1
2-Amino-4,6-dinitrotoluene	NA	0.33	J	0.054	0.11	0.12	3		0.053	0.1	0.11	<	U	0.055	0.11	0.12	3.2		0.054	0.11	0.12	<	U	0.054	0.11	0.12	<	U	0.053	0.1	0.11	<	U	0.051	0.1	0.11
2-Nitrotoluene	NA	<	U	0.091	0.21	0.22	<	U	0.089	0.21	0.22	<	U	0.093	0.22	0.23	<	U	0.092	0.21	0.22	<	U	0.092	0.21	0.22	<	U	0.089	0.21	0.22	<	U	0.087	0.2	0.21
3-Nitrotoluene	NA	<	U	0.21	0.43	0.43	<	U	0.2	0.42	0.42	<	U	0.21	0.43	0.43	<	U	0.21	0.43	0.43	<	U	0.21	0.43	0.43	<	UJ	0.2	0.42	0.42	<	UJ	0.2	0.41	0.41
4-Amino-2,6-dinitrotoluene	NA	0.51		0.061	0.13	0.16	5.3		0.06	0.12	0.16	<	U	0.062	0.13	0.16	2.2		0.062	0.13	0.16	0.34		0.062	0.13	0.16	<	UJ	0.06	0.12	0.16	<	UJ	0.058	0.12	0.15
4-Nitrotoluene	NA	<	U	0.11	0.43	0.44	<	U	0.1	0.42	0.43	<	U	0.11	0.43	0.44	<	U	0.11	0.43	0.44	<	U	0.11	0.43	0.44	<	U	0.1	0.42	0.43	<	U	0.1	0.41	0.42
HMX	400	<	U	0.093	0.21	0.22	<	UJ	0.091	0.21	0.22	<	U	0.095	0.22	0.23	<	U	0.094	0.21	0.22	<	U	0.094	0.21	0.22	<	U	0.091	0.21	0.22	<	U	0.089	0.2	0.21
MNX	NA	<	U	0.16	0.43	2.1	<	U	0.16	0.42	2.1	<	U	0.17	0.43	2.2	<	U	0.16	0.43	2.1	<	U	0.16	0.43	2.1	<	U	0.16	0.42	2.1	<	U	0.16	0.41	2
Nitrobenzene	NA	<	U	0.097	0.21	0.22	<	U	0.095	0.21	0.22	<	U	0.098	0.22	0.23	<	U	0.097	0.21	0.22	<	U	0.097	0.21	0.22	<	U	0.094	0.21	0.22	<	U	0.092	0.2	0.21
RDX	2	<	U	0.055	0.21	0.22	1.2		0.054	0.21	0.22	<	U	0.056	0.22	0.23	0.97		0.055	0.21	0.22	0.9	J	0.055	0.21	0.22	<	U	0.053	0.21	0.22	<	U	0.052	0.2	0.21
Tetryl	NA	<	U	0.034	0.11	0.12	<	U	0.033	0.1	0.11	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12	<	U	0.033	0.1	0.11	<	U	0.032	0.1	0.11
LABORATORY WATER QUALITY PARAMETERS																																						
Alkalinity SM 2320B (mg/L)		370		3.1	6.4	10	450		3.1	6.4	10	550		3.1	6.4	10	400		3.1	6.4	10	500		3.1	6.4	10	680		3.1	6.4	10	430		3.1	6.4	10
Sulfate USEPA 9056A (mg/L)		110		1	2.5	5	72		1	2.5	5	12		1	2.5	5	100		1	2.5	5	48		1	2.5	5	5.5		1	2.5	5	94		1	2.5	5
Ammonia USEPA 350.1 (mg/L)		0.74		0.022	0.05	0.1	0.67		0.022	0.05	0.1	2.9		0.22	0.5	1	1.9		0.022	0.05	0.1	1.8		0.022	0.05	0.1	2.2		0.022	0.05	0.1	2.9		0.022	0.05	0.1
Nitrate/Nitrite USEPA 353.2 (mg/L)		11		0.038	0.1	0.2	5.8		0.019	0.05	0.1	<	U	0.019	0.05	0.1	15		0.095	0.25	0.5	2.1		0.019	0.05	0.1	0.05		0.019	0.05	0.1	0.05		0.019	0.05	0.1
Total Kjeldahl Nitrogen USEPA 351.2 (mg/L)		<	UJ	0.69	0.8	1	15	J	3.4	4	5	12		1.1	1.3	1.7	0.8	J	0.69	1	1	4.2		0.69	1	1	6.4	J	3.4	5	5	5.5		0.86	1.3	1.3
Dissolved Organic Carbon SM 9060A (mg/L)		3.7		0.35	0.8	1	7.4		0.35	0.8	1	22		0.35	0.8	1	5.1		0.35	0.8	1	8.4		0.35	0.8	1	25		0.35	0.8	1	13		0.35	0.8	1
Sulfide SM 9034 (mg/L)		1.6	J	0.79	1.9	4	<	UJ	0.79	1.9	4	<	U	0.79	1.9	4	<	U	0.79	1.9	4	0.8	J	0.79	1.9	4	0.8		0.79	1.9	4	1.9		0.79	1.9	4
Methane RSK-175 (µg/L)		5100		0.63	1.3	5	17000		0.63	1.3	5	16000		0.63	1.3	5	12000		0.63	1.3	5	13000		0.63	1.3	5	9300	J	1.3	2.6	10	19000		0.63	1.3	5
Carbon Dioxide SM 2320B (mg/L)[1]		164		3.1	6.4	10	200		3.1	6.4	10	244		3.1	6.4	10	178		3.1	6.4	10	222		3.1	6.4	10	302		3.1	6.4	10	191		3.1	6.4	10

Notes:

Concentrations exceed HALs

[1]Carbon dioxide back calculated from alkalinity SM 2320B.

< = less than LOQ
µg/L = micrograms per liter
CHAAP = Cornhusker Army Ammunition Plant
DL = detection limit
EW = extraction well
HAL = health advisory level
HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification number
J = estimated
LOD = limit of detection
LOQ = limit of quantification
mg/L = milligrams per liter
MNX = mono-nitroso-RDX
NA = not available
OU = Operable Unit
PM = performance monitoring
Qual = qualifier
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RSK = Robert S. Kerr Environmental Research Laboratory
SM = Standard Method
TNT = 2,4,6-trinitrotoluene
U = nondetect
USEPA = United States Environmental Protection Agency

TABLE 3-3
SUMMARY OF EXPLOSIVES DETECTED AND LABORATORY WATER QUALITY PARAMETERS, PERFORMANCE MONITORING WELLS
OU1 SUBSURFACE INJECTION, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

FIELD ID / SAMPLE DATE	CHAAP HALs (µg/L)	BETWEEN EW6 AND EW7																										LOAD LINE 1				
		EW7-PM26A-8-25 2/25/2022					EW7-PM26B-8-35 2/25/2022					EW7-PM27B-8-35 2/26/2022					EW7-PM28A-8-25 2/26/2022					EW7-PM29A-8-25 2/26/2022					EW7-PM29B-8-35 2/24/2022					G0094-8 3/2/2022				
		Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ
EXPLOSIVES (USEPA Method 8330A) (µg/L)																																
1,3,5-Trinitrobenzene	NA	<	U	0.084	0.2	0.21	<	U	0.084	0.2	0.21	<	U	0.087	0.21	0.22	<	U	0.088	0.21	0.22	<	U	0.087	0.21	0.22	<	U	0.087	0.21	0.22	<	U	0.088	0.21	0.22
1,3-Dinitrobenzene	NA	<	U	0.037	0.1	0.11	<	U	0.037	0.1	0.11	<	U	0.038	0.1	0.11	<	U	0.039	0.1	0.12	<	U	0.038	0.1	0.11	<	U	0.038	0.1	0.11	1.1	J	0.039	0.1	0.12
TNT	2	1.1		0.045	0.1	0.11	<	U	0.045	0.1	0.11	<	U	0.047	0.1	0.11	<	U	0.047	0.1	0.12	<	U	0.046	0.1	0.11	<	U	0.047	0.1	0.11	48		0.24	0.52	0.58
2,4-Dinitrotoluene	NA	<	U	0.027	0.08	0.1	<	U	0.027	0.08	0.1	<	U	0.028	0.083	0.1	<	U	0.029	0.084	0.1	<	U	0.028	0.082	0.1	<	U	0.028	0.083	0.1	<	U	0.029	0.084	0.1
2,6-Dinitrotoluene	NA	<	U	0.04	0.08	0.1	<	U	0.04	0.08	0.1	<	U	0.042	0.083	0.1	<	U	0.042	0.084	0.1	<	U	0.041	0.082	0.1	<	U	0.042	0.083	0.1	<	U	0.042	0.084	0.1
2-Amino-4,6-dinitrotoluene	NA	2.7		0.051	0.1	0.11	<	U	0.051	0.1	0.11	<	U	0.053	0.1	0.11	<	U	0.053	0.1	0.12	<	U	0.052	0.1	0.11	<	U	0.053	0.1	0.11	57		0.27	0.52	0.58
2-Nitrotoluene	NA	<	U	0.085	0.2	0.21	<	U	0.086	0.2	0.21	<	U	0.089	0.21	0.22	<	U	0.09	0.21	0.22	<	U	0.088	0.21	0.22	<	U	0.089	0.21	0.22	<	U	0.09	0.21	0.22
3-Nitrotoluene	NA	<	UJ	0.19	0.4	0.4	<	UJ	0.2	0.4	0.4	<	U	0.2	0.41	0.41	<	U	0.2	0.42	0.42	<	U	0.2	0.41	0.41	<	UJ	0.2	0.41	0.41	<	U	0.2	0.42	0.42
4-Amino-2,6-dinitrotoluene	NA	3	J	0.058	0.12	0.15	<	UJ	0.058	0.12	0.15	<	U	0.06	0.12	0.16	<	U	0.06	0.13	0.16	<	U	0.059	0.12	0.15	<	UJ	0.06	0.12	0.16	65		0.3	0.63	0.79
4-Nitrotoluene	NA	<	U	0.1	0.4	0.41	<	U	0.1	0.4	0.41	<	U	0.1	0.41	0.43	<	U	0.1	0.42	0.43	<	U	0.1	0.41	0.42	<	U	0.1	0.41	0.42	<	U	0.1	0.42	0.43
HMX	400	0.85	J	0.087	0.2	0.21	<	U	0.088	0.2	0.21	<	U	0.091	0.21	0.22	<	U	0.092	0.21	0.22	<	U	0.09	0.21	0.22	<	U	0.091	0.21	0.22	11		0.092	0.21	0.22
MNX	NA	<	U	0.15	0.4	2	<	U	0.15	0.4	2	<	U	0.16	0.41	2.1	<	U	0.16	0.42	2.1	<	U	0.16	0.41	2.1	<	U	0.16	0.41	2.1	9.1	J	0.16	0.42	2.1
Nitrobenzene	NA	<	U	0.091	0.2	0.21	<	U	0.091	0.2	0.21	<	U	0.094	0.21	0.22	<	U	0.095	0.21	0.22	<	U	0.094	0.21	0.22	<	U	0.094	0.21	0.22	<	U	0.095	0.21	0.22
RDX	2	0.77		0.051	0.2	0.21	<	U	0.052	0.2	0.21	<	U	0.053	0.21	0.22	<	U	0.054	0.21	0.22	<	U	0.053	0.21	0.22	<	U	0.053	0.21	0.22	9		0.054	0.21	0.22
Tetryl	NA	<	U	0.032	0.1	0.11	<	U	0.032	0.1	0.11	<	U	0.033	0.1	0.11	<	U	0.033	0.1	0.12	<	U	0.033	0.1	0.11	<	U	0.033	0.1	0.11	<	U	0.033	0.1	0.12
LABORATORY WATER QUALITY PARAMETERS																																
Alkalinity SM 2320B (mg/L)		430		3.1	6.4	10	470		3.1	6.4	10	410		3.1	6.4	10	540		3.1	6.4	10	370		3.1	6.4	10	350		3.1	6.4	10	300		3.1	6.4	10
Sulfate USEPA 9056A (mg/L)		120		1	2.5	5	79		1	2.5	5	95		1	2.5	5	15		1	2.5	5	62		1	2.5	5	140	J	1	2.5	5	130		1	2.5	5
Ammonia USEPA 350.1 (mg/L)		0.62		0.022	0.05	0.1	2.1		0.022	0.05	0.1	3.9		0.022	0.05	0.1	3.6		0.022	0.05	0.1	1.4		0.022	0.05	0.1	2.8		0.022	0.05	0.1	3.3		0.022	0.05	0.1
Nitrate/Nitrite USEPA 353.2 (mg/L)		9.9		0.019	0.05	0.1	<	U	0.019	0.05	0.1	<	U	0.019	0.05	0.1	<	U	0.019	0.05	0.1	<	U	0.019	0.05	0.1	<	U	0.019	0.05	0.1	12		0.038	0.1	0.2
Total Kjeldahl Nitrogen USEPA 351.2 (mg/L)		<	UJ	0.69	1	1	4.6		0.86	1.3	1.3	5.6		0.69	1	1	7.6		3.4	5	5	2.8		0.69	1	1	4.9	J	0.69	1	1	2.8		0.69	0.8	1
Dissolved Organic Carbon SM 9060A (mg/L)		5.5		0.35	0.8	1	11		0.35	0.8	1	8.5		0.35	0.8	1	18		0.35	0.8	1	7.8		0.35	0.8	1	5.6		0.35	0.8	1	6.4		0.35	0.8	1
Sulfide SM 9034 (mg/L)		<	U	0.79	1.9	4	<	U	0.79	1.9	4	0.8	J	0.79	1.9	4	<	U	0.79	1.9	4	<	U	0.79	1.9	4	0.8		0.79	1.9	4	0.8	J	0.79	1.9	4
Methane RSK-175 (µg/L)		17000		0.63	1.3	5	11000		0.63	1.3	5	11000		0.63	1.3	5	15000		1.3	2.6	10	15000		1.3	2.6	10	4200		0.63	1.3	5	13000		0.63	1.3	5
Carbon Dioxide SM 2320B (mg/L)[1]		191		3.1	6.4	10	209		3.1	6.4	10	182		3.1	6.4	10	240		3.1	6.4	10	164		3.1	6.4	10	156		3.1	6.4	10	133		3.1	6.4	10

Notes:

Concentrations exceed HALs

[1]Carbon dioxide back calculated from alkalinity SM 2320B.

< = less than LOQ
µg/L = micrograms per liter
CHAAP = Cornhusker Army Ammunition Plant
DL = detection limit
EW = extraction well
HAL = health advisory level
HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
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MNX = mono-nitroso-RDX
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RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RSK = Robert S. Kerr Environmental Research Laboratory
SM = Standard Method
TNT = 2,4,6-trinitrotoluene
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USEPA = United States Environmental Protection Agency

TABLE 3-3
SUMMARY OF EXPLOSIVES DETECTED AND LABORATORY WATER QUALITY PARAMETERS, PERFORMANCE MONITORING WELLS
OU1 SUBSURFACE INJECTION, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

FIELD ID / SAMPLE DATE	CHAAP HALs (µg/L)	LOAD LINE 1					LOAD LINE 2																					DECANT STATION				
		G0096-8 3/2/2022					G0111-8 3/2/2022					G0121-8 3/2/2022					G0122-8 3/2/2022					G0123-8 3/2/2022					G0102-8 3/2/2022				
		Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ
EXPLOSIVES (USEPA Method 8330A) (µg/L)																																
1,3,5-Trinitrobenzene	NA	<	U	0.086	0.2	0.21	9.8		0.089	0.21	0.22	<	U	0.086	0.2	0.21	<	U	0.089	0.21	0.22	<	U	0.081	0.19	0.2	<	U	0.086	0.21	0.22
1,3-Dinitrobenzene	NA	<	U	0.038	0.1	0.11	<	U	0.039	0.11	0.12	<	U	0.038	0.1	0.11	<	U	0.039	0.11	0.12	<	U	0.036	0.097	0.11	<	U	0.038	0.1	0.11
TNT	2	<	U	0.046	0.1	0.11	6.4		0.048	0.11	0.12	<	U	0.046	0.1	0.11	<	U	0.048	0.11	0.12	<	U	0.044	0.097	0.11	<	U	0.046	0.1	0.11
2,4-Dinitrotoluene	NA	<	U	0.028	0.082	0.1	0.63		0.029	0.085	0.11	<	U	0.028	0.081	0.1	<	U	0.029	0.085	0.11	<	U	0.027	0.078	0.097	<	U	0.028	0.082	0.1
2,6-Dinitrotoluene	NA	<	U	0.041	0.082	0.1	<	U	0.042	0.085	0.11	<	U	0.041	0.081	0.1	<	U	0.042	0.085	0.11	<	U	0.039	0.078	0.097	<	U	0.041	0.082	0.1
2-Amino-4,6-dinitrotoluene	NA	<	U	0.052	0.1	0.11	6.6		0.054	0.11	0.12	<	U	0.052	0.1	0.11	<	U	0.054	0.11	0.12	<	U	0.049	0.097	0.11	<	U	0.052	0.1	0.11
2-Nitrotoluene	NA	<	U	0.087	0.2	0.21	<	U	0.091	0.21	0.22	<	U	0.087	0.2	0.21	<	U	0.09	0.21	0.22	<	U	0.083	0.19	0.2	<	U	0.088	0.21	0.22
3-Nitrotoluene	NA	<	U	0.2	0.41	0.41	<	UJ	0.21	0.42	0.42	<	U	0.2	0.41	0.41	<	U	0.21	0.42	0.42	<	U	0.19	0.39	0.39	<	U	0.2	0.41	0.41
4-Amino-2,6-dinitrotoluene	NA	0.61		0.059	0.12	0.15	6.5	J	0.061	0.13	0.16	<	U	0.059	0.12	0.15	<	U	0.061	0.13	0.16	<	U	0.056	0.12	0.15	<	U	0.059	0.12	0.15
4-Nitrotoluene	NA	<	U	0.1	0.41	0.42	<	U	0.11	0.42	0.43	<	U	0.1	0.41	0.42	<	U	0.11	0.42	0.43	<	U	0.097	0.39	0.4	<	U	0.1	0.41	0.42
HMX	400	27		0.45	1	1.1	<	U	0.093	0.21	0.22	<	U	0.089	0.2	0.21	<	U	0.093	0.21	0.22	<	U	0.085	0.19	0.2	<	U	0.09	0.21	0.22
MNX	NA	2.8	J	0.16	0.41	2	<	U	0.16	0.42	2.1	<	U	0.16	0.41	2	27	J	0.16	0.42	2.1	1.5	J	0.15	0.39	1.9	<	U	0.16	0.41	2.1
Nitrobenzene	NA	<	U	0.093	0.2	0.21	<	U	0.096	0.21	0.22	<	U	0.093	0.2	0.21	<	U	0.096	0.21	0.22	<	U	0.088	0.19	0.2	<	U	0.093	0.21	0.22
RDX	2	47		0.26	1	1.1	0.64		0.055	0.21	0.22	1.8	J	0.052	0.2	0.21	5.6		0.054	0.21	0.22	<	U	0.05	0.19	0.2	<	U	0.053	0.21	0.22
Tetryl	NA	<	U	0.032	0.1	0.11	<	U	0.034	0.11	0.12	<	U	0.032	0.1	0.11	<	U	0.034	0.11	0.12	<	U	0.031	0.097	0.11	<	U	0.033	0.1	0.11
LABORATORY WATER QUALITY PARAMETERS																																
Alkalinity SM 2320B (mg/L)		400		3.1	6.4	10	970		3.1	6.4	10	710		3.1	6.4	10	850		3.1	6.4	10	670		3.1	6.4	10	510		3.1	6.4	10
Sulfate USEPA 9056A (mg/L)		110		1	2.5	5	210		2.1	5	10	220		5.2	13	25	590	J	5.2	13	25	340		2.1	5	10	1200		10	25	50
Ammonia USEPA 350.1 (mg/L)		2.5		0.022	0.05	0.1	0.33		0.022	0.05	0.1	13		0.22	0.5	1	8.2		0.22	0.5	1	1.5		0.044	0.1	0.2	0.24	J	0.22	0.5	1
Nitrate/Nitrite USEPA 353.2 (mg/L)		2.8		0.019	0.05	0.1	0.75		0.019	0.05	0.1	<	U	0.019	0.05	0.1	0.061	J	0.019	0.05	0.1	<	U	0.019	0.05	0.1	<	U	0.019	0.05	0.1
Total Kjeldahl Nitrogen USEPA 351.2 (mg/L)		<	U	0.69	0.8	1	1.5		0.69	0.8	1	<	U	3.4	4	5	2.9	J	1.7	2	2.5	<	U	0.69	0.8	1	0.98	J	0.69	0.8	1
Dissolved Organic Carbon SM 9060A (mg/L)		6.1		0.35	0.8	1	9.1		0.35	0.8	1	43		0.35	0.8	1	18		0.35	0.8	1	7.9		0.35	0.8	1	5.6		0.35	0.8	1
Sulfide SM 9034 (mg/L)		0.8	J	0.79	1.9	4	<	U	0.79	1.9	4	2.8	J	0.79	1.9	4	2.4	J	0.79	1.9	4	0.8	J	0.79	1.9	4	12		0.79	1.9	4
Methane RSK-175 (µg/L)		9300		0.63	1.3	5	5900		0.63	1.3	5	18000		0.63	1.3	5	15000		0.63	1.3	5	15000		0.63	1.3	5	1500		0.63	1.3	5
Carbon Dioxide SM 2320B (mg/L)[1]		178		3.1	6.4	10	431		3.1	6.4	10	316		3.1	6.4	10	378		3.1	6.4	10	298		3.1	6.4	10	227		3.1	6.4	10

Notes:

Concentrations exceed HALs

[1]Carbon dioxide back calculated from alkalinity SM 2320B.

< = less than LOQ
µg/L = micrograms per liter
CHAAP = Cornhusker Army Ammunition Plant
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Qual = qualifier
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RSK = Robert S. Kerr Environmental Research Laboratory
SM = Standard Method
TNT = 2,4,6-trinitrotoluene
U = nondetect
USEPA = United States Environmental Protection Agency

TABLE 3-4
SUMMARY OF OU1 FIELD DUPLICATE SAMPLE PAIRS
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

WELL NUMBER	OS001-DP08-25											G0096									
FIELD ID	OS001-DP08-25					OS501-DP08-25						G0096-8					G0296-8				
SAMPLE DATE	2/23/2022					2/23/2022						3/2/2022					3/2/2022				
	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	RPD	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	RPD
EXPLOSIVES (USEPA Method 8330A) (µg/L)																						
1,3,5-Trinitrobenzene	<	U	0.084	0.2	0.21	<	U	0.083	0.2	0.21		<	U	0.086	0.2	0.21	<	U	0.082	0.19	0.2	
1,3-Dinitrobenzene	<	U	0.037	0.1	0.11	<	U	0.037	0.099	0.11		<	U	0.038	0.1	0.11	<	U	0.036	0.097	0.11	
TNT	21		0.045	0.1	0.11	21		0.045	0.099	0.11	0	<	U	0.046	0.1	0.11	<	U	0.044	0.097	0.11	
2,4-Dinitrotoluene	<	U	0.027	0.08	0.1	<	U	0.027	0.079	0.099		<	U	0.028	0.082	0.1	<	U	0.027	0.078	0.097	
2,6-Dinitrotoluene	<	U	0.04	0.08	0.1	<	U	0.04	0.079	0.099		<	U	0.041	0.082	0.1	<	U	0.039	0.078	0.97	
2-Amino-4,6-dinitrotoluene	3		0.051	0.1	0.11	3		0.05	0.099	0.11	0	<	U	0.052	0.1	0.11	<	U	0.049	0.097	0.11	
2-Nitrotoluene	<	U	0.085	0.2	0.21	<	U	0.085	0.2	0.21		<	U	0.087	0.2	0.21	<	U	0.083	0.19	0.2	
3-Nitrotoluene	<	UJ	0.19	0.4	0.4	<	UJ	0.19	0.4	0.4		<	U	0.2	0.41	0.41	<	U	0.19	0.39	0.39	
4-Amino-2,6-dinitrotoluene	3.7	J	0.058	0.12	0.15	3.8	J	0.057	0.12	0.15	3	0.61		0.059	0.12	0.15	0.62		0.056	0.12	0.15	<2x
4-Nitrotoluene	<	U	0.1	0.4	0.41	<	U	0.099	0.4	0.41		<	U	0.1	0.41	0.42	<	U	0.097	0.39	0.4	
HMX	0.2	J	0.087	0.2	0.21	<	UJ	0.087	0.2	0.21	<2x	27		0.45	1	1.1	29		0.43	0.97	1	7
MNX	<	U	0.15	0.4	2	<	U	0.15	0.4	2		2.8	J	0.16	0.41	2	6.1	J	0.15	0.39	1.9	<2x
Nitrobenzene	<	U	0.091	0.2	0.21	<	U	0.09	0.2	0.21		<	U	0.093	0.2	0.21	<	U	0.089	0.19	0.2	
RDX	0.7		0.051	0.2	0.21	0.69		0.051	0.2	0.21	<2x	47		0.26	1	1.1	49		0.25	0.97	1	4
Tetryl	<	U	0.032	0.1	0.11	<	U	0.032	0.099	0.11		<	U	0.032	0.1	0.11	<	U	0.031	0.097	0.11	
LABORATORY MNA PARAMETERS																						
Alkalinity SM 2320B (mg/L)												400		3.1	6.4	10	400		3.1	6.4	10	0
Sulfate USEPA 9056A (mg/L)												110		1	2.5	5	110		1	2.5	5	0
Ammonia USEPA 350.1 (mg/L)												2.5		0.022	0.05	0.1	2.6		0.022	0.05	0.1	4
Nitrate/Nitrite USEPA 353.2 (mg/L)												2.8		0.019	0.05	0.1	3.3		0.019	0.05	0.1	16
Total Kjeldahl Nitrogen USEPA 351.2 (mg/L)	No Analysis					No Analysis						<	U	0.69	0.8	1	0.82	J	0.69	0.8	1	<2x
Dissolved Organic Carbon SM 9060A (mg/L)												6.1		0.35	0.8	1	6.3		0.35	0.8	1	3
Sulfide SM 9034 (mg/L)												0.8	J	0.79	1.9	4	<	U	0.79	1.9	4	<2x
Methane RSK-175 (µg/L)												9300		0.63	1.3	5	7500		0.63	1.3	5	21
Carbon Dioxide SM 2320B (mg/L)[1]												178		3.1	6.4	10	178		3.1	6.4	10	0

Notes:

[1]Carbon dioxide back calculated from alkalinity SM 2320.

field duplicate RPD > 30 or >2X the LOQ

< = less than LOQ
µg/L = micrograms per liter
DL = detection limit
DP = direct push
HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification number
J = estimated
LOD = limit of detection
LOQ = limit of quantification
mg/L = milligrams per liter
MNA = monitored natural attenuation
MNX = mono-nitroso-RDX
OS = off-post sample
OU = Operable Unit
Qual = qualifier
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RPD = relative percent difference
RSK = Robert S. Kerr Environmental Research Laboratory
SM = Standard Method
TNT = 2,4,6-trinitrotoluene
U = nondetect
USEPA = United States Environmental Protection Agency
X = times

TABLE 3-4
SUMMARY OF OU1 FIELD DUPLICATE SAMPLE PAIRS
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

WELL NUMBER	G0111											PZ017R									
FIELD ID	G0111-8					G0311-8						PZ017R-8					PZ021-8				
SAMPLE DATE	3/2/2022					3/2/2022						3/2/2022					3/2/2022				
	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	RPD	Result	Qual	DL	LOD	LOQ	Result	Qual	DL	LOD	LOQ	RPD
EXPLOSIVES (USEPA Method 8330A) (µg/L)																						
1,3,5-Trinitrobenzene	9.8		0.089	0.21	0.22	15		0.089	0.21	0.22	42	1.4		0.087	0.21	0.22	1		0.089	0.21	0.22	<2x
1,3-Dinitrobenzene	<	U	0.039	0.11	0.12	<	U	0.039	0.11	0.12		<	U	0.038	0.1	0.11	<	U	0.039	0.11	0.12	
TNT	6.4		0.048	0.11	0.12	8.8		0.048	0.11	0.12	32	5		0.047	0.1	0.11	4.5		0.048	0.11	0.12	11
2,4-Dinitrotoluene	0.63		0.029	0.085	0.11	0.77		0.029	0.085	0.11	20	<	U	0.028	0.083	0.1	<	U	0.029	0.085	0.11	
2,6-Dinitrotoluene	<	U	0.042	0.085	0.11	<	U	0.042	0.085	0.11		<	U	0.042	0.083	0.1	<	U	0.043	0.085	0.11	
2-Amino-4,6-dinitrotoluene	6.6		0.054	0.11	0.12	7.5		0.054	0.11	0.12	13	3		0.053	0.1	0.11	2.9		0.054	0.11	0.12	3
2-Nitrotoluene	<	U	0.091	0.21	0.22	<	U	0.09	0.21	0.22		<	U	0.089	0.21	0.22	<	U	0.091	0.21	0.22	
3-Nitrotoluene	<	UJ	0.21	0.42	0.42	<	UJ	0.21	0.42	0.42		<	U	0.2	0.42	0.42	<	U	0.21	0.42	0.42	
4-Amino-2,6-dinitrotoluene	6.5	J	0.061	0.13	0.16	7.5	J	0.061	0.13	0.16	14	5.3		0.06	0.12	0.16	5.1		0.061	0.13	0.16	4
4-Nitrotoluene	<	U	0.11	0.42	0.43	<	U	0.11	0.42	0.43		<	U	0.1	0.42	0.43	<	U	0.11	0.42	0.44	
HMX	<	U	0.093	0.21	0.22	<	U	0.093	0.21	0.22		<	UJ	0.091	0.21	0.22	0.82	J	0.093	0.21	0.22	>2x
MNX	<	U	0.16	0.42	2.1	<	U	0.16	0.42	2.1		<	U	0.16	0.42	2.1	<	U	0.16	0.42	2.1	
Nitrobenzene	<	U	0.096	0.21	0.22	<	U	0.096	0.21	0.22		<	U	0.095	0.21	0.22	<	U	0.097	0.21	0.22	
RDX	0.64		0.055	0.21	0.22	0.69		0.054	0.21	0.22	<2x	1.2		0.054	0.21	0.22	1.2		0.055	0.21	0.22	0
Tetryl	<	U	0.034	0.11	0.12	<	U	0.034	0.11	0.12		<	U	0.033	0.1	0.11	<	U	0.034	0.11	0.12	
LABORATORY MNA PARAMETERS																						
Alkalinity SM 2320B (mg/L)	970		3.1	6.4	10	970		3.1	6.4	10	0	450		3.1	6.4	10	460		3.1	6.4	10	2
Sulfate USEPA 9056A (mg/L)	210		2.1	5	10	200		2.1	5	10	5	72		1	2.5	5	73		1	2.5	5	1
Ammonia USEPA 350.1 (mg/L)	0.33		0.022	0.05	0.1	0.34		0.022	0.05	0.1	<2x	0.67		0.022	0.05	0.1	0.84	J	0.22	0.5	1	<2x
Nitrate/Nitrite USEPA 353.2 (mg/L)	0.75		0.019	0.05	0.1	0.7		0.019	0.05	0.1	7	5.8		0.019	0.05	0.1	5.8	J	0.019	0.05	0.1	0
Total Kjeldahl Nitrogen USEPA 351.2 (mg/L)	1.5		0.69	0.8	1	1.6		0.69	0.8	1	<2x	15	J	3.4	4	5	1.5	J	0.69	0.8	1	>2x
Dissolved Organic Carbon SM 9060A (mg/L)	9.1		0.35	0.8	1	9.5		0.35	0.8	1	4	7.4		0.35	0.8	1	7.2		0.35	0.8	1	3
Sulfide SM 9034 (mg/L)	<	U	0.79	1.9	4	0.8	J	0.79	1.9	4	<2x	<	U	0.79	1.9	4	0.8	J	0.79	1.9	4	<2x
Methane RSK-175 (µg/L)	5900		0.63	1.3	5	5600		0.63	1.3	5	5	17000		0.63	1.3	5	19000		0.63	1.3	5	11
Carbon Dioxide SM 2320B (mg/L)[1]	431		3.1	6.4	10	431		3.1	6.4	10	0	200		3.1	6.4	10	204		3.1	6.4	10	2

Notes:

[1]Carbon dioxide back calculated from alkalinity SM 2320.

field duplicate RPD > 30 or >2X the LOQ

< = less than LOQ
µg/L = micrograms per liter
DL = detection limit
DP = direct push
HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification number
J = estimated
LOD = limit of detection
LOQ = limit of quantification
mg/L = milligrams per liter
MNA = monitored natural attenuation
MNX = mono-nitroso-RDX
OS = off-post sample
OU = Operable Unit
Qual = qualifier
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RPD = relative percent difference
RSK = Robert S. Kerr Environmental Research Laboratory
SM = Standard Method
TNT = 2,4,6-trinitrotoluene
U = nondetect
USEPA = United States Environmental Protection Agency
X = times

TABLE 3-5
FIELD WATER QUALITY PARAMETERS, OFF-POST AND ON-POST MONITORING WELLS
OU1 REBOUND STUDY, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Well Number	Sample Date	pH	Temperature (°C)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Ferrous Iron (mg/L)
OU1 Off-Post Monitoring Wells								
CA210	2/28/2022	6.86	11.52	1.738	2.83	140.7	3.18	0.28
CA211	2/28/2022	6.69	11.95	0.818	1.21	155.6	3.16	0.05
CA212	2/28/2022	7.12	12.92	0.587	0.12	108.8	3.45	0.28
CA213	2/28/2022	7.89	13.91	0.490	0.14	39.3	2.93	0.16
NW020	2/28/2022	6.97	14.55	1.366	6.40	135.0	2.58	0.09
NW021	2/28/2022	7.00	14.83	1.001	0.07	136.6	2.83	0.11
NW022	2/28/2022	7.21	14.10	1.207	0.66	-37.6	3.48	0.77
NW060	2/27/2022	6.42	13.19	0.206	9.84	141.0	3.65	0.11
NW061	2/27/2022	7.12	13.75	0.896	0.01	-63.8	23.40	1.73
NW062	2/27/2022	7.28	13.49	0.895	0.32	-86.0	3.32	0.84
NW070	2/27/2022	7.11	15.65	0.831	0.29	174.5	2.76	0.08
NW071	2/27/2022	6.48	13.91	0.681	2.15	181.9	4.34	0.13
OU1 On-Post Monitoring Wells								
G0024	3/1/2022	6.81	14.60	0.594	5.00	148.8	2.41	0.18
G0070	3/1/2022	6.91	13.67	0.501	0.17	20.1	3.14	0.16
G0075	3/1/2022	7.13	14.06	0.905	2.06	95.3	2.99	0.07
G0076	3/1/2022	6.82	13.56	1.286	0.01	-92.3	3.33	1.99
G0077	3/1/2022	6.57	16.08	0.803	3.61	180.8	1.91	0.17
G0078	3/1/2022	6.88	14.62	1.089	0.70	-8.9	0.77	0.55
G0079	3/1/2022	6.54	12.33	0.602	6.00	76.3	2.90	0.07
G0080	3/1/2022	6.72	14.35	0.910	0.08	137.9	1.62	0.14
G0081	3/1/2022	6.37	13.49	0.951	0.01	-26.1	3.22	1.74
G0082	3/1/2022	6.75	15.72	0.913	0.05	82.1	3.05	0.08
G0086	3/1/2022	6.83	14.02	0.915	0.09	172.9	0.24	0.13
G0087	3/1/2022	6.80	13.32	0.839	0.06	134.1	0.17	0.12
G0091	2/27/2022	6.80	13.16	1.096	5.12	139.5	3.00	0.06
G0092	2/27/2022	7.13	12.94	1.410	0.01	-5.2	3.27	0.21
PZ017R	3/2/2022	6.58	15.16	1.026	0.01	-57.3	3.30	1.11
PZ018	3/2/2022	6.38	14.35	1.174	0.11	-97.0	6.24	1.32
PZ019	3/2/2022	6.32	13.01	0.779	7.76	177.8	0.99	0.33
PZ020	3/1/2022	6.88	13.94	0.994	1.37	99.6	1.89	0.07

Notes:

Field water quality parameters for all wells were measured using an In-Situ Aqua TROLL 500 MPS equipped with a flow-through cell with the exception of turbidity and ferrous iron. Turbidity was measured using a LaMotte 2020 turbidity meter and ferrous iron was measured using a Hach colorimeter (DR/820).

°C = degrees Celsius
DO = dissolved oxygen
mg/L = milligrams per liter
MPS = multiprobe system
mS/cm = milliSiemens per centimeter
mV = millivolts
NTU = nephelometric turbidity units
ORP = oxidation/reduction potential
OU = Operable Unit
PZ = piezometer

TABLE 3-6
FIELD WATER QUALITY PARAMETERS, PERFORMANCE MONITORING WELLS
OU1 SUBSURFACE INJECTION, QUARTER 8
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Well Number	Sample Date	pH	Temperature (°C)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Ferrous Iron (mg/L)
Between EW6 and EW7								
G0022	3/2/2022	6.79	14.25	0.948	0.01	34.6	2.56	0.14
PZ017R	3/2/2022	6.58	15.16	1.026	0.01	-57.3	3.30	1.11
PZ018	3/2/2022	6.38	14.35	1.174	0.11	-97.0	6.24	1.32
EW7-PM21A	2/26/2022	6.63	11.55	1.001	0.10	-37.8	4.50	1.75
EW7-PM24A	2/26/2022	6.58	12.36	1.045	2.14	-70.1	6.16	2.39
EW7-PM25A	2/25/2022	6.28	10.50	1.125	0.01	-136.8	4.42	2.15
EW7-PM25B	2/25/2022	6.58	11.35	0.810	0.88	-108.4	5.93	1.67
EW7-PM26A	2/25/2022	6.77	10.80	1.073	0.09	-61.6	3.05	1.64
EW7-PM26B	2/25/2022	6.43	11.14	1.064	0.20	-97.2	4.85	1.73
EW7-PM27B	2/26/2022	6.54	11.78	0.977	3.63	-49.5	6.66	1.70
EW7-PM28A	2/26/2022	6.40	11.96	1.092	0.21	-104.6	6.69	1.81
EW7-PM29A	2/26/2022	6.52	12.14	0.827	0.02	-95.5	8.52	2.34
EW7-PM29B	2/24/2022	6.54	10.90	0.910	0.01	-225.9	8.42	2.26
Load Line 1								
G0094	3/2/2022	6.39	13.54	0.951	0.03	-30.0	2.26	2.19
G0096	3/2/2022	6.54	14.41	1.040	0.03	-77.3	3.93	3.29
Load Line 2								
G0111	3/2/2022	6.44	15.53	2.112	0.02	-9.2	2.32	0.61
G0121	3/2/2022	6.44	13.54	1.827	0.01	-141.5	5.66	2.24
G0122	3/2/2022	6.61	16.43	2.555	0.01	-112.9	2.39	1.33
G0123	3/2/2022	6.42	13.12	1.765	0.01	-94.2	1.59	3.00
Decant Station								
G0102	3/2/2022	7.14	14.69	2.769	0.01	-409.9	0.40	1.12

Notes:

Field water quality parameters for all wells were measured using an In-Situ Aqua TROLL 500 MPS equipped with a flow-through cell with the exception of turbidity and ferrous iron. Turbidity was measured using a LaMotte 2020 turbidity meter and ferrous iron was measured using a Hach colorimeter (DR/820).

> = greater than

°C = degrees Celsius

DO = dissolved oxygen

EW = extraction well

mg/L = milligrams per liter

MPS = multiprobe system

mS/cm = milliSiemens per centimeter

mV = millivolts

NTU = nephelometric turbidity units

ORP = oxidation/reduction potential

OU = Operable Unit

PM = performance monitoring

TABLE 5-1
SUMMARY OF RDX AND TNT CONCENTRATIONS
OU1 REBOUND STUDY LOCATIONS
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

	BASELINE		QUARTER 2		QUARTER 3		QUARTER 4		QUARTER 5		QUARTER 6		QUARTER 7		QUARTER 8	
Well Number / Sample Interval	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**
OU1 Off-Post Wells																
CA210	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CA211	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CA212	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CA213	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NW020	0.2	ND	0.94	0.6	1.5	0.59	2.3	0.62	1.2	0.8	1	0.93	0.44	1.2	0.22	1.1
NW021	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND	0.22	ND	0.17	ND
NW022	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NW050*	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
NW051*	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
NW052*	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
NW060	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NW061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NW062	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NW070	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NW071	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NW080*	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
NW081R*	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
NW082R*	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
OU1 On-Post Wells																
G0024	ND	ND	ND	ND	0.59	0.63	ND	0.2	ND	0.48	ND	0.44	ND	0.46	ND	0.66
G0070	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
G0075	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.19	ND
G0076	ND	ND	ND	ND	0.2	ND	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
G0077	0.91	3.2	0.19	2.7	0.46	3.3	0.34	3.4	0.82	3.6	1.2	4.3	1.7	4.5	0.5	4.2
G0078	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
G0079	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
G0080	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
G0081	ND	0.29	ND	ND	ND	ND	ND	ND	ND	ND	0.3	ND	ND	ND	ND	0.11
G0082	0.63	ND	ND	ND	0.68	ND	0.41	ND	0.53	ND	0.43	0.73	0.49	ND	0.59	ND
G0086	ND	3.8	ND	5.9	0.21	3.6	0.17	ND	0.59	4.9	0.84	4.9	0.95	5.5	1.3	5.8
G0087	ND	ND	ND	ND	0.15	ND	0.15	ND	0.17	ND	0.23	ND	0.22	ND	0.19	ND
G0091	0.81	ND	0.83	ND	0.59	ND	0.46	ND	0.27	ND	0.31	ND	0.32	ND	0.21	ND
G0092	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PZ017R	0.87	15	1.4	17	1.4	11	1.8	15	2.2	10	2.1	10	ND	0.37	1.2	5
PZ018	0.88	8	ND	19	1	ND	ND	17	ND	6	ND	4.6	ND	4	ND	ND
PZ019	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
PZ020	0.42	3.7	0.62	3.2	0.58	2.2	0.67	3.5	0.57	3.9	0.68	3.8	0.62	5.1	ND	4.8

Notes:

Concentrations exceed HALs

*Beginning Quarter 5, wells are no longer accessed/sampled due to private property restrictions.

µg/L = micrograms per liter
ND = nondetect
NS = not sampled
OS = off-post sample
OU = Operable Unit
PZ = piezometer
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
TNT = 2,4,6-trinitrotoluene

TABLE 5-1
SUMMARY OF RDX AND TNT CONCENTRATIONS
OU1 REBOUND STUDY LOCATIONS
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

	BASELINE		QUARTER 2		QUARTER 3		QUARTER 4		QUARTER 5		QUARTER 6		QUARTER 7		QUARTER 8	
Well Number / Sample Interval	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**	**RDX (µg/L)**	**TNT (µg/L)**
Direct Push Samples (Off-Post)																
OS001-25	ND	12	ND	9.2	0.19	32	ND	29	ND	20	0.4	26	0.51	26	0.7	21
OS001-35	ND	11	ND	8.2	0.21	11	1.8	15	0.82	2	ND	4.9	ND	8.7	ND	1.1
OS001-45	ND	ND	ND	1.1	0.17	2.2	ND	ND	ND	0.25	ND	0.34	ND	ND	ND	ND
OS002-25	0.63	1.3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
OS002-35	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
OS002-45	ND	3.3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
OS003-25	ND	ND	NS	NS	NS	NS	ND	ND	ND	0.2	ND	ND	ND	0.24	ND	ND
OS003-35	ND	3	NS	NS	NS	NS	ND	ND	ND	ND	ND	ND	ND	0.17	ND	0.14
OS003-45	ND	ND	NS	NS	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OS004-25	NS	NS	NS	NS	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
OS004-35	NS	NS	NS	NS	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
OS004-45	NS	NS	NS	NS	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
NW050R-20	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
NW050R-35	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
NW050R-60	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

Concentrations exceed HALs

*Beginning Quarter 5, wells are no longer accessed/sampled due to private property restrictions.

µg/L = micrograms per liter
ND = nondetect
NS = not sampled
OS = off-post sample
OU = Operable Unit
PZ = piezometer
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
TNT = 2,4,6-trinitrotoluene

TABLE 5-2
SUMMARY OF MNA PARAMETERS, OFF-POST AND ON-POST MONITORING WELLS
OU1 REBOUND STUDY
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Well Number	ORP (mV)								DO (mg/L)								Nitrate/Nitrite (mg/L)								Ammonia (mg/L)							
	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22
Shallow Wells																																
CA210	165.5	61.3	70	210.0	177.6	192.0	211.8	140.7	0.45	1.99	0.48	0.17	0.21	0.06	0.47	2.83	22	13	19	2.7	42	41	29	31	ND	ND	0.052	0.098	0.06	0.14	ND	0.15
NW020	113.9	41.1	153	118.2	138.9	193.0	162.5	135.0	3.30	6.04	6.30	5.41	5.54	6.69	5.90	6.40	62	49	42	56	68	59	33	55	0.46	0.025	ND	ND	ND	ND	ND	ND
NW050*	112.8	140.3	130	118.6	NS	NS	NS	NS	0.24	0.37	0.40	0.02	NS	NS	NS	NS	62	79	78	87	NS	NS	NS	NS	4.8	0.72	0.98	ND	NS	NS	NS	NS
NW060	171.6	29.2	130	156.7	196.7	214.5	126.7	141.0	10.75	10.20	10.63	9.26	10.23	10.89	9.43	9.84	1.8	3.0	2.4	4.9	4.1	2.4	3.6	4.2	0.14	ND	ND	ND	ND	ND	ND	ND
NW070	127.0	-307.4	-7	107.0	163.2	137.0	78.9	174.5	0.38	1.59	0.40	0.12	0.07	0.19	0.11	0.29	0.03	ND	ND	39	29	0.031	31	11	0.024	0.059	0.087	ND	ND	0.034	ND	ND
NW080*	197.0	146.2	186	133.8	NS	NS	NS	NS	7.28	8.38	7.66	7.38	NS	NS	NS	NS	47	32	26	40	NS	NS	NS	NS	0.029	ND	ND	ND	NS	NS	NS	NS
G0024	156.5	22.5	119	155.4	175.4	221.4	188.8	148.8	4.88	5.57	7.26	5.01	5.31	5.07	4.91	5.00	40	32	26	23	12	7.8	5.5	11	ND	0.025	ND	ND	ND	ND	ND	0.04
G0079	144.0	170.4	69	18.5	81.8	123.7	66.5	76.3	3.82	5.13	5.90	1.03	2.51	0.88	0.78	6.00	0.21	0.36	0.83	0.03	3.8	1.8	ND	2.9	ND	0.058	0.065	ND	ND	ND	ND	ND
G0091	156.8	27.4	105	196.8	170.1	94.3	126.0	139.5	2.79	3.13	6.55	6.99	5.53	4.74	6.00	5.12	32	27	40	4.1	40	38	40	38	ND	ND	ND	ND	ND	ND	ND	ND
PZ017R	173.9	154.3	111	68.6	6.8	144.5	-81.9	-57.3	5.68	2.63	3.44	0.65	0.01	0.03	0.02	0.01	41	26	30	20	10	24	0.11	5.8	0.060	0.13	ND	0.032	0.041	0.033	0.47	0.67
PZ018	167.4	177.2	127	136.6	-9.9	11.5	-32.3	-97.0	1.34	9.09	9.26	5.99	0.36	0.01	0.01	0.11	24	31	26	26	8.1	5.0	3.2	ND	0.21	0.023	ND	ND	0.055	0.32	0.65	2.9
PZ019	77.3	-4.3	112	166.3	162.2	145.8	207.1	177.8	6.44	9.44	10.83	9.36	7.35	8.36	9.01	7.76	34	31	34	36	37	36	38	48	ND	ND	ND	0.08	ND	ND	ND	ND
PZ020	160.2	166.3	104	114.1	104.1	92.8	134.4	99.6	2.54	4.17	7.07	4.06	2.65	2.77	0.76	1.37	29	28	38	27	14	13	13	16	ND	ND	0.032	ND	ND	ND	ND	0.034
Shallow-Intermediate Wells																																
CA211	161.2	33.6	94	188.2	162.3	149.5	170.0	155.6	0.44	0.93	0.78	0.10	0.75	0.70	0.23	1.21	30	34	33	5.7	40	32	36	30	0.11	ND	ND	0.032	ND	ND	ND	ND
NW021	112.2	26.7	150	137.5	-110.2	148.3	94.4	136.6	0.26	0.83	0.34	0.06	0.04	0.67	0.10	0.07	0.84	0.43	1.5	1.5	1.3	0.87	0.06	0.62	3.8	2.7	1.4	1.6	1.4	1.5	1.4	2.4
NW051*	132.3	157.2	126	159.1	NS	NS	NS	NS	0.32	7.01	0.37	0.56	NS	NS	NS	NS	27	36	24	45	NS	NS	NS	NS	ND	0.033	ND	ND	NS	NS	NS	NS
NW061	137.4	0.1	180	196.8	35.3	243.4	207.5	-63.8	0.18	0.68	0.38	0.22	0.03	0.29	0.41	0.01	4.6	10	5.7	26	8.3	9.8	12	5.4	5.7	3.8	4.5	4.1	3.6	2.4	3.9	4.6
NW071	158.1	-151.2	88	130.0	107.8	165.3	158.6	181.9	2.18	3.43	3.00	0.46	1.94	1.80	2.18	2.15	2.9	32	30	26	36	32	34	35	ND	ND	ND	ND	ND	ND	ND	ND
NW081R*	171.2	144.8	161	129.5	NS	NS	NS	NS	0.65	0.62	1.46	0.14	NS	NS	NS	NS	29	29	26	29	NS	NS	NS	NS	ND	ND	ND	ND	NS	NS	NS	NS
G0075	132.7	154.9	73	257.3	88.2	143.9	105.0	95.3	6.86	1.05	0.71	0.03	2.09	0.01	0.06	2.06	1.2	0.94	2.4	0.76	4.7	3.3	1.7	6.5	0.056	ND	0.062	0.059	0.055	ND	ND	0.047
G0077	144.8	20.4	115	115.5	194.5	165.7	160.6	180.8	1.86	5.43	2.67	2.62	2.34	1.55	1.19	3.61	20	16	13	14	10	9.0	17	12	ND	ND	0.052	ND	ND	ND	ND	ND
G0080	-16.4	32.0	36	148.6	48.7	170.1	120.3	137.9	1.23	1.02	0.39	0.2	0.09	0.04	0.02	0.08	2.7	2.8	2.9	3.1	3.2	1.4	4.0	4.9	0.064	0.41	0.83	ND	0.55	1.3	1.5	2.0
G0081	14.9	24.2	52	32.7	-25.1	204.1	-18.8	-26.1	0.18	0.75	0.59	0.07	0.05	0.39	0.01	0.01	0.36	0.051	ND	0.02	ND	3.6	0.14	0.064	0.26	0.26	0.31	0.34	0.35	ND	0.44	0.48
G0082	32.9	14.4	-12	104.1	-21.0	105.6	178.0	82.1	0.20	0.51	0.23	0.23	0.13	0.13	0.04	0.05	3.4	0.31	0.46	0.69	2.4	2.8	4.4	4.4	ND	ND	0.11	0.30	0.027	0.190	ND	0.034
G0086	156.2	12.2	111	193.8	70.7	186.9	194.0	172.9	0.52	0.69	1.14	0.05	0.06	0.13	0.18	0.09	4.8	2.6	6.5	3.8	3.0	5.4	6.6	5.1	ND	0.039	0.025	ND	ND	ND	ND	ND
G0087	164.9	14.3	111	115.9	100.1	121.2	203.5	134.1	0.39	0.80	0.40	0.09	0.05	0.25	0.15	0.06	1.3	2.0	2.7	7.8	9.9	8.2	7.6	6.8	ND	ND	0.032	ND	ND	ND	ND	ND
G0092	122.9	14.7	103	56.4	43.8	15.0	5.0	-5.2	0.26	0.74	0.41	0.11	0.04	0.06	0.03	0.01	0.45	0.19	0.18	ND	ND	ND	0.037	ND	ND	ND	0.031	ND	ND	ND	ND	ND
Intermediate Wells																																
CA212	149.6	22.3	98	167.4	161.4	124.8	135.5	108.8	0.46	0.89	0.41	0.13	0.05	0.05	0.10	0.12	14	17	18	14	15	14	17	15	ND	ND	ND	ND	ND	ND	ND	ND
NW022	26.7	15.4	85	-34.9	-19.9	-29.7	-48.5	-37.6	0.19	0.72	0.33	0.05	0.08	0.03	0.15	0.66	53	ND	ND	ND	ND	ND	0.21	0.34	0.42	0.47	1.4	1.3	1.2	1.4	1.1	1.1
NW052*	134.5	87.4	27	20.1	NS	NS	NS	NS	0.66	0.31	0.36	0.63	NS	NS	NS	NS	0.12	0.022	0.052	ND	NS	NS	NS	NS	0.027	0.039	0.031	0.029	NS	NS	NS	NS
NW062	38.6	-15.8	-67	-62.2	-100.6	-56.9	-81.1	-86.0	0.26	0.65	0.33	0.15	0.05	0.21	0.22	0.32	ND	ND	ND	ND	ND	0.053	ND	ND	0.59	0.63	0.91	0.35	0.86	1.0	1.2	1.8
NW082R*	153.8	144.8	153	151.9	NS	NS	NS	NS	0.50	0.51	0.49	0.01	NS	NS	NS	NS	20	18	17	25	NS	NS	NS	NS	ND	ND	0.024	ND	NS	NS	NS	NS
G0076	-36.2	83.2	-27	-13.1	-49.0	-10.4	-63.4	-92.3	1.91	0.23	0.56	0.09	0.05	0.01	0.10	0.01	ND	ND	ND	ND	ND	ND	ND	ND	1.1	1.1	1.4	1.4	1.3	1.6	1.8	2.3
G0078	28.1	9.9	68	-21.2	-10.9	-21.5	-6.1	-8.9	0.25	0.45	0.31	0.09	0.10	0.08	0.02	0.70	ND	ND	ND	ND	ND	ND	0.03	0.022	0.53	0.48	0.46	0.42	0.30	0.29	0.21	0.19
Deep Wells																																
CA213	118.3	17.4	95	97.9	172.3	106.5	107.5	39.3	0.22	1.51	0.48	0.09	0.66	0.33	0.15	0.14	1.3	1.4	1.0	0.81	1.3	1.5	2.1	3.6	ND	ND	ND	1.0	ND	ND	ND	0.026
G0070	16.5	87.3	120	68.5	84.2	176.3	30.9	20.1	3.29	0.58	1.40	0.54	1.80	5.09	1.76	0.17	0.025	ND	ND	ND	ND	ND	ND	ND	ND	0.023	0.039	0.025	ND	ND	ND	0.029

Notes:

*Beginning Quarter 5, wells are no longer accessed/sampled due to private property restrictions.

µg/L = micrograms per liter
CO_2 = carbon dioxide
DO = dissolved oxygen
DOC = dissolved organic carbon
mg/L = milligrams per liter
MNA = monitored natural attenuation
mS/cm = milliSiemens per centimeter
mV = millivolts
NA = no analysis
ND = nondetect
NS = no sample/measurement collected
NS* = specific conductance not measured due to instrument error
ORP = oxidation/reduction potential
OU = Operable Unit
PZ = piezometer
TKN = total Kjeldahl nitrogen

TABLE 5-2
SUMMARY OF MNA PARAMETERS, OFF-POST AND ON-POST MONITORING WELLS
OU1 REBOUND STUDY
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Well Number	TKN (mg/L)								DOC (mg/L)								CO_2 (mg/L)								Methane (µg/L)							
	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22
Shallow Wells																																
CA210	ND	1.5	0.72	ND	ND	ND	ND	ND	9.7	14	14	9.2	7.8	9.5	10	1.0	138	156	151	142	164	173	182	196	23	6.6	2.3	1.6	1.7	2.7	0.74	ND
NW020	ND	ND	ND	ND	ND	ND	ND	ND	3.6	6.1	5.9	6.7	6.2	6.9	6.1	7.3	129	138	142	151	160	151	160	142	ND	ND	ND	ND	ND	ND	ND	ND
NW050*	ND	ND	ND	ND	NS	NS	NS	NS	8.1	8.7	6.5	6.5	NS	NS	NS	NS	107	116	98	80	NS	NS	NS	NS	1.4	ND	ND	2.1	NS	NS	NS	NS
NW060	ND	ND	ND	ND	ND	ND	ND	ND	1.8	1.6	0.96	2.5	2.2	2.6	2.7	2.0	15	14	12	28	18	16	26	20	ND	ND	ND	ND	20	ND	ND	ND
NW070	ND	1.1	1.3	ND	ND	2.0	ND	ND	7.2	9.3	10	5.9	6.4	15	8.2	8.4	23	49	32	67	93	53	84	107	18	630	3900	ND	ND	7.5	ND	ND
NW080*	ND	ND	ND	ND	NS	NS	NS	NS	4.7	3.9	3.9	4.0	NS	NS	NS	NS	111	116	93	84	NS	NS	NS	NS	ND	ND	ND	ND	NS	NS	NS	NS
G0024	ND	ND	ND	ND	ND	ND	ND	1.1	4.9	5.8	5.5	5.3	4.0	3.3	3.9	3.6	49	89	129	89	107	98	93	93	ND	ND	ND	ND	ND	ND	ND	ND
G0079	0.76	ND	ND	1.3	ND	0.83	0.74	ND	3.2	2.6	6.0	8.8	3.6	5.0	6.0	5.1	58	58	138	67	124	138	53	102	ND	ND	ND	ND	2.6	ND	ND	ND
G0091	ND	ND	ND	ND	ND	ND	ND	ND	3.6	3.4	3.8	3.7	2.8	3.1	3.3	3.2	160	160	124	111	116	120	124	107	ND	ND	ND	ND	ND	ND	ND	ND
PZ017R	ND	ND	ND	ND	ND	ND	2.0	15	3.5	4.5	5.1	5.4	6.8	4.2	9.1	7.4	62	116	84	120	196	124	258	200	140	520	1800	7800	120	6500	21000	17000
PZ018	ND	ND	ND	ND	14	2.4	2.8	12	3.3	3.3	4.0	3.9	7.9	11	13	22	89	32	43	44	142	160	209	244	240	ND	ND	60	8600	7900	16000	16000
PZ019	ND	ND	ND	ND	ND	ND	ND	ND	2.2	2.1	2.0	ND	1.8	2.0	2.0	2.2	39	32	33	30	53	58	49	62	ND	ND	ND	ND	15000	ND	ND	ND
PZ020	ND	ND	ND	ND	ND	ND	ND	4.3	3.8	4.6	6.4	5.7	3.4	3.5	3.6	4.0	124	142	138	147	151	142	156	147	ND	ND	ND	ND	0.78	0.79	ND	ND
Shallow-Intermediate Wells																																
CA211	ND	ND	ND	ND	ND	ND	ND	ND	4.3	4.9	6.0	4.2	4.8	4.7	4.9	4.3	89	93	93	84	102	80	98	80	ND	ND	ND	ND	ND	ND	ND	ND
NW021	3.5	2.8	1.8	1.9	1.7	1.7	1.6	2.7	2.9	2.8	2.8	3.3	2.6	3.3	2.9	3.1	182	178	151	147	164	151	169	156	55	1.2	5.7	4.2	8.5	34	280	120
NW051*	ND	ND	ND	ND	NS	NS	NS	NS	9.0	9.4	9.2	9.1	NS	NS	NS	NS	156	156	147	124	NS	NS	NS	NS	8.3	4.9	1.9	0.9	NS	NS	NS	NS
NW061	4.9	2.6	2.5	1.2	3.4	1.8	2.8	4.8	4.4	4.2	4.1	3.5	4.7	4.7	5.1	6.0	133	124	120	93	129	129	133	147	21	14	19	13	62	28	74	140
NW071	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.3	3.7	4.1	2.8	3.2	3.0	2.9	49	44	43	42	44	49	49	44	ND	ND	ND	140	ND	ND	ND	ND
NW081R*	ND	ND	ND	ND	NS	NS	NS	NS	4.5	4.6	5.0	4.3	NS	NS	NS	NS	111	111	98	98	NS	NS	NS	NS	ND	ND	ND	ND	NS	NS	NS	NS
G0075	0.92	ND	ND	ND	ND	ND	ND	ND	3.4	3.1	3.4	2.7	2.4	2.7	3.2	3.0	173	164	160	142	129	129	156	124	12	ND	ND	ND	0.75	ND	28	ND
G0077	ND	ND	ND	ND	ND	ND	ND	4.6	4.5	4.0	3.6	3.9	2.8	4.4	4.6	4.5	138	111	116	102	124	138	160	133	26	ND	ND	ND	47	530	960	1800
G0080	ND	0.70	0.97	ND	ND	2.1	1.6	1.6	2.9	2.7	2.8	2.6	2.7	8.3	4.0	3.4	156	151	138	133	156	120	151	169	1.1	4.6	8.8	2.0	5.0	1.1	6.9	7.8
G0081	ND	0.69	1.1	1.1	ND	ND	1.1	4.0	7.8	6.5	6.6	5.1	5.3	3.6	5.7	5.9	164	156	124	138	151	124	164	142	3500	2400	1100	2100	1000	76	1100	920
G0082	ND	ND	ND	ND	ND	0.96	ND	1.6	ND	4.5	4.0	3.0	3.2	4.9	3.1	3.8	111	138	116	120	129	164	129	133	1100	2700	460	2200	230	850	720	140
G0086	ND	ND	ND	ND	ND	ND	ND	ND	2.6	2.7	3.6	3.1	2.3	3.0	2.9	3.2	138	151	124	124	138	138	151	138	110	150	22	31	44	14	9.2	18
G0087	ND	ND	1.1	ND	ND	ND	ND	ND	2.9	2.8	2.9	2.8	2.4	2.8	2.9	3.3	138	142	138	120	133	129	142	129	ND	ND	ND	ND	ND	ND	ND	ND
G0092	ND	ND	ND	ND	ND	ND	ND	ND	2.9	2.8	2.9	3.3	2.5	2.7	3.1	3.3	182	169	156	142	164	160	187	173	1.1	1.4	18	9.3	11	3.6	70	90
Intermediate Wells																																
CA212	ND	ND	ND	ND	ND	ND	ND	ND	2.6	2.7	3.1	2.5	2.1	2.4	2.7	2.3	84	102	76	84	80	76	89	76	ND	ND	ND	ND	ND	ND	ND	ND
NW022	ND	0.70	1.7	1.5	1.5	1.4	1.4	1.5	2.9	2.7	2.6	3.4	2.8	3.4	3.1	3.5	182	191	178	178	204	191	196	169	290	250	440	420	350	430	320	200
NW052*	0.80	0.80	1.0	1.6	NS	NS	NS	NS	6.3	6.7	6.6	9.7	NS	NS	NS	NS	169	160	142	164	NS	NS	NS	NS	150	240	450	630	NS	NS	NS	NS
NW062	1.0	1.3	1.5	1.1	1.1	ND	1.6	2.0	2.8	2.5	2.3	2.3	2.6	2.9	3.0	2.9	120	120	107	107	120	120	129	120	18	21	21	20	ND	7.6	24	24
NW082R*	ND	ND	ND	ND	NS	NS	NS	NS	ND	4.0	4.2	3.6	NS	NS	NS	NS	107	107	102	93	NS	NS	NS	NS	ND	0.66	2.0	ND	NS	NS	NS	NS
G0076	1.3	1.2	1.3	1.8	1.1	1.8	2.0	2.5	ND	2.9	3.3	2.6	2.7	3.4	5.2	3.6	156	156	142	138	156	164	169	173	330	200	180	190	310	210	490	450
G0078	ND	ND	ND	0.80	ND	0.70	ND	3.0	2.8	2.8	3.8	3.2	2.3	2.9	3.0	3.1	187	182	151	133	142	142	151	142	350	240	130	71	ND	130	210	200
Deep Wells																																
CA213	0.97	ND	ND	ND	ND	ND	ND	ND	2.2	2.0	1.7	1.8	1.7	2.0	2.2	2.2	58	53	53	53	58	58	62	58	ND	ND	ND	ND	ND	ND	ND	ND
G0070	ND	ND	ND	ND	ND	ND	ND	ND	1.0	0.89	1.0	0.75	0.89	1.1	1.1	1.4	98	102	89	89	93	98	102	98	ND	ND	ND	ND	ND	ND	0.85	0.91

Notes:

*Beginning Quarter 5, wells are no longer accessed/sampled due to private property restrictions.

µg/L = micrograms per liter
CO_2 = carbon dioxide
DO = dissolved oxygen
DOC = dissolved organic carbon
mg/L = milligrams per liter
MNA = monitored natural attenuation
mS/cm = milliSiemens per centimeter
mV = millivolts
NA = no analysis
ND = nondetect
NS = no sample/measurement collected
NS* = specific conductance not measured due to instrument error
ORP = oxidation/reduction potential
OU = Operable Unit
PZ = piezometer
TKN = total Kjeldahl nitrogen

TABLE 5-2
SUMMARY OF MNA PARAMETERS, OFF-POST AND ON-POST MONITORING WELLS
OU1 REBOUND STUDY
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Well Number	Alkalinity (mg/L)								Ferrous Iron (mg/L)								Sulfate (mg/L)								Sulfide (mg/L)							
	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22
Shallow Wells																																
CA210	310	350	340	320	370	390	410	440	ND	0.44	1.13	ND	0.18	0.15	0.04	0.28	120	99	150	190	190	190	210	210	ND	ND	ND	ND	ND	ND	0.80	ND
NW020	290	310	320	340	360	340	360	320	0.07	0.14	0.96	ND	0.15	ND	0.18	0.09	150	200	230	190	230	240	190	220	ND	NA	ND	ND	0.80	ND	ND	1.6
NW050*	240	260	220	180	NS	NS	NS	NS	ND	0.02	0.30	ND	NS	NS	NS	NS	120	210	200	190	NS	NS	NS	NS	ND	NA	ND	ND	NS	NS	NS	NS
NW060	33	31	28	64	41	36	58	45	ND	ND	0.10	ND	ND	0.10	0.20	0.11	3.8	7.5	5.2	20	30	9.4	30	26	ND	0.80	ND	ND	ND	ND	ND	ND
NW070	51	110	72	150	210	120	190	240	ND	0.35	1.21	ND	ND	0.04	0.14	0.08	3.9	6.4	5.9	93	98	18	98	87	ND	0.80	ND	ND	ND	ND	ND	ND
NW080*	250	260	210	190	NS	NS	NS	NS	ND	0.02	0.26	ND	NS	NS	NS	NS	200	160	130	130	NS	NS	NS	NS	ND	ND	ND	ND	NS	NS	NS	NS
G0024	110	200	290	200	240	220	210	210	ND	0.07	1.26	ND	0.10	0.04	0.90	0.18	50	110	150	98	65	54	61	54	ND	NA	ND	ND	0.80	ND	3.6	ND
G0079	130	130	310	150	280	310	120	230	0.06	ND	0.25	ND	0.30	0.03	0.40	0.07	17	12	48	53	68	50	31	67	ND	ND	ND	ND	ND	ND	0.8	ND
G0091	360	360	280	250	260	270	280	240	ND	ND	0.28	ND	0.14	0.02	0.23	0.06	190	200	190	190	210	200	170	200	ND	ND	ND	ND	ND	0.80	ND	ND
PZ017R	140	260	190	270	440	280	580	450	ND	0.04	0.42	ND	1.25	0.27	0.54	1.11	74	83	62	64	53	81	34	72	ND	NA	ND	1.6	ND	ND	ND	ND
PZ018	200	73	96	100	320	360	470	550	ND	0.02	0.42	ND	2.62	6.30	0.54	1.32	100	62	67	65	49	53	36	12	ND	NA	ND	ND	ND	ND	ND	ND
PZ019	88	73	75	68	120	130	110	140	0.07	0.06	0.23	ND	0.23	0.05	0.05	0.33	67	57	58	62	71	79	71	83	ND	0.80	ND	ND	0.80	0.80	0.80	0.80
PZ020	280	320	310	330	340	320	350	330	0.11	0.06	0.91	ND	0.05	ND	0.01	0.07	160	160	190	170	160	150	130	140	ND	NA	ND	ND	ND	0.80	3.2	0.80
Shallow-Intermediate Wells																																
CA211	200	210	210	190	230	180	220	180	ND	ND	0.91	ND	0.08	0.02	0.02	0.05	93	99	110	97	120	89	110	96	ND	ND	0.80	ND	ND	ND	1.6	0.80
NW021	410	400	340	330	370	340	380	350	ND	0.06	1.09	ND	0.18	0.02	0.18	0.11	210	210	220	200	200	200	200	180	ND	NA	ND	ND	0.80	0.80	ND	0.80
NW051*	350	350	330	280	NS	NS	NS	NS	ND	0.08	0.41	ND	NS	NS	NS	NS	170	180	190	190	NS	NS	NS	NS	ND	NA	ND	ND	NS	NS	NS	NS
NW061	300	280	270	210	290	290	300	330	ND	NS	0.20	ND	ND	0.03	0.42	1.73	170	160	170	160	140	150	140	160	ND	ND	ND	ND	ND	ND	ND	0.80
NW071	110	100	96	95	98	110	110	98	ND	0.12	0.95	ND	0.18	0.08	0.16	0.13	60	54	64	61	63	63	65	58	ND	ND	ND	ND	ND	0.80	1.6	0.80
NW081R*	250	250	220	220	NS	NS	NS	NS	ND	ND	0.62	ND	NS	NS	NS	NS	98	91	95	97	NS	NS	NS	NS	ND	ND	0.80	ND	NS	NS	NS	NS
G0075	390	370	360	320	290	290	350	280	ND	ND	0.25	ND	0.14	0.10	0.61	0.07	150	170	150	200	160	190	190	170	ND	ND	ND	ND	0.80	ND	ND	ND
G0077	310	250	260	230	280	310	360	300	ND	0.06	1.28	ND	0.16	ND	0.35	0.17	150	100	99	110	140	140	130	120	ND	NA	0.80	ND	ND	0.80	ND	ND
G0080	350	340	310	300	350	270	340	380	0.45	ND	0.78	ND	0.21	ND	ND	0.14	ND	72	87	98	100	100	81	98	2.9	ND	ND	ND	ND	0.80	ND	ND
G0081	370	350	280	310	340	280	370	320	0.68	0.62	0.71	0.51	1.16	0.04	1.54	1.74	120	140	190	130	170	140	150	170	ND	0.80	ND	ND	ND	ND	0.80	ND
G0082	250	310	260	270	290	370	290	300	0.04	1.35	0.10	ND	0.20	ND	0.03	0.08	76	130	130	140	170	99	140	160	ND	ND	ND	ND	ND	ND	ND	0.80
G0086	310	340	280	280	310	310	340	310	ND	0.04	0.16	ND	ND	0.02	0.05	0.13	140	150	130	160	200	180	170	170	ND	NA	ND	ND	ND	ND	ND	ND
G0087	310	320	310	270	300	290	320	290	0.06	0.23	0.16	ND	0.06	ND	0.06	0.12	120	120	110	100	99	110	130	130	ND	NA	ND	ND	0.80	0.80	ND	ND
G0092	410	380	350	320	370	360	420	390	ND	ND	0.22	ND	0.10	0.12	0.36	0.21	300	290	330	340	370	350	360	390	ND	ND	0.80	ND	ND	0.80	0.80	0.80
Intermediate Wells																																
CA212	190	230	170	190	180	170	200	170	ND	2.98	0.93	ND	0.16	0.10	0.14	0.28	72	73	79	79	78	68	84	72	ND	ND	ND	ND	ND	0.80	0.80	0.80
NW022	410	430	400	400	460	430	440	380	0.27	1.02	1.94	0.34	1.00	0.92	0.21	0.77	360	260	290	250	260	250	250	280	ND	NA	ND	ND	ND	0.80	0.80	0.88
NW052*	380	360	320	370	NS	NS	NS	NS	ND	0.39	0.96	0.62	NS	NS	NS	NS	130	130	140	150	NS	NS	NS	NS	ND	NA	ND	ND	NS	NS	NS	NS
NW062	270	270	240	240	270	270	290	270	0.18	0.94	0.84	0.47	0.73	0.94	0.33	0.84	180	180	190	180	190	190	200	200	ND	ND	ND	ND	0.80	ND	ND	ND
NW082R*	240	240	230	210	NS	NS	NS	NS	0.34	ND	0.33	ND	NS	NS	NS	NS	86	88	85	88	NS	NS	NS	NS	ND	NA	ND	ND	NS	NS	NS	NS
G0076	350	350	320	310	350	370	380	390	1.68	1.21	0.25	1.33	2.11	2.42	0.59	1.99	280	280	310	300	320	320	280	310	ND	ND	ND	ND	ND	ND	0.80	ND
G0078	420	410	340	300	320	320	340	320	0.48	0.79	1.11	0.11	1.41	1.09	0.92	0.55	250	260	250	250	270	270	250	260	ND	NA	ND	ND	ND	0.80	ND	ND
Deep Wells																																
CA213	130	120	120	120	130	130	140	130	ND	0.09	1.02	ND	ND	0.60	0.09	0.16	63	60	57	61	64	60	70	65	ND	NA	ND	ND	ND	ND	0.80	1.6
G0070	220	230	200	200	210	220	230	220	ND	ND	0.32	ND	ND	ND	0.46	0.16	34	33	39	40	43	44	47	48	ND	ND	ND	ND	ND	ND	0.80	ND

Notes:

*Beginning Quarter 5, wells are no longer accessed/sampled due to private property restrictions.

µg/L = micrograms per liter
CO_2 = carbon dioxide
DO = dissolved oxygen
DOC = dissolved organic carbon
mg/L = milligrams per liter
MNA = monitored natural attenuation
mS/cm = milliSiemens per centimeter
mV = millivolts
NA = no analysis
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NS* = specific conductance not measured due to instrument error
ORP = oxidation/reduction potential
OU = Operable Unit
PZ = piezometer
TKN = total Kjeldahl nitrogen

TABLE 5-2
SUMMARY OF MNA PARAMETERS, OFF-POST AND ON-POST MONITORING WELLS
OU1 REBOUND STUDY
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Well Number	pH								Conductance (mS/cm)							
	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22	Oct-19	Mar-20	Jun-20	Oct-20	Mar-21	May-21	Oct-21	Mar-22
Shallow Wells																
CA210	6.55	5.83	6.40	6.66	6.75	6.66	6.73	6.86	0.977	0.708	1.550	1.560	1.545	1.611	1.735	1.738
NW020	6.53	6.45	6.57	6.81	6.90	6.85	6.69	6.97	1.118	0.994	1.450	1.510	1.504	1.633	1.301	1.366
NW050*	6.71	6.50	5.97	6.56	NS	NS	NS	NS	1.178	1.916	0.567	1.560	NS	NS	NS	NS
NW060	6.01	5.82	5.88	6.46	6.56	6.12	6.32	6.42	0.075	0.077	0.065	0.200	0.203	0.105	0.171	0.206
NW070	7.10	6.59	6.51	7.25	7.24	6.88	7.13	7.11	0.096	0.184	0.195	0.910	0.926	0.279	0.871	0.831
NW080*	6.23	6.12	6.26	6.60	NS	NS	NS	NS	1.161	0.991	1.070	1.050	NS	NS	NS	NS
G0024	6.36	6.60	6.71	6.70	6.64	6.74	6.32	6.81	0.670	0.729	1.170	0.740	0.654	0.613	0.537	0.594
G0079	6.34	5.73	6.63	6.13	6.67	6.51	6.50	6.54	0.278	0.273	0.706	0.502	0.575	0.666	0.268	0.602
G0091	6.83	6.65	7.29	6.98	6.93	6.92	7.07	6.80	1.325	0.973	1.300	1.140	1.170	1.195	1.050	1.096
PZ017R	6.34	6.16	6.90	6.07	6.38	6.17	6.31	6.58	0.652	0.797	0.788	0.840	0.902	0.910	1.034	1.026
PZ018	6.57	5.52	6.46	5.99	6.28	5.96	6.40	6.38	0.664	0.520	0.590	0.550	0.713	0.870	0.798	1.174
PZ019	6.16	6.03	6.49	6.22	6.32	6.39	6.49	6.32	0.602	0.377	0.616	0.570	0.663	0.709	0.627	0.779
PZ020	6.67	6.54	6.86	6.85	6.87	6.91	6.78	6.88	1.061	1.049	1.350	1.160	0.916	1.003	1.041	0.994
Shallow-Intermediate Wells																
CA211	6.49	6.45	6.46	6.72	6.72	6.33	6.63	6.69	0.662	0.705	1.110	0.860	1.026	0.809	0.958	0.818
NW021	6.77	6.69	6.84	6.93	6.79	7.02	6.96	7.00	1.154	0.825	1.180	1.070	0.982	1.084	0.851	1.001
NW051*	6.47	6.32	6.14	6.75	NS	NS	NS	NS	1.088	1.451	0.442	1.520	NS	NS	NS	NS
NW061	7.00	7.01	6.59	7.00	7.13	6.79	7.14	7.12	0.790	0.685	0.308	1.070	0.941	0.920	0.921	0.896
NW071	6.32	6.32	6.40	6.62	6.61	6.35	6.66	6.48	0.563	0.519	0.745	0.610	0.686	0.640	0.664	0.681
NW081R*	6.51	6.48	6.42	6.55	NS	NS	NS	NS	0.797	0.925	1.050	0.990	NS	NS	NS	NS
G0075	6.57	6.44	6.83	6.72	6.98	6.68	6.81	7.13	0.995	0.926	0.987	0.730	0.809	0.900	1.003	0.905
G0077	6.63	6.65	6.68	6.71	6.61	6.87	6.84	6.57	1.012	0.620	0.874	0.780	0.795	0.881	0.965	0.803
G0080	6.64	6.48	6.70	6.54	6.82	6.51	6.71	6.72	0.795	0.557	0.884	0.840	0.703	0.701	0.811	0.910
G0081	6.19	6.22	6.43	6.31	6.51	6.38	6.59	6.37	0.910	0.664	1.020	0.550	0.891	0.780	0.925	0.951
G0082	6.28	6.29	6.47	6.45	6.62	6.24	6.37	6.75	0.652	0.637	0.858	0.820	0.790	0.860	0.797	0.913
G0086	6.84	6.69	7.03	6.91	6.92	6.67	6.92	6.83	0.684	0.725	0.923	0.880	0.808	0.966	0.918	0.915
G0087	6.70	6.75	7.03	6.79	6.82	6.62	6.69	6.80	0.808	0.663	0.851	0.710	0.731	0.774	0.844	0.839
G0092	7.14	7.06	7.54	7.36	7.28	7.23	7.37	7.13	1.269	0.940	1.240	1.290	1.297	1.051	1.323	1.410
Intermediate Wells																
CA212	6.70	6.88	6.64	7.05	6.97	6.65	6.96	7.12	0.496	0.573	0.732	0.660	0.621	0.555	0.618	0.587
NW022	6.96	7.02	7.05	7.14	6.97	7.03	7.29	7.21	1.270	1.019	1.390	1.280	1.257	1.338	1.051	1.207
NW052*	7.24	6.15	6.26	7.00	NS	NS	NS	NS	0.738	0.920	0.312	1.140	NS	NS	NS	NS
NW062	8.11	6.97	6.71	7.38	7.41	7.04	7.49	7.28	0.701	0.584	0.270	0.850	0.883	0.853	0.869	0.895
NW082R*	6.84	6.48	6.64	6.58	NS	NS	NS	NS	0.687	0.884	0.916	0.890	NS	NS	NS	NS
G0076	6.66	6.62	6.93	6.74	6.81	6.65	7.17	6.82	1.189	1.116	1.260	NS*	1.135	1.264	1.230	1.286
G0078	6.90	6.94	6.91	6.78	6.78	6.95	6.97	6.88	1.213	0.972	1.280	1.070	0.957	1.118	1.064	1.089
Deep Wells																
CA213	7.47	7.64	7.56	7.82	7.63	7.44	7.81	7.89	0.373	0.378	0.501	0.450	0.447	0.366	0.453	0.490
G0070	7.12	6.88	7.01	6.88	7.02	7.09	7.16	6.91	0.461	0.452	0.511	NS*	0.427	0.451	0.431	0.501

Notes:

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NA = no analysis
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NS = no sample/measurement collected
NS* = specific conductance not measured due to instrument error
ORP = oxidation/reduction potential
OU = Operable Unit
PZ = piezometer
TKN = total Kjeldahl nitrogen

TABLE 5-3
SUMMARY OF RDX AND TNT CONCENTRATIONS
OU1 PERFORMANCE MONITORING LOCATIONS
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Performance Monitoring Location	BASELINE		QUARTER 2		QUARTER 3		QUARTER 4		QUARTER 5		QUARTER 6		QUARTER 7		QUARTER 8	
	RDX (µg/L)	TNT (µg/L)	RDX (µg/L)	TNT (µg/L)	RDX (µg/L)	TNT (µg/L)	RDX (µg/L)	TNT (µg/L)	RDX (µg/L)	TNT (µg/L)	RDX (µg/L)	TNT (µg/L)	RDX (µg/L)	TNT (µg/L)	RDX (µg/L)	TNT (µg/L)
Between EW6 and EW7																
G0022	NS	NS	NS	NS	ND	2.3	NS	NS	ND	1.1	ND	0.69	ND	0.19	ND	0.08
PZ017R	0.87	15	1.4	17	1.4	11	1.8	15	2.2	10	2.1	10	ND	0.37	1.2	5
PZ018	0.88	8	ND	19	1	ND	ND	17	ND	6	ND	4.6	ND	4	ND	ND
EW7-PM21A-25	1	29	6.2	17	7.3	11	ND	11	ND	5.8	ND	8.3	1.5	10	0.97	4.1
EW7-PM21B-35	0.39	5.7	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
EW7-PM22A-25	0.47	27	ND	1.1	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
EW7-PM22B-35	0.28	5.7	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
EW7-PM23A-25	1	28	2.2	38	ND	ND	ND	0.39	NS	NS	NS	NS	NS	NS	NS	NS
EW7-PM23B-35	0.32	5.2	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
EW7-PM24A-25	1.4	9.8	0.19	0.53	ND	8.3	ND	5.4	ND	4.6	ND	0.25	ND	0.14	0.9	ND
EW7-PM24B-35	0.41	11	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
EW7-PM25A-25	1.6	13	ND	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EW7-PM25B-35	ND	4.1	ND	ND	57	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND
EW7-PM26A-25	0.97	14	ND	0.73	0.46	0.87	ND	ND	ND	0.66	2.5	ND	1	0.67	0.77	1.1
EW7-PM26B-35	0.38	7.2	37	ND	34	ND	ND	ND	ND	ND	ND	ND	1.6	ND	ND	ND
EW7-PM27A-25	1.7	9.5	2.2	9.8	ND	0.45	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
EW7-PM27B-35	0.62	4.9	ND	0.26	17	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND
EW7-PM28A-25	1.1	13	1.1	8.2	15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EW7-PM28B-35	0.22	5.6	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
EW7-PM29A-25	1.2	5.9	ND	ND	26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EW7-PM29B-35	ND	3.6	ND	ND	44	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Load Line 1																
G0094	NS	NS	NS	NS	2.7	8.5	NS	NS	16	4.9	8.1	19	8.6	0.25	9	48
G0096	NS	NS	NS	NS	36	0.96	NS	NS	87	0.24	58	0.38	18	ND	47	ND
Load Line 2																
G0111	NS	NS	NS	NS	ND	12	NS	NS	ND	3.7	6.5	6.6	ND	5.5	0.64	6.4
G0121	NS	NS	NS	NS	13	ND	NS	NS	ND	ND	ND	ND	ND	ND	1.8	ND
G0122	NS	NS	NS	NS	12	ND	NS	NS	ND	ND	82	ND	ND	ND	5.6	ND
G0123	NS	NS	NS	NS	48	ND	NS	NS	ND	ND	ND	ND	1.3	ND	ND	ND
Decant Station																
G0102	NS	NS	NS	NS	41	ND	NS	NS	ND	ND	8.5	ND	ND	ND	ND	ND

Notes:

Concentrations exceed HALs

µg/L = micrograms per TNT = 2,4,6-trinitrotoluene

EW = extraction well

ND = nondetect

NS = not sampled

OU = Operable Unit

PM = performance monitoring

PZ = piezometer

RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

TABLE 5-4
SUMMARY OF WATER QUALITY PARAMETERS, PERFORMANCE MONITORING LOCATIONS
OU1 SUBSURFACE INJECTION
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Performance Monitroing Well Number	ORP (mV)								DO (mg/L)								Nitrate/Nitrite (mg/L)								Ammonia (mg/L)							
	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22
Shallow Wells																																
G0022	NS	NS	64	NS	-94.9	18.2	7.9	34.6	NS	NS	2.07	NS	3.32	0.10	0.02	0.01	NS	NS	8.8	NS	9.8	5.3	1.9	11	NS	NS	ND	NS	ND	ND	0.61	0.74
PZ017R	173.9	154.3	111	68.6	6.8	144.5	-81.9	-57.3	5.68	2.63	3.44	0.65	0.01	0.03	0.02	0.01	41	26	30	20	10	24	0.11	5.8	0.06	0.13	ND	0.032	0.041	0.033	0.47	0.67
PZ018	167.4	177.2	127	136.6	-9.9	11.5	-32.3	-97.0	1.34	9.09	9.26	5.99	0.36	0.01	0.01	0.11	24	31	26	26	8.1	5.0	3.2	ND	0.21	0.023	ND	ND	0.055	0.32	0.65	2.9
EW7-PM21A	-36.9	-307.7	-235	-81.2	-146.6	-42.4	-83.1	-37.8	0.57	1.45	0.69	0.07	0.05	0.01	0.01	0.10	23	11	8.0	7.2	16	17	24	15	1.1	0.77	0.8	0.93	0.95	1.7	1.2	1.9
EW7-PM22A	-10.3	-326.1	-148	-101.5	NS	NS	NS	NS	0.32	1.04	0.53	0.06	NS	NS	NS	NS	13	2.3	5.4	2.1	NS	NS	NS	NS	1.8	0.59	2.3	2.1	NS	NS	NS	NS
EW7-PM23A	-26.7	-325.2	-91	-81.8	NS	NS	NS	NS	0.36	1.18	0.41	0.00	NS	NS	NS	NS	24	24	0.26	22	NS	NS	NS	NS	1.8	1.3	1.6	ND	NS	NS	NS	NS
EW7-PM24A	-28.7	-288.4	-68	-85.6	-129.6	-78.4	-83.9	-70.1	1.49	0.35	0.54	0.03	0.07	0.01	0.01	2.14	51	10	6.9	7.2	2.8	ND	1.1	2.1	0.33	0.34	0.20	0.42	1.1	1.1	0.49	1.8
EW7-PM25A	17.9	-331.9	7	-111.1	-184.5	-99.3	-99.8	-136.8	3.48	0.33	8.07	0.00	0.01	0.01	0.01	0.01	25	6.8	3.0	ND	0.10	ND	0.081	0.05	0.13	1.2	1.4	0.20	1.9	1.9	3.2	2.2
EW7-PM26A	-39.0	-321.4	-53	-71.1	-75.4	-33.3	-101.5	-61.6	0.83	0.16	0.49	0.06	0.03	0.01	0.02	0.09	11	2.1	1.9	3.4	4.9	ND	5.1	9.9	0.086	1.0	0.09	0.39	0.15	0.94	2.0	0.6
EW7-PM27A	-6.6	222.5	-99	-306.2	NS	NS	NS	NS	2.02	2.95	0.31	0.02	NS	NS	NS	NS	26	22	4.2	5.9	NS	NS	NS	NS	0.15	0.21	1.1	1.4	NS	NS	NS	NS
EW7-PM28A	-28.2	-211.3	-53	-335.5	-58.1	-104.7	-116.6	-104.6	0.12	0.40	0.35	0.03	1.78	0.01	0.01	0.21	16	3.9	0.15	ND	0.077	ND	0.049	ND	0.53	2.4	3.0	0.9	1.0	4.7	4.0	3.6
EW7-PM29A	-20.7	-137.6	-62	-287.5	-97.7	-93.7	-88.4	-95.5	0.35	0.61	0.37	0.01	0.01	0.01	0.01	0.02	12	0.13	0.06	ND	0.10	ND	0.046	ND	0.12	0.19	0.35	1.1	1.3	1.7	2.4	1.4
Shallow-Intermediate Wells																																
EW7-PM21B	-121.5	-160.7	-122	-84.2	NS	NS	NS	NS	0.16	0.25	0.39	0.07	NS	NS	NS	NS	2.5	0.18	ND	ND	NS	NS	NS	NS	1.5	0.68	1.5	1.7	NS	NS	NS	NS
EW7-PM22B	-36.6	-33.1	-123	-106.7	NS	NS	NS	NS	0.20	0.32	0.34	0.06	NS	NS	NS	NS	1.9	ND	ND	ND	NS	NS	NS	NS	1.3	4.4	1.0	2.8	NS	NS	NS	NS
EW7-PM23B	-51.6	-20.1	-91	-135.4	NS	NS	NS	NS	0.18	0.52	0.40	0.00	NS	NS	NS	NS	4.4	ND	0.032	ND	NS	NS	NS	NS	1.2	1.5	2.4	0.09	NS	NS	NS	NS
EW7-PM24B	-92.2	-321.0	-135	-109.0	NS	NS	NS	NS	0.30	0.67	0.34	0.02	NS	NS	NS	NS	11	0.053	ND	ND	NS	NS	NS	NS	1.3	0.27	1.70	0.28	NS	NS	NS	NS
EW7-PM25B	4.6	-330.7	-79	-123.3	-99.8	-120.1	-125.8	-108.4	0.15	0.34	0.42	0.00	0.64	0.01	0.01	0.88	1.7	ND	0.053	ND	0.09	ND	0.046	0.05	1.5	3.1	3.1	100	3.5	2.5	2.9	2.9
EW7-PM26B	-108.3	-318.6	-82	97.2	-104.6	-140.4	-123.0	-97.2	0.28	1.07	0.41	0.03	0.01	0.01	0.01	0.20	7.5	ND	0.055	ND	0.10	ND	0.034	ND	0.57	1.3	1.8	1.8	1.5	1.7	2.4	2.1
EW7-PM27B	-86.3	-297.6	-107	-112.1	-135.3	-100.5	-119.7	-49.5	0.24	0.50	0.36	0.05	0.01	0.01	0.01	3.63	8.3	0.056	0.16	ND	ND	ND	0.044	ND	1.1	1.8	1.8	4.8	6.5	3.9	4.2	3.9
EW7-PM28B	-12.2	-240.9	-141	-125.4	NS	NS	NS	NS	0.23	0.29	0.29	0.05	NS	NS	NS	NS	2.7	0.031	0.035	ND	NS	NS	NS	NS	1.0	9.9	5.8	4.9	NS	NS	NS	NS
EW7-PM29B	-55.6	-300.9	-105	-119.1	-119.7	-125.6	-159.5	-225.9	0.20	0.54	0.29	0.02	0.02	0.01	0.01	0.01	2.5	0.037	0.049	ND	0.09	ND	0.045	ND	2.4	0.33	1.6	3.1	7.9	4.0	2.8	2.8
Load Line 1																																
G0094	NS	NS	-28.0	NS	-12.1	-62.6	3.7	-30.0	NS	NS	0.64	NS	0.03	0.02	0.14	0.03	NS	NS	1.00	NS	11	ND	5.3	12	NS	NS	6.1	NS	3.6	4.2	3.0	3.3
G0096	NS	NS	65.0	NS	-102.0	-138.6	-136.1	-77.3	NS	NS	0.61	NS	0.03	0.02	0.01	0.03	NS	NS	25	NS	14	6.8	2.6	2.8	NS	NS	0.19	NS	2.9	4.3	3.6	2.5
Load Line 2																																
G0111	NS	NS	14.0	NS	-198.4	-63.8	-213.0	-9.2	NS	NS	0.86	NS	0.22	0.04	0.01	0.02	NS	NS	14	NS	7.8	6.5	3.7	0.75	NS	NS	0.39	NS	0.58	0.33	0.58	0.33
G0121	NS	NS	-80.0	NS	-127.9	-173.6	-244.6	-141.5	NS	NS	0.50	NS	0.04	0.08	0.01	0.01	NS	NS	0.40	NS	ND	0.054	0.034	ND	NS	NS	3.7	NS	31	24	12	13
G0122	NS	NS	-61.0	NS	-266.4	-341.4	-340.3	-112.9	NS	NS	0.30	NS	0.06	0.02	0.01	0.01	NS	NS	0.82	NS	0.021	0.68	0.024	0.061	NS	NS	1.9	NS	4.8	3.3	12	8.2
G0123	NS	NS	45.0	NS	-126.2	-128.6	-123.8	-94.2	NS	NS	0.31	NS	0.03	0.05	0.02	0.01	NS	NS	0.31	NS	0.02	ND	0.02	ND	NS	NS	0.24	NS	0.86	1.9	0.76	1.5
Decant Station																																
G0102	NS	NS	-60.0	NS	-279.2	-335.7	-358.6	-409.9	NS	NS	0.43	NS	0.03	0.01	0.01	0.01	NS	NS	3.9	NS	ND	0.32	ND	ND	NS	NS	0.072	NS	0.088	3.5	0.54	0.24

Notes:

µg/L = micrograms per liter
CO_2 = carbon dioxide
DO = dissolved oxygen
DOC = dissolved organic carbon
EW = extraction well
mg/L = milligrams per liter
mS/cm = milliSiemens per centimeter
mV = millivolts
ND = nondetect
NS = no sample/measurement collected
NS* = specific conductance not measured due to instrument error
ORP = oxidation/reduction potential
OU = Operable Unit
PM = performance monitoring
PZ = piezometer
TKN = total Kjeldahl nitrogen

TABLE 5-4
SUMMARY OF WATER QUALITY PARAMETERS, PERFORMANCE MONITORING LOCATIONS
OU1 SUBSURFACE INJECTION
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Performance Monitroing Well Number	TKN (mg/L)								DOC (mg/L)								CO_2 (mg/L)								Methane (µg/L)							
	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22
Shallow Wells																																
G0022	NS	NS	ND	NS	ND	ND	1.4	ND	NS	NS	3.0	NS	3.0	3.2	4.0	3.7	NS	NS	182	NS	156	147	187	164	NS	NS	ND	NS	22	6100	6300	5100
PZ017R	ND	ND	ND	ND	ND	ND	2.0	15	3.5	4.5	5.1	5.4	6.8	4.2	9.1	7.4	62	116	84	120	196	124	258	200	140	520	1800	7800	120	6500	21000	17000
PZ018	ND	ND	ND	ND	14	2.4	2.8	12	3.3	3.3	4.0	3.9	7.9	11	13	22	89	32	43	44	142	160	209	244	240	ND	ND	60	8600	7900	16000	16000
EW7-PM21A	ND	1.3	1.8	1.0	ND	1.8	ND	0.80	3.7	7.6	11	6.3	23	7.1	5.0	5.1	142	173	173	156	204	196	164	178	340	320	4700	9400	15000	16000	17000	12000
EW7-PM22A	ND	3.9	7.5	4.9	NS	NS	NS	NS	3.5	84	68	18	NS	NS	NS	NS	147	227	209	209	NS	NS	NS	NS	800	2700	13000	12000	NS	NS	NS	NS
EW7-PM23A	ND	ND	3.7	2.3	NS	NS	NS	NS	3.6	3.8	12	22	NS	NS	NS	NS	147	147	187	213	NS	NS	NS	NS	420	460	8400	13000	NS	NS	NS	NS
EW7-PM24A	ND	1.3	2.1	3.5	3.6	3.5	1.7	4.2	3.8	14	20	16	17	15	8.4	8.4	151	178	213	200	276	302	231	222	380	760	9000	12000	13000	12000	20000	13000
EW7-PM25A	ND	3.8	6.8	6.2	6.3	ND	8.2	6.4	4.4	100	130	23	35	39	32	25	142	182	231	271	280	329	307	302	590	1600	5000	17000	17000	14000	20000	9300
EW7-PM26A	ND	2.0	1.5	2.0	0.99	ND	2.0	ND	3.9	27	9.6	9.3	7.7	6.2	6.4	5.5	147	196	222	178	218	200	204	191	1600	1300	2600	7400	13000	8800	18000	17000
EW7-PM27A	ND	ND	3.6	4.3	NS	NS	NS	NS	4.2	13	42	15	NS	NS	NS	NS	124	164	196	200	NS	NS	NS	NS	610	170	6400	7900	NS	NS	NS	NS
EW7-PM28A	ND	3.9	5.6	4.4	3.1	9.5	5.1	7.6	4.8	29	46	72	28	30	14	18	164	187	209	240	244	298	231	240	1600	3300	15000	14000	ND	15000	22000	15000
EW7-PM29A	ND	2.4	5.3	2.7	2.6	3.1	3.0	2.8	3.1	93	38	12	12	9.3	9.7	7.8	102	160	196	156	187	200	191	164	450	1900	22000	12000	16000	10000	18000	15000
Shallow-Intermediate Wells																																
EW7-PM21B	1.4	2.3	4.6	2.8	NS	NS	NS	NS	3.2	43	63	8.1	NS	NS	NS	NS	133	160	182	142	NS	NS	NS	NS	770	1300	6700	3800	NS	NS	NS	NS
EW7-PM22B	1.2	21	6.4	5.7	NS	NS	NS	NS	3.3	480	96	33	NS	NS	NS	NS	133	142	218	173	NS	NS	NS	NS	690	1500	15000	10000	NS	NS	NS	NS
EW7-PM23B	1.6	7.4	8.0	6.5	NS	NS	NS	NS	3.2	270	66	37	NS	NS	NS	NS	138	196	253	253	NS	NS	NS	NS	620	3300	21000	18000	NS	NS	NS	NS
EW7-PM24B	ND	5.0	8.2	6.7	NS	NS	NS	NS	3.8	140	150	34	NS	NS	NS	NS	147	178	222	213	NS	NS	NS	NS	1300	1100	14000	12000	NS	NS	NS	NS
EW7-PM25B	1.5	1.0	6.8	5.1	8.5	ND	4.7	5.5	4.8	69	72	18	35	20	12	13	182	271	342	236	249	253	196	191	3900	1600	18000	21000	19000	15000	19000	19000
EW7-PM26B	0.7	11	7.2	4.5	3.9	ND	6.6	4.6	4.7	490	220	23	39	22	18	11	173	196	231	213	191	280	249	209	2900	3700	19000	14000	11000	13000	16000	11000
EW7-PM27B	1.1	3.9	5.7	10	8.2	7.5	6.0	5.6	5.1	120	47	44	47	15	13	8.5	173	222	218	236	253	231	213	182	1700	3400	16000	11000	16000	14000	18000	11000
EW7-PM28B	5.2	12	9.2	7.4	NS	NS	NS	NS	6.5	25	23	16	NS	NS	NS	NS	200	311	329	227	NS	NS	NS	NS	3500	2200	16000	19000	NS	NS	NS	NS
EW7-PM29B	2.4	8.1	7.2	5.1	6.7	3.4	3.5	4.9	3.7	280	64	14	21	12	7.6	5.6	156	244	213	187	200	204	173	156	750	3100	9600	18000	16000	12000	11000	4200
Load Line 1																																
G0094	NS	NS	6.90	NS	3.3	2.5	3.6	2.8	NS	NS	5.8	NS	5.5	6.5	6.8	6.4	NS	NS	129	NS	169	151	164	133	NS	NS	19000	NS	12000	13000	13000	13000
G0096	NS	NS	ND	NS	5.0	6.1	5.4	ND	NS	NS	4.4	NS	120	46	12	6.1	NS	NS	124	NS	200	218	191	178	NS	NS	5100	NS	2200	5900	12000	9300
Load Line 2																																
G0111	NS	NS	ND	NS	1.3	1.9	1.7	1.5	NS	NS	7.9	NS	9.5	8.2	7.6	9.1	NS	NS	320	NS	351	404	369	431	NS	NS	3800	NS	6400	3400	8500	5900
G0121	NS	NS	4.4	NS	77	44	21	ND	NS	NS	8.0	NS	69	650	170	43	NS	NS	222	NS	356	293	347	316	NS	NS	10000	NS	5200	10000	17000	18000
G0122	NS	NS	3.0	NS	10	5.6	18	2.9	NS	NS	7.0	NS	150	32	40	18	NS	NS	258	NS	622	489	578	378	NS	NS	8500	NS	14000	11000	17000	15000
G0123	NS	NS	0.84	NS	13	3.5	1.5	ND	NS	NS	5.6	NS	580	9.4	5.0	7.9	NS	NS	231	NS	360	338	276	298	NS	NS	15000	NS	12000	18000	20000	15000
Decant Station																																
G0102	NS	NS	ND	NS	ND	ND	1.4	0.98	NS	NS	3.9	NS	22	88	6.6	5.6	NS	NS	191	NS	293	342	280	227	NS	NS	1.8	NS	57	120	790	1500

Notes:

µg/L = micrograms per liter
CO_2 = carbon dioxide
DO = dissolved oxygen
DOC = dissolved organic carbon
EW = extraction well
mg/L = milligrams per liter
mS/cm = milliSiemens per centimeter
mV = millivolts
ND = nondetect
NS = no sample/measurement collected
NS* = specific conductance not measure due to instrument error
ORP = oxidation/reduction potential
OU = Operable Unit
PM = performance monitoring
PZ = piezometer
TKN = total Kjeldahl nitrogen

TABLE 5-4
SUMMARY OF WATER QUALITY PARAMETERS, PERFORMANCE MONITORING LOCATIONS
OU1 SUBSURFACE INJECTION
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Performance Monitroing Well Number	Alkalinity (mg/L)								Ferrous Iron (mg/L)								Sulfate (mg/L)								Sulfide (mg/L)							
	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22
Shallow Wells																																
G0022	NS	NS	330	NS	350	330	420	370	NS	NS	0.26	NS	0.11	0.35	0.33	0.14	NS	NS	NS	NS	120	130	100	110	NS	NS	0.80	NS	ND	0.80	12	1.6
PZ017R	140	260	190	270	440	280	580	450	ND	0.04	0.42	ND	1.25	0.27	0.54	1.11	74	83	62	64	53	81	34	72	ND	NA	ND	1.6	ND	ND	ND	ND
PZ018	200	73	96	100	320	360	470	550	ND	0.02	0.42	ND	2.62	6.30	0.54	1.32	100	62	67	65	49	53	36	12	ND	NA	ND	ND	ND	ND	ND	ND
EW7-PM21A	320	390	390	350	460	440	370	400	0.99	2.62	5.73	3.14	2.67	8.67	0.54	1.75	84	61	49	78	72	96	110	100	ND	ND	ND	ND	ND	ND	ND	ND
EW7-PM22A	330	510	470	470	NS	NS	NS	NS	2.89	3.06	>15	8.76	NS	NS	NS	NS	85	22	30	13	NS	NS	NS	NS	ND	0.80	ND	ND	NS	NS	NS	NS
EW7-PM23A	330	330	420	480	NS	NS	NS	NS	2.73	0.90	10.28	5.80	NS	NS	NS	NS	90	91	44	21	NS	NS	NS	NS	ND	ND	ND	ND	NS	NS	NS	NS
EW7-PM24A	340	400	480	450	620	680	520	500	2.62	3.30	>15	5.96	2.10	3.10	1.88	2.39	84	57	40	32	16	2.3	45	48	ND	0.80	ND	ND	0.80	0.80	ND	0.80
EW7-PM25A	320	410	520	610	630	740	690	680	1.56	7.68	3.30	5.78	6.52	2.72	0.70	2.15	87	39	38	ND	2.4	1.7	4.1	5.5	ND	0.80	0.80	ND	0.80	ND	ND	0.80
EW7-PM26A	330	440	500	400	490	450	460	430	2.89	2.83	4.52	5.88	5.92	7.56	0.51	1.64	73	20	36	54	48	100	81	120	ND	ND	ND	ND	ND	ND	ND	ND
EW7-PM27A	280	370	440	450	NS	NS	NS	NS	2.89	2.48	6.60	5.30	NS	NS	NS	NS	120	83	47	37	NS	NS	NS	NS	ND	ND	ND	ND	NS	NS	NS	NS
EW7-PM28A	370	420	470	540	550	670	520	540	3.30	4.42	7.05	2.64	5.00	1.87	0.62	1.81	80	53	28	ND	2.5	ND	22	15	ND	ND	ND	ND	0.80	ND	0.80	ND
EW7-PM29A	230	360	440	350	420	450	430	370	3.30	11.28	2.64	7.50	6.12	8.70	0.43	2.34	97	7.9	7.1	24	5.0	6.3	31	62	ND	ND	ND	0.80	0.80	ND	ND	ND
Shallow-Intermediate Wells																																
EW7-PM21B	300	360	410	320	NS	NS	NS	NS	2.89	>15	>15	5.34	NS	NS	NS	NS	150	29	70	93	NS	NS	NS	NS	ND	ND	ND	ND	NS	NS	NS	NS
EW7-PM22B	300	320	490	390	NS	NS	NS	NS	2.89	>15	>15	6.90	NS	NS	NS	NS	160	45	14	11	NS	NS	NS	NS	ND	ND	ND	ND	NS	NS	NS	NS
EW7-PM23B	310	440	570	570	NS	NS	NS	NS	2.89	>15	>15	2.50	NS	NS	NS	NS	150	4.0	1.1	ND	NS	NS	NS	NS	ND	ND	ND	ND	NS	NS	NS	NS
EW7-PM24B	330	400	500	480	NS	NS	NS	NS	3.30	9.56	>15	7.17	NS	NS	NS	NS	110	43	6.0	5.9	NS	NS	NS	NS	ND	ND	0.80	0.80	NS	NS	NS	NS
EW7-PM25B	410	610	770	530	560	570	440	430	0.72	2.12	4.28	3.15	6.48	9.15	0.98	1.67	110	4.0	ND	ND	ND	9.4	120	94	ND	ND	ND	ND	ND	ND	0.80	1.9
EW7-PM26B	390	440	520	480	430	630	560	470	2.78	>15	>15	2.02	7.32	2.69	0.66	1.73	79	29	6.8	ND	46	13	36	79	ND	ND	ND	ND	ND	ND	ND	ND
EW7-PM27B	390	500	490	530	570	520	480	410	2.89	6.20	4.32	6.78	6.54	6.42	0.58	1.70	90	16	37	2.1	ND	3.1	57	95	ND	0.80	ND	ND	ND	ND	ND	0.80
EW7-PM28B	450	700	740	510	NS	NS	NS	NS	3.30	11.28	5.48	2.89	NS	NS	NS	NS	71	3.4	ND	13	NS	NS	NS	NS	ND	ND	0.80	ND	NS	NS	NS	NS
EW7-PM29B	350	550	480	420	450	460	390	350	3.30	12.08	6.51	7.05	2.73	9.27	0.78	2.26	140	ND	ND	8.0	ND	1.8	110	140	ND	0.80	ND	0.80	0.80	ND	ND	0.80
Load Line 1																																
G0094	NS	NS	290	NS	380	340	370	300	NS	NS	12.20	NS	1.67	4.98	0.53	2.19	NS	NS	59	NS	82	89	130	130	NS	NS	ND	NS	ND	0.80	2.4	0.80
G0096	NS	NS	280	NS	450	490	430	400	NS	NS	1.26	NS	3.22	1.09	1.80	3.29	NS	NS	85	NS	120	72	71	110	NS	NS	ND	NS	ND	0.80	2.4	0.80
Load Line 2																																
G0111	NS	NS	720	NS	790	910	830	970	NS	NS	0.38	NS	2.24	1.79	0.30	0.61	NS	NS	370	NS	320	200	410	210	NS	NS	ND	NS	ND	1.6	0.80	ND
G0121	NS	NS	500	NS	800	660	780	710	NS	NS	8.08	NS	3.09	2.88	2.99	2.24	NS	NS	500	NS	110	45	29	220	NS	NS	ND	NS	4.8	4.8	2.0	2.8
G0122	NS	NS	580	NS	1400	1100	1300	850	NS	NS	7.80	NS	2.64	2.79	1.15	1.33	NS	NS	700	NS	45	360	150	590	NS	NS	ND	NS	1.6	4.8	0.8	2.4
G0123	NS	NS	520	NS	810	760	620	670	NS	NS	0.88	NS	6.54	5.12	1.52	3.00	NS	NS	490	NS	5.6	230	360	340	NS	NS	ND	NS	0.80	ND	2.0	0.80
Decant Station																																
G0102	NS	NS	430	NS	660	770	630	510	NS	NS	2.95	NS	2.20	1.86	0.70	1.12	NS	NS	1100	NS	870	740	1100	1200	NS	NS	ND	NS	2.4	4.8	1.6	12

Notes:

µg/L = micrograms per liter
CO_2 = carbon dioxide
DO = dissolved oxygen
DOC = dissolved organic carbon
EW = extraction well
mg/L = milligrams per liter
mS/cm = milliSiemens per centimeter
mV = millivolts
ND = nondetect
NS = no sample/measurement collected
NS* = specific conductance not measure due to instrument error
ORP = oxidation/reduction potential
OU = Operable Unit
PM = performance monitoring
PZ = piezometer
TKN = total Kjeldahl nitrogen

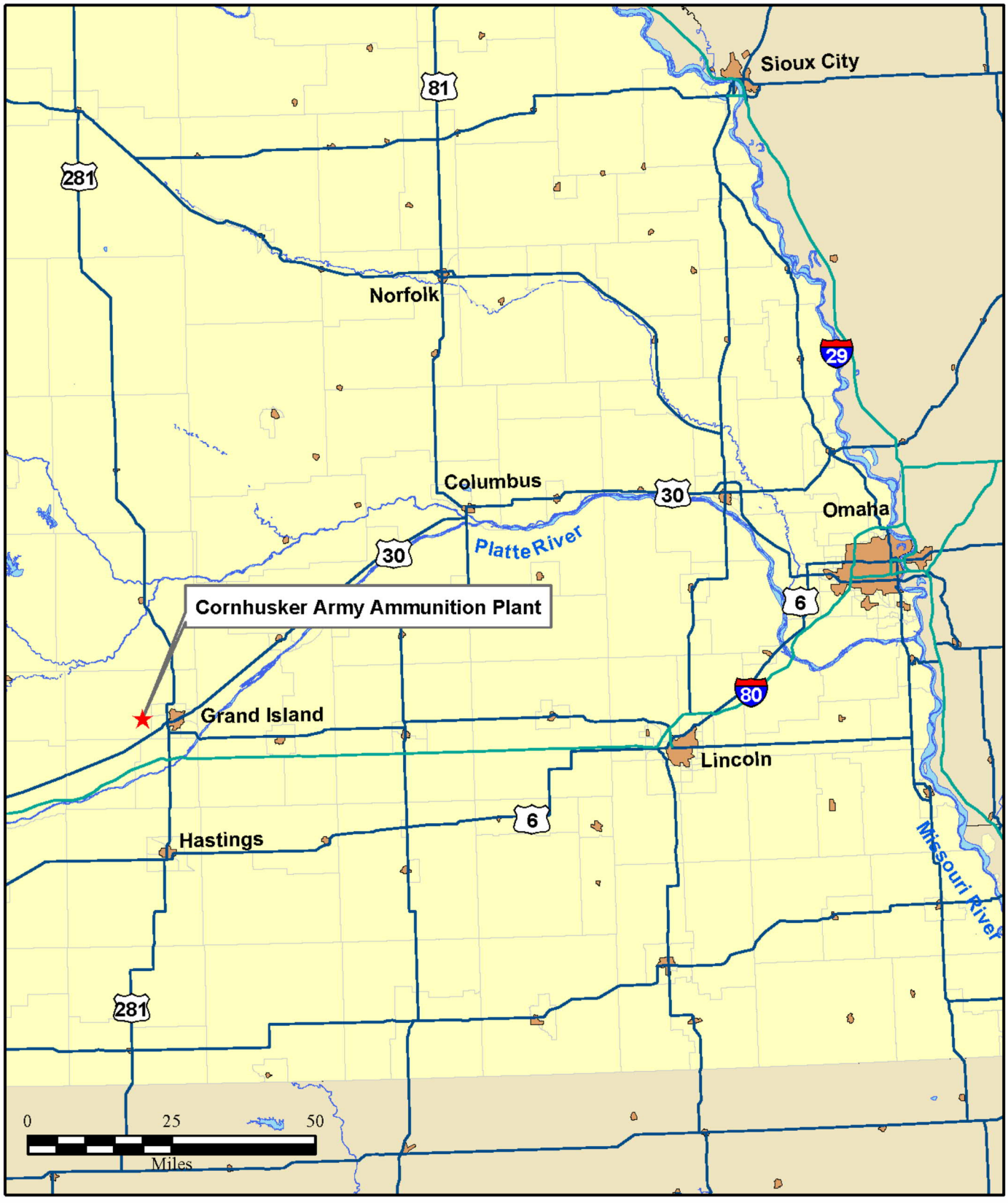
TABLE 5-4
SUMMARY OF WATER QUALITY PARAMETERS, PERFORMANCE MONITORING LOCATIONS
OU1 SUBSURFACE INJECTION
OU1 REBOUND STUDY LETTER REPORT - QUARTER 8

Performance Monitroing Well Number	pH								Conductance (mS/cm)							
	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22	Oct-19	Feb-20	Jun-20	Oct-20	Mar-21	Jun-21	Oct-21	Mar-22
Shallow Wells																
G0022	NS	NS	7.08	NS	6.87	6.68	6.99	6.79	NS	NS	0.862	NS	0.850	0.940	0.783	0.948
PZ017R	6.34	6.16	6.90	6.07	6.38	6.17	6.31	6.58	0.652	0.797	0.788	0.840	0.902	0.910	1.034	1.026
PZ018	6.57	5.52	6.46	5.99	6.28	5.96	6.40	6.38	0.664	0.520	0.590	0.550	0.713	0.870	0.798	1.174
EW7-PM21A	7.66	6.12	6.38	6.65	6.35	6.31	6.65	6.63	0.724	0.700	0.920	0.886	0.925	1.130	0.819	1.001
EW7-PM22A	7.05	6.11	6.16	6.46	NS	NS	NS	NS	0.673	0.817	0.932	1.004	NS	NS	NS	NS
EW7-PM23A	8.21	6.53	6.54	6.50	NS	NS	NS	NS	0.740	0.705	0.949	1.223	NS	NS	NS	NS
EW7-PM24A	7.56	6.33	6.44	6.49	6.52	6.38	6.42	6.58	0.903	0.716	1.070	0.908	1.071	1.270	0.209	1.045
EW7-PM25A	7.23	5.87	6.21	6.26	6.32	6.23	6.27	7.50	0.794	0.814	1.230	1.503	1.243	1.550	0.158	1.125
EW7-PM26A	7.69	6.18	6.54	6.58	6.56	6.36	6.57	6.77	0.684	0.674	1.050	0.818	0.925	1.170	0.996	1.073
EW7-PM27A	7.01	6.35	6.07	6.37	NS	NS	NS	NS	0.771	0.753	1.010	1.019	NS	NS	NS	NS
EW7-PM28A	7.45	6.11	6.23	6.29	6.34	6.35	6.37	6.40	0.797	0.731	1.110	1.222	0.106	1.460	0.900	1.092
EW7-PM29A	7.29	5.71	6.25	6.40	6.52	6.33	6.32	6.52	0.600	0.623	0.955	0.818	0.817	0.930	0.810	0.827
Shallow-Intermediate Wells																
EW7-PM21B	9.46	6.15	6.29	6.67	NS	NS	NS	NS	0.697	0.646	0.952	0.553	NS	NS	NS	NS
EW7-PM22B	7.64	5.32	6.15	6.49	NS	NS	NS	NS	0.734	0.933	1.090	NS*	NS	NS	NS	NS
EW7-PM23B	7.98	5.72	6.14	6.30	NS	NS	NS	NS	0.750	0.870	1.270	1.356	NS	NS	NS	NS
EW7-PM24B	8.84	5.80	6.13	6.35	NS	NS	NS	NS	0.707	0.786	1.160	1.095	NS	NS	NS	NS
EW7-PM25B	7.11	6.38	6.46	6.43	6.42	6.38	6.55	6.58	0.791	0.971	1.530	1.464	0.746	1.210	0.159	0.810
EW7-PM26B	9.22	5.28	6.06	6.49	6.46	6.38	6.31	6.43	0.792	1.091	1.280	0.867	0.820	1.320	1.110	1.064
EW7-PM27B	8.70	5.80	6.41	6.33	6.29	6.32	6.49	6.54	0.798	0.897	1.180	1.192	0.974	1.130	0.138	0.977
EW7-PM28B	7.09	6.44	6.74	6.58	NS	NS	NS	NS	0.802	1.028	1.460	NS*	NS	NS	NS	NS
EW7-PM29B	8.07	5.66	6.32	6.50	6.49	6.57	6.57	6.54	0.769	1.099	1.11	0.964	0.953	1.010	0.740	0.910
Load Line 1																
G0094	NS	NS	6.04	NS	6.30	6.13	6.49	6.39	NS	NS	0.791	NS	0.887	1.080	0.912	0.951
G0096	NS	NS	6.72	NS	6.19	6.29	6.51	6.54	NS	NS	1.040	NS	1.138	1.230	0.966	1.040
Load Line 2																
G0111	NS	NS	7.06	NS	6.69	6.38	6.77	6.44	NS	NS	1.620	NS	1.762	2.130	2.170	2.112
G0121	NS	NS	6.86	NS	5.02	5.59	6.54	6.44	NS	NS	1.770	NS	3.539	2.330	1.713	1.827
G0122	NS	NS	7.01	NS	6.48	6.69	6.78	6.61	NS	NS	2.340	NS	2.339	2.440	2.625	2.555
G0123	NS	NS	6.85	NS	6.00	6.40	6.34	6.42	NS	NS	1.860	NS	1.673	1.880	1.709	1.765
Decant Station																
G0102	NS	NS	7.00	NS	6.68	6.70	7.29	7.14	NS	NS	2.740	NS	2.271	2.530	0.805	2.769

Notes:

µg/L = micrograms per liter
CO_2 = carbon dioxide
DO = dissolved oxygen
DOC = dissolved organic carbon
EW = extraction well
mg/L = milligrams per liter
mS/cm = milliSiemens per centimeter
mV = millivolts
ND = nondetect
NS = no sample/measurement collected
NS* = specific conductance not measure due to instrument error
ORP = oxidation/reduction potential
OU = Operable Unit
PM = performance monitoring
PZ = piezometer
TKN = total Kjeldahl nitrogen

Figures



Brice ENGINEERING

AECOM

FACILITY LOCATION MAP
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 05/23/22	PROJECT NO. 60565355	FIG. NO. 1-1
CHK'D. BY: DC	DATE: 05/23/22		

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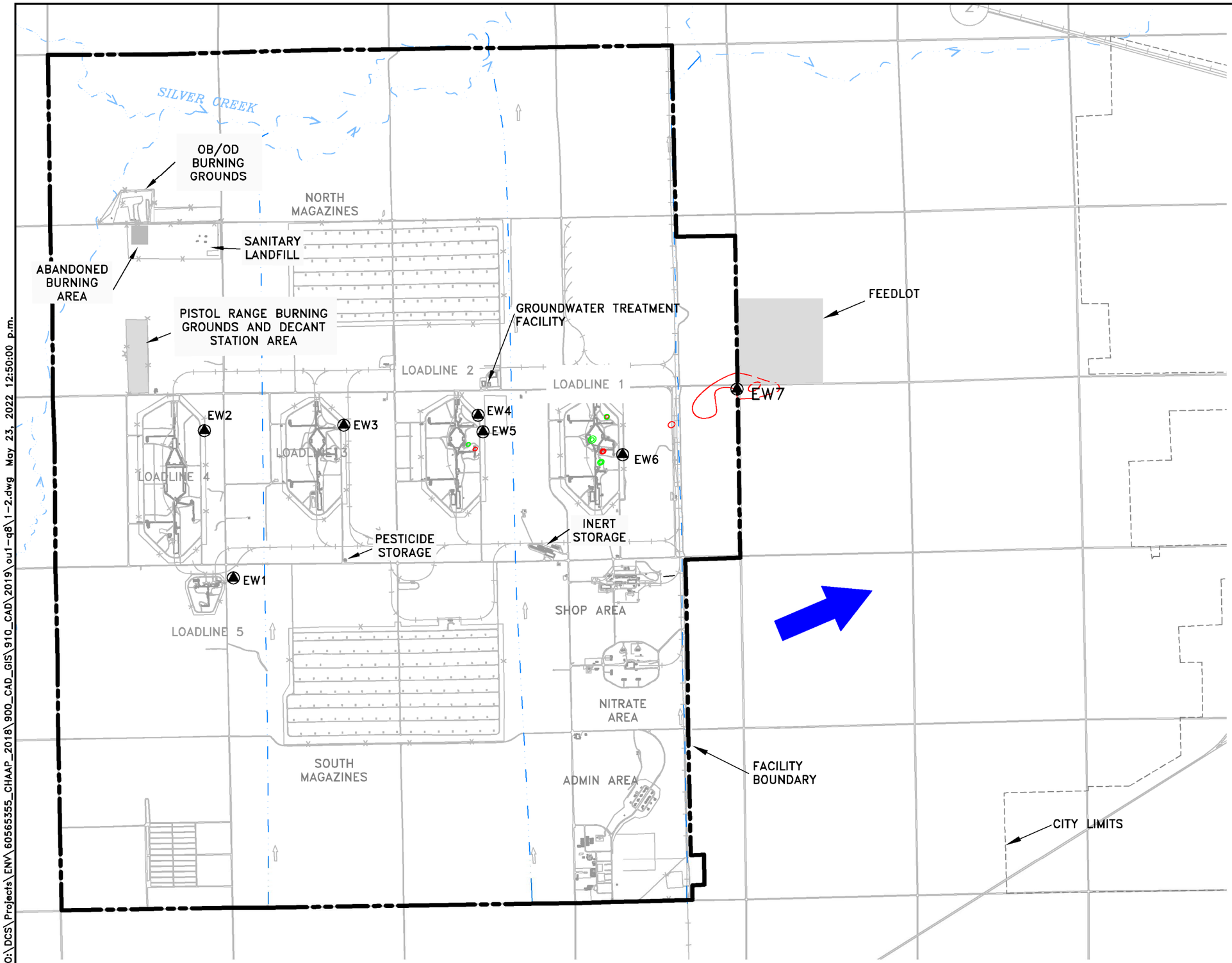


LEGEND:

- ROADS
- FENCE
- FACILITY BOUNDARY
- SURFACE DRAINAGE
- DRAINAGE DITCH FLOW DIRECTION
- GRAND ISLAND CITY LIMITS
- ABANDONED BURNING GROUNDS, SANITARY LANDFILL, PISTOL RANGE BURNING GROUNDS, AND FEEDLOT
- INACTIVE GROUNDWATER EXTRACTION WELL
- 281 STATE ROUTE
- 30 U.S. ROUTE
- GENERAL GROUNDWATER FLOW DIRECTION
- 2 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) FEBRUARY/MARCH 2022
- 20 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >20µg/L) FEBRUARY/MARCH 2022
- 2 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >2µg/L) FEBRUARY/MARCH 2022
- 20 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >20µg/L) FEBRUARY/MARCH 2022

N

0 3000 6000

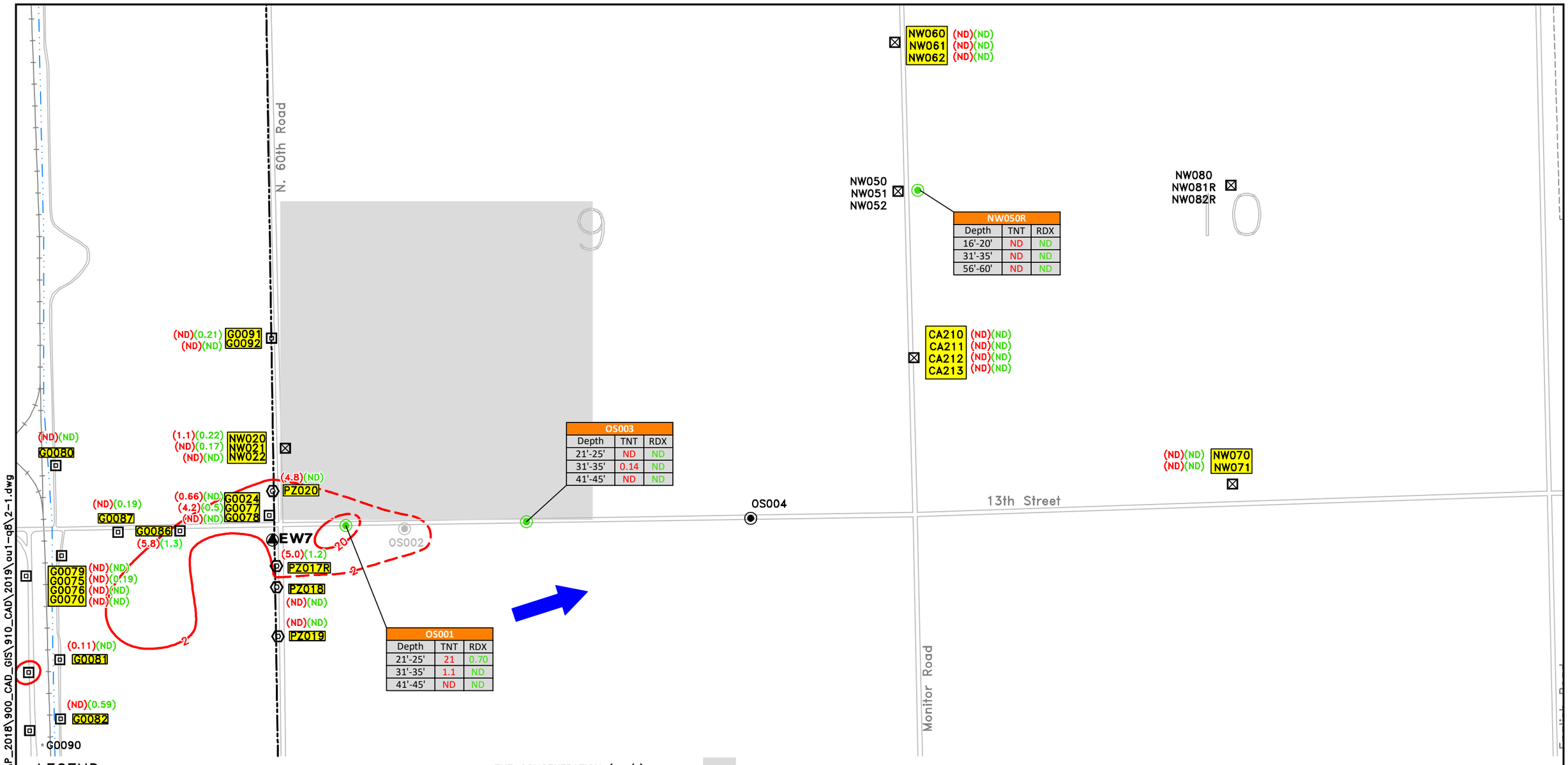
SCALE FEET

Bruce ENGINEERING AECOM

SITE LOCATION MAP
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 05/23/22	PROJECT NO. 60565355	FIG. NO. 1-2
CHK'D. BY: DC	DATE: 05/23/22		

Drawing: O:\DCS\Projects\ENV\60565355_CHAAP_2018\900_CAD_GIS\910_CAD\2019\ou1-q8\1-2.dwg May 23, 2022 12:50:00 p.m.



LEGEND:

- ON-POST GROUNDWATER MONITORING WELL
- OFF-POST GROUNDWATER MONITORING WELL
- ON-POST PIEZOMETER
- INACTIVE GROUNDWATER EXTRACTION WELL
- G0029 — OU1 GROUNDWATER SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 8 (FEBRUARY/MARCH 2022)
- OS001 — OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 8 (FEBRUARY/MARCH 2022)
- OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 4 (SEPTEMBER 2020)
- OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, BASELINE (OCTOBER 2019)

- (ND) TNT CONCENTRATION (µg/L)
- (ND) RDX CONCENTRATION (µg/L)
- ND NON DETECT
- GENERAL GROUNDWATER FLOW DIRECTION
- ROADS
- FACILITY BOUNDARY
- GRAND ISLAND CITY LIMITS
- SURFACE DRAINAGE
- (281) STATE ROUTE
- (30) U.S. ROUTE

- FEEDLOT
- 2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) FEBRUARY/MARCH 2022
- 20 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >20µg/L) FEBRUARY/MARCH 2022
- DASHED WHERE INFERRED

NOTE: EW7 PUMPING RATE SET AT 0 GPM DURING OU1 REBOUND STUDY AND SUBSURFACE INJECTION EVENTS.

N

800 400 0 800
SCALE IN FEET

Bruce ENGINEERING AECOM

EXTENT OF OU1 EXPLOSIVES PLUME, OU1 REBOUND STUDY, QUARTER 8 (FEBRUARY/MARCH 2022)
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 04/12/22	PROJECT NO. 60565355	FIG. NO. 2-1
CHK'D. BY: DC	DATE: 04/12/22		

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13th Street

G0086
(5.8)
(1.3)

2

EW7
(INACTIVE)

EW7-PM23

EW7-PM22

EW7-PM21		
Depth	TNT	RDX
20'-30'	4.1	0.97

EW7-PM24		
Depth	TNT	RDX
20'-30'	ND	0.90

EW7-PM25		
Depth	TNT	RDX
20'-30'	ND	ND
30'-40'	ND	ND

EW7-PM26		
Depth	TNT	RDX
20'-30'	1.1	0.77
30'-40'	ND	ND

EW7-PM27		
Depth	TNT	RDX
30'-40'	ND	ND

EW7-PM28		
Depth	TNT	RDX
20'-30'	ND	ND

EW7-PM29		
Depth	TNT	RDX
20'-30'	ND	ND
30'-40'	ND	ND

EW7-T19
EW7-T20
EW7-T21
EW7-T22
EW7-T23
EW7-T24
EW7-T25
EW7-T26
EW7-T27

(5.0)
(1.2)
PZ017R

PZ018
(ND)
(ND)

(ND)
(ND)
PZ019

N. 60th Road

2

2020 EW7 INJECTION WALL	LENGTH (FEET)	NUMBER OF POINTS	SPACING (FEET)	AMENDMENT
EW7-T17	165	12	15	WB66-10 9.8%
EW7-T18	165	12	15	WB66-10 9.8%
EW7-T19	165	12	15	WB66-10 9.8%
EW7-T20	165	12	15	WB66-10 9.8%
EW7-T21	345	24	15	WB66-10 9.8%
EW7-T22	165	12	15	WB66-10 9.8%
EW7-T23	525	36	15	WB66-10 9.8%
EW7-T24	525	36	15	WB66-10 9.8%
EW7-T25	525	36	15	WB66-10 9.8%
EW7-T26	432	30	15	WB66-10 9.8%
EW7-T27	165	12	15	WB66-10 9.8%
2020 EW7 TOTAL	**3345**	**234**		
EW7-T17 AND T18 ARE SHOWN ON FIGURE 2-3				

May 10, 2022 10:48:08 a.m.
Drawing: O:\DCS\Projects\ENV\60565355_CHAAP_2018\900_CAD_GIS\910_CAD\2019\ou1-q8\2-2.dwg

LEGEND

- G0121 — OU1 GROUNDWATER SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 8 (FEBRUARY/MARCH 2022)
- EW7-PM21 — OU1 GROUNDWATER SAMPLING LOCATIONS – PERFORMANCE MONITORING, QUARTER 8 (FEBRUARY/MARCH 2022)
- (ND) — TNT CONCENTRATION (µg/L)
- (ND) — RDX CONCENTRATION (µg/L)
- ND — NON DETECT
- WESBLEND 66-10 TREATMENT WALL LOCATION (9.8% BY VOLUME) (OCTOBER/NOVEMBER 2020)
- WESBLEND 66-10 TREATMENT WALL LOCATION (9.8% BY VOLUME) (OCTOBER/NOVEMBER 2019)
- BLDG 14 — FORMER SITE FEATURES
- ROADS
- FACILITY BOUNDARY

EW7 (INACTIVE)

- EXTRACTION WELL
- G0015 — ON-POST GROUNDWATER MONITORING WELL
- PZ007 — ON-POST PIEZOMETER
- PERFORMANCE MONITORING SAMPLING LOCATION (TEMPORARY WELL)
- 2018 DIRECT PUSH GROUNDWATER SAMPLING LOCATION (MARCH)
- 2016 DIRECT PUSH GROUNDWATER SAMPLING LOCATION (FEBRUARY)
- 2015 DIRECT PUSH GROUNDWATER SAMPLING LOCATION (MARCH)
- 2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) FEBRUARY/MARCH 2022
- DASHED WHERE INFERRED
- GENERAL GROUNDWATER FLOW DIRECTION

NOTE:
EW7 PUMPING RATE SET AT 0 GPM DURING OU1 REBOUND STUDY AND SUBSURFACE INJECTION EVENTS.

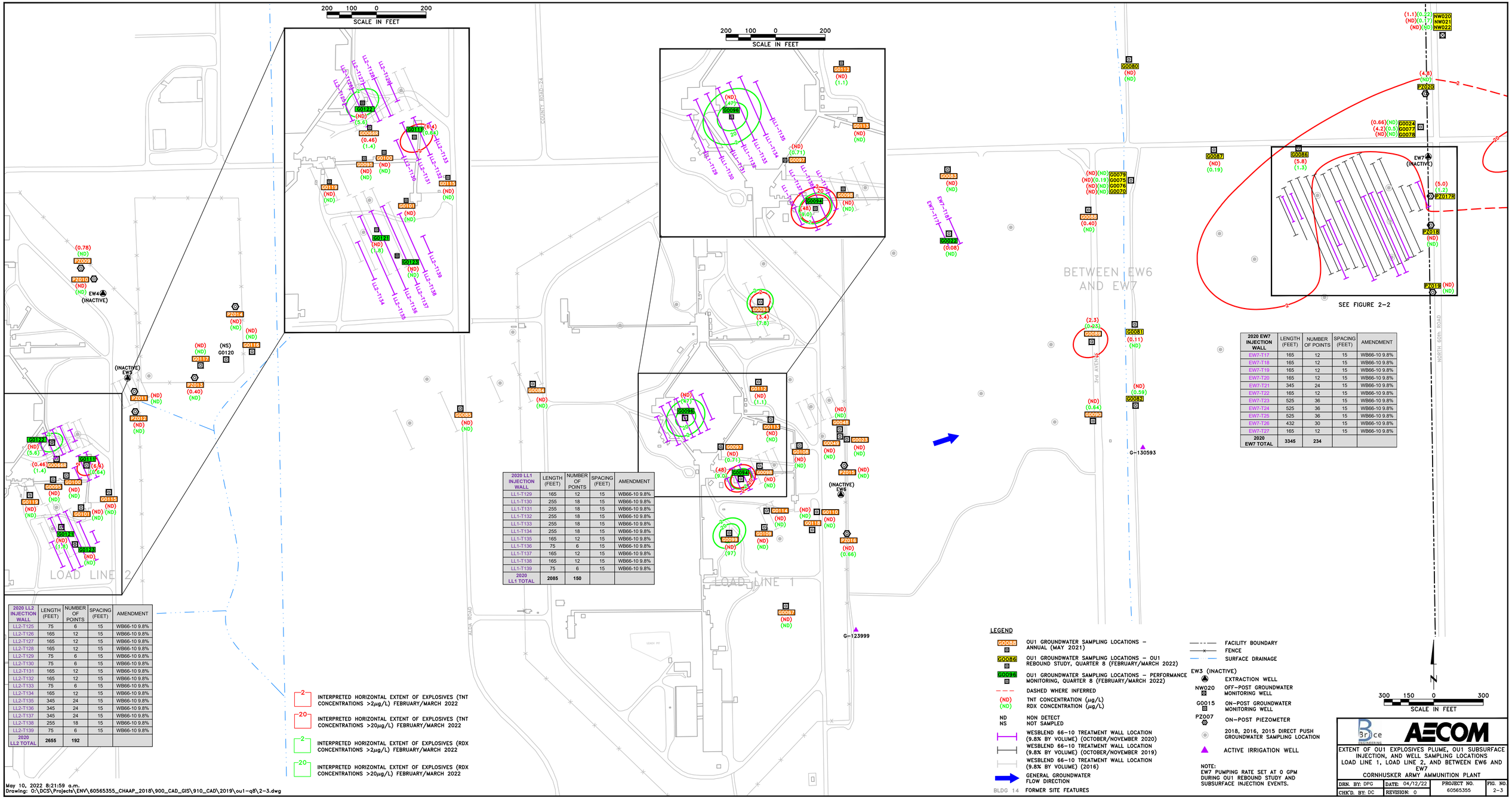
N

100 50 0 100
SCALE IN FEET

Bruce ENGINEERING AECOM

EXTENT OF OU1 EXPLOSIVES PLUME, OU1 SUBSURFACE INJECTION PERFORMANCE MONITORING, QUARTER 8 (FEBRUARY/MARCH 2022) CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 04/12/22	PROJECT NO. 60565355	FIG. NO. 2-2
CHK'D. BY: DC	REVISION: 0		



2020 LL2 INJECTION WALL	LENGTH (FEET)	NUMBER OF POINTS	SPACING (FEET)	AMENDMENT
LL2-T125	75	6	15	WB66-10 9.8%
LL2-T126	165	12	15	WB66-10 9.8%
LL2-T127	165	12	15	WB66-10 9.8%
LL2-T128	165	12	15	WB66-10 9.8%
LL2-T129	75	6	15	WB66-10 9.8%
LL2-T130	75	6	15	WB66-10 9.8%
LL2-T131	165	12	15	WB66-10 9.8%
LL2-T132	165	12	15	WB66-10 9.8%
LL2-T133	75	6	15	WB66-10 9.8%
LL2-T134	165	12	15	WB66-10 9.8%
LL2-T135	345	24	15	WB66-10 9.8%
LL2-T136	345	24	15	WB66-10 9.8%
LL2-T137	345	24	15	WB66-10 9.8%
LL2-T138	255	18	15	WB66-10 9.8%
LL2-T139	75	6	15	WB66-10 9.8%
2020 LL2 TOTAL	2655	192		

2020 LL1 INJECTION WALL	LENGTH (FEET)	NUMBER OF POINTS	SPACING (FEET)	AMENDMENT
LL1-T129	165	12	15	WB66-10 9.8%
LL1-T130	255	18	15	WB66-10 9.8%
LL1-T131	255	18	15	WB66-10 9.8%
LL1-T132	255	18	15	WB66-10 9.8%
LL1-T133	255	18	15	WB66-10 9.8%
LL1-T134	255	18	15	WB66-10 9.8%
LL1-T135	165	12	15	WB66-10 9.8%
LL1-T136	75	6	15	WB66-10 9.8%
LL1-T137	165	12	15	WB66-10 9.8%
LL1-T138	165	12	15	WB66-10 9.8%
LL1-T139	75	6	15	WB66-10 9.8%
2020 LL1 TOTAL	2085	150		

2020 EW7 INJECTION WALL	LENGTH (FEET)	NUMBER OF POINTS	SPACING (FEET)	AMENDMENT
EW7-T17	165	12	15	WB66-10 9.8%
EW7-T18	165	12	15	WB66-10 9.8%
EW7-T19	165	12	15	WB66-10 9.8%
EW7-T20	165	12	15	WB66-10 9.8%
EW7-T21	345	24	15	WB66-10 9.8%
EW7-T22	165	12	15	WB66-10 9.8%
EW7-T23	525	36	15	WB66-10 9.8%
EW7-T24	525	36	15	WB66-10 9.8%
EW7-T25	525	36	15	WB66-10 9.8%
EW7-T26	432	30	15	WB66-10 9.8%
EW7-T27	165	12	15	WB66-10 9.8%
2020 EW7 TOTAL	3345	234		

-2 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) FEBRUARY/MARCH 2022

-20 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >20µg/L) FEBRUARY/MARCH 2022

-2 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >2µg/L) FEBRUARY/MARCH 2022

-20 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >20µg/L) FEBRUARY/MARCH 2022

LEGEND

- G0083 OU1 GROUNDWATER SAMPLING LOCATIONS – ANNUAL (MAY 2021)
- G0086 OU1 GROUNDWATER SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 8 (FEBRUARY/MARCH 2022)
- G0094 OU1 GROUNDWATER SAMPLING LOCATIONS – PERFORMANCE MONITORING, QUARTER 8 (FEBRUARY/MARCH 2022)
- DASHED WHERE INFERRED
- (ND) TNT CONCENTRATION (µg/L)
- (ND) RDX CONCENTRATION (µg/L)
- ND NON DETECT
- NS NOT SAMPLED
- WESBLEND 66-10 TREATMENT WALL LOCATION (9.8% BY VOLUME) (OCTOBER/NOVEMBER 2020)
- WESBLEND 66-10 TREATMENT WALL LOCATION (9.8% BY VOLUME) (OCTOBER/NOVEMBER 2019)
- WESBLEND 66-10 TREATMENT WALL LOCATION (9.8% BY VOLUME) (2016)
- GENERAL GROUNDWATER FLOW DIRECTION
- BLDG 14 FORMER SITE FEATURES
- FACILITY BOUNDARY
- FENCE
- SURFACE DRAINAGE
- EW3 (INACTIVE) EXTRACTION WELL
- NW020 OFF-POST GROUNDWATER MONITORING WELL
- G0015 ON-POST GROUNDWATER MONITORING WELL
- PZ007 ON-POST PIEZOMETER
- 2018, 2016, 2015 DIRECT PUSH GROUNDWATER SAMPLING LOCATION
- ACTIVE IRRIGATION WELL

NOTE:
EW7 PUMPING RATE SET AT 0 GPM DURING OU1 REBOUND STUDY AND SUBSURFACE INJECTION EVENTS.

300 150 0 300
SCALE IN FEET

EXTENT OF OU1 EXPLOSIVES PLUME, OU1 SUBSURFACE INJECTION, AND WELL SAMPLING LOCATIONS
LOAD LINE 1, LOAD LINE 2, AND BETWEEN EW6 AND EW7
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 04/12/22	PROJECT NO. 60565355	FIG. NO. 2-3
CHK'D. BY: DC	REVISION: 0		

May 10, 2022 8:21:59 a.m.
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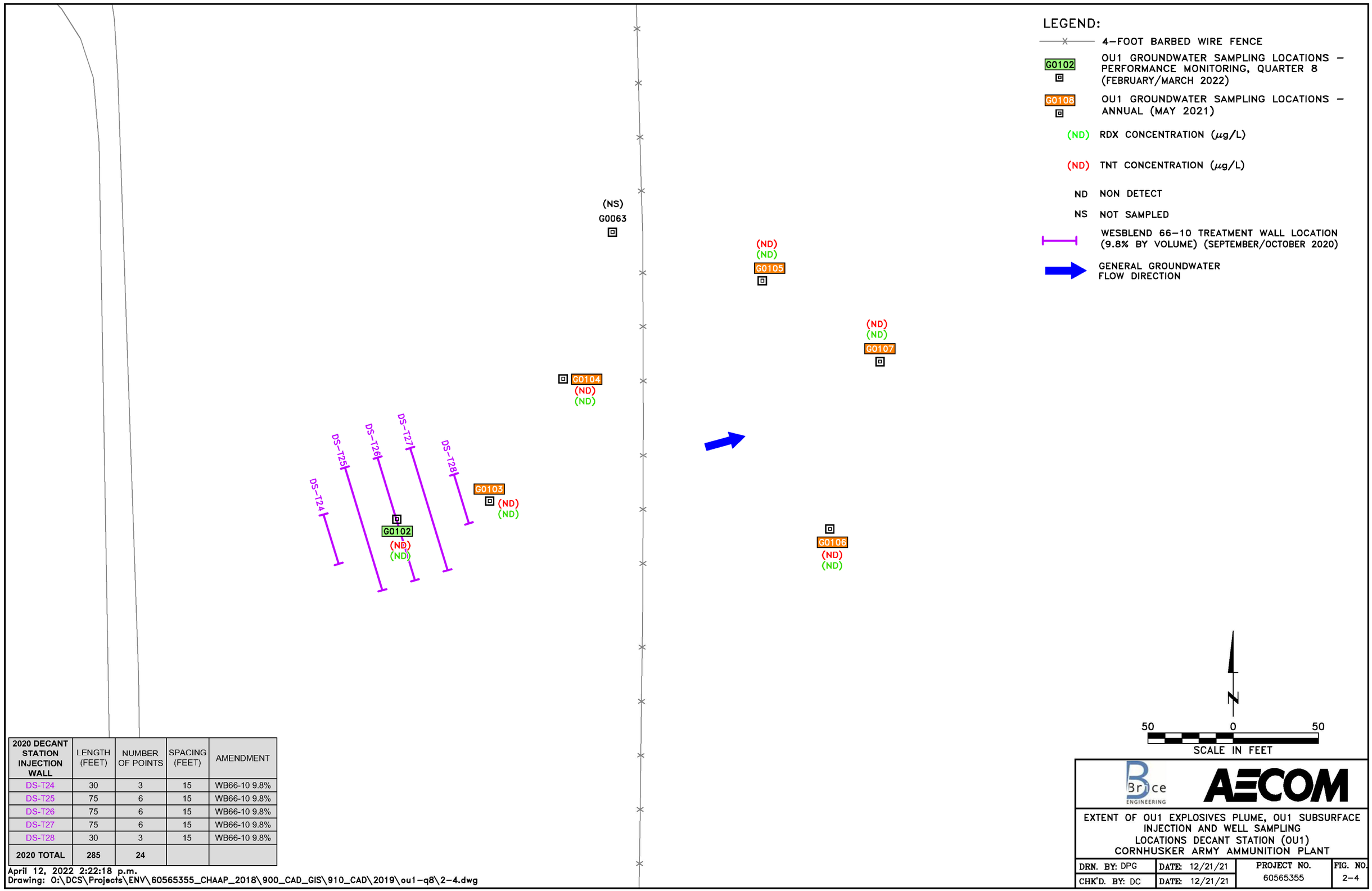

2020 DECANT STATION INJECTION WALL	LENGTH (FEET)	NUMBER OF POINTS	SPACING (FEET)	AMENDMENT
DS-T24	30	3	15	WB66-10 9.8%
DS-T25	75	6	15	WB66-10 9.8%
DS-T26	75	6	15	WB66-10 9.8%
DS-T27	75	6	15	WB66-10 9.8%
DS-T28	30	3	15	WB66-10 9.8%
2020 TOTAL	285	24		

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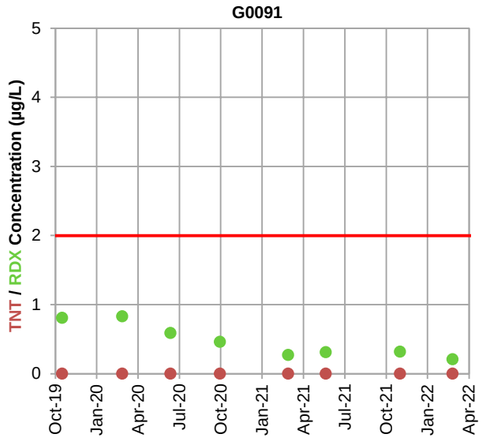
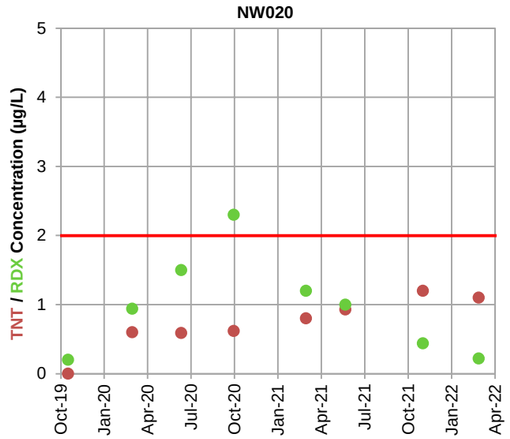
Bruce ENGINEERING AECOM

EXTENT OF OU1 EXPLOSIVES PLUME, OU1 SUBSURFACE INJECTION AND WELL SAMPLING LOCATIONS DECANT STATION (OU1)
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 12/21/21	PROJECT NO. 60565355	FIG. NO. 2-4
CHK'D. BY: DC	DATE: 12/21/21		





Nonparametric Trend Analysis for TNT and RDX (OU1 Rebound Study)

Well	Detects	Non-detects	Total Samples	Detection Frequency	Min (µg/L)	Max (µg/L)	Mean (µg/L)	Median (µg/L)	MK Result	Trend
G0091	0 / 8	8 / 0	8 / 8	ND / 100%	ND / 0.21	ND / 0.83	ND / 0.48	ND / 0.39	-12 / -20	ND / D
NW020	7 / 8	1 / 0	8 / 8	88% / 100%	ND / 0.20	1.2 / 2.3	0.73 / 0.98	0.71 / 0.97	24 / -4	I / S
NW021	0 / 3	8 / 5	8 / 8	ND / 38%	ND / ND	ND / 0.22	ND / 0.07	ND / ND	-10 / 7	ND / NT
PZ020	8 / 7	0 / 1	8 / 8	100% / 88%	2.2 / ND	5.1 / 0.68	3.78 / 0.52	3.75 / 0.6	16 / 1	I / NT
G0024	6 / 1	2 / 7	8 / 8	75% / 13%	ND / ND	0.66 / 0.59	0.36 / 0.07	0.45 / ND	15 / -12	I / PD
G0077	8 / 8	0 / 0	8 / 8	100% / 100%	2.7 / 0.19	4.5 / 1.7	3.65 / 0.77	3.5 / 0.66	22 / 10	I / NT
PZ017R	8 / 7	0 / 1	8 / 8	100% / 88%	0.37 / ND	17 / 2.2	10.42 / 1.37	10.5 / 1.4	-20 / 3	D / NT
PZ018	6 / 2	2 / 6	8 / 8	75% / 25%	ND / ND	19 / 1.0	7.33 / 0.24	5.3 / ND	-15 / -9	D / NT

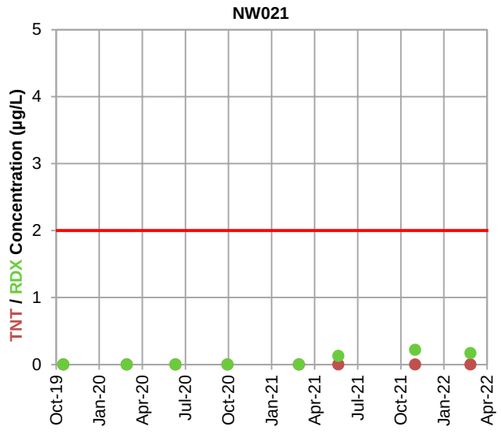
Notes:

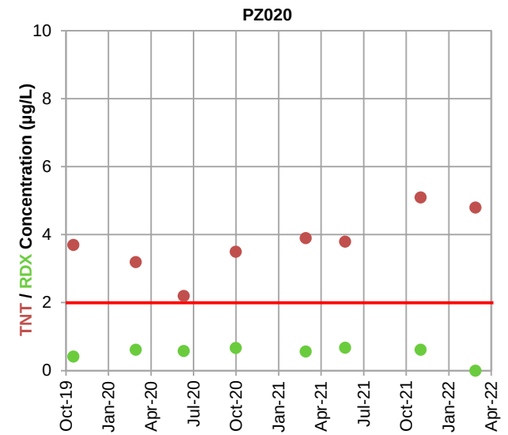
Trend analysis performed using Mann-Kendall test at 0.05 significance level. Only wells with detections are shown.

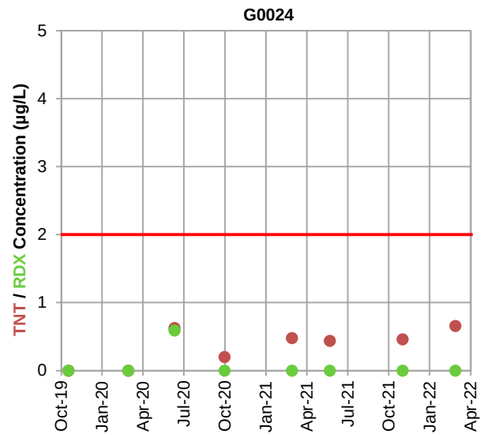
µg/L = micrograms per liter MK = Mann-Kendall OU = Operable Unit — = Health Advisory Level (HAL) (1994) TNT / RDX

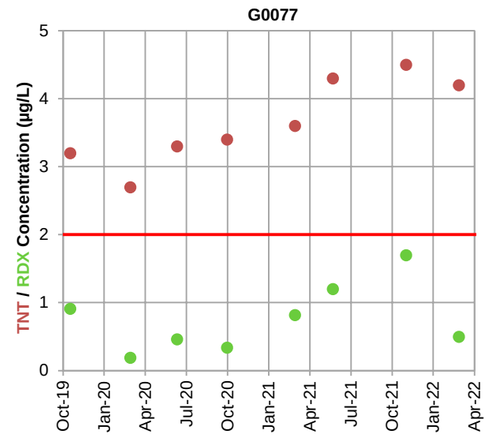
TNT = 2,4,6-trinitrotoluene RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

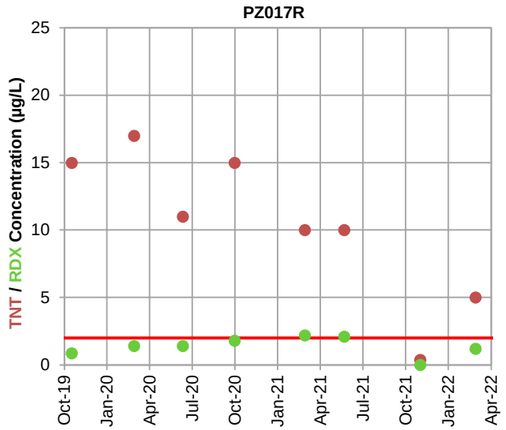
D = Decreasing I = Increasing ND = No Detections NT = No Trend PI = Probably Decreasing S = Stable

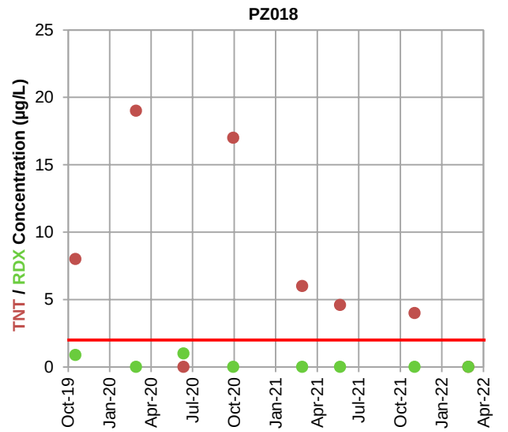












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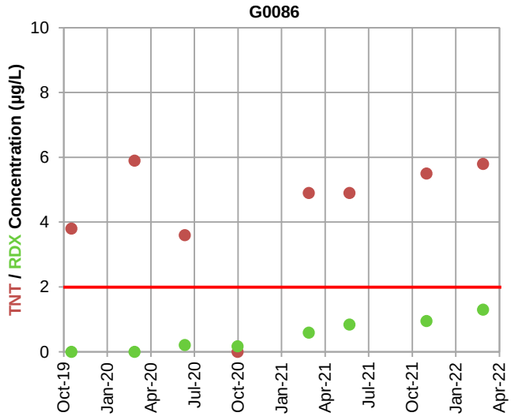
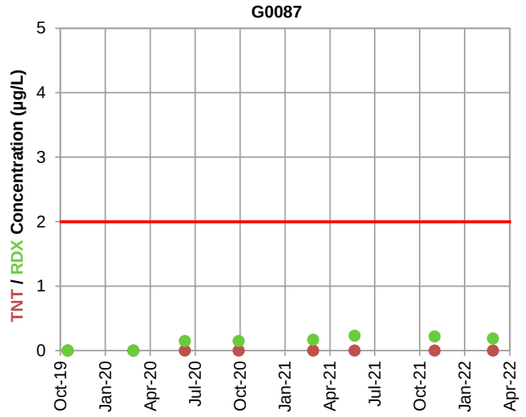
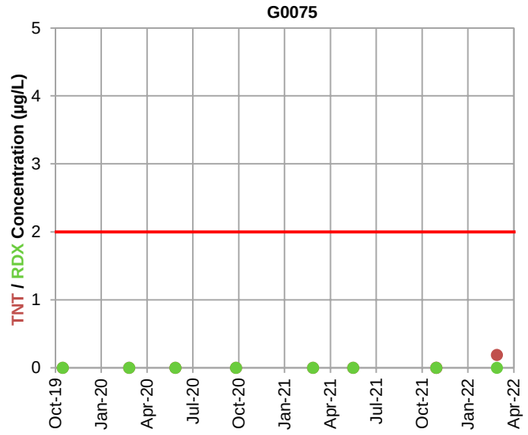
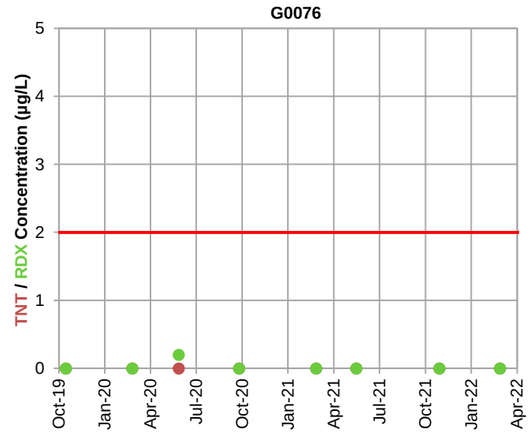
Mann-Kendall Analysis for TNT and RDX
Former Facility Boundary Wells (OU1)
Cornhusker Army Ammunition Plant

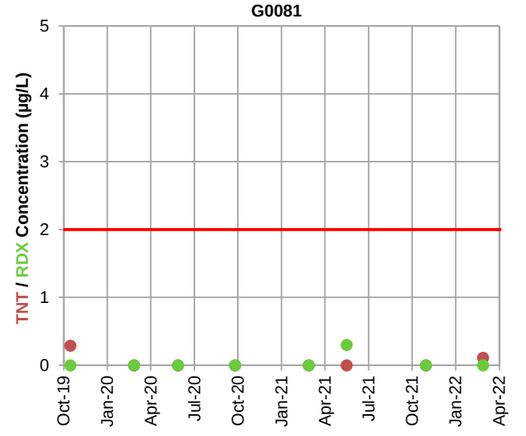
Drawn By:	Date:	
KD	4/1/2022	**Figure 4-1**
Checked By:	Project No.:	
JO	60565355	

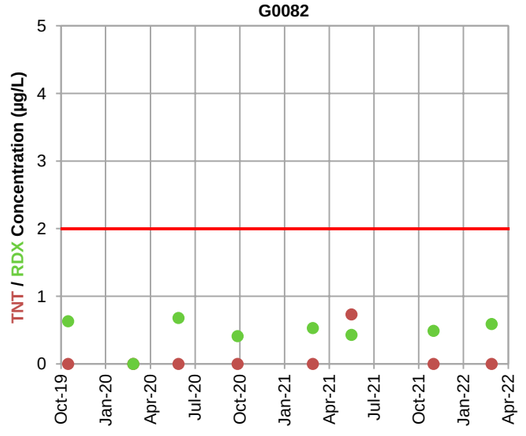












Nonparametric Trend Analysis for TNT and RDX (OU1 Rebound Study)

Well	Detects	Non-detects	Total Samples	Detection Frequency	Min (µg/L)	Max (µg/L)	Mean (µg/L)	Median (µg/L)	MK Result	Trend
G0086	7 / 6	1 / 2	8 / 8	88% / 75%	ND / ND	5.9 / 1.3	4.3 / 0.51	4.9 / 0.4	9 / 24	NT / I
G0087	0 / 6	8 / 2	8 / 8	ND / 75%	ND / ND	ND / 0.23	ND / 0.14	ND / 0.16	-10 / 20	ND / I
G0075	1 / 0	7 / 8	8 / 8	13% / ND	ND / ND	0.19 / ND	0.02 / ND	ND / ND	-13 / -5	ND / S
G0076	0 / 1	8 / 7	8 / 8	ND / 13%	ND / ND	ND / 0.20	ND / 0.03	ND / ND	-13 / -9	ND / NT
G0081	2 / 1	6 / 7	8 / 8	25% / 13%	ND / ND	0.29 / 0.30	0.05 / 0.04	ND / ND	-10 / -5	NT / NT
G0082	1 / 7	7 / 1	8 / 8	13% / 88%	ND / ND	0.73 / 0.68	0.09 / 0.47	ND / 0.51	-6 / 2	NT / NT

Notes:

Trend analysis performed using Mann-Kendall test at 0.05 significance level. Only wells with detections are shown.

µg/L = micrograms per liter MK = Mann-Kendall OU = Operable Unit — = Health Advisory Level (HAL) (1994) TNT / RDX

TNT = 2,4,6-trinitrotoluene RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

I = Increasing ND = No Detections NT = No Trend S = Stable

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Mann-Kendall Analysis for TNT and RDX
Upgradient Wells (OU1)
Cornhusker Army Ammunition Plant

Drawn By:	Date:	
KD	4/1/2022	**Figure 4-2**
Checked By:	Project No.:	
JO	60565355	

Appendix A
Well Drilling Licenses

NEBRASKA
Good Life. Great Mission.
DEPT. OF HEALTH AND HUMAN SERVICES

Pete Ricketts, Governor

Public Health Licensure Unit
Certification of Licensure

This certificate serves as primary source verification of licensure in the State of Nebraska as of the close of the business day before 10/18/2021.

Name:	Gregory B Barnes
Type:	WD-PIC
Number:	39646
Status:	Active
Issued:	06/01/2021
Expiration:	12/31/2022
Education:	None on record at this time

Disciplinary/Non-Disciplinary Information:

No disciplinary/non-disciplinary actions taken against this license.

If you have questions about this information, please contact the Licensure Unit at (402) 471-2115 or DHHS.LicensureUnit@nebraska.gov.

NEBRASKA
Good Life. Great Mission.
DEPT. OF HEALTH AND HUMAN SERVICES

Pete Ricketts, Governor

Public Health Licensure Unit
Certification of Licensure

This certificate serves as primary source verification of licensure in the State of Nebraska as of the close of the business day before 4/ 6/2021.

Name:	Jesse V Kalvig
Type:	Well Drilling Contractor
Number:	19210
Status:	Active
Issued:	09/19/2000
Expiration:	12/31/2022
Education:	None on record at this time

Disciplinary/Non-Disciplinary Information:

No disciplinary/non-disciplinary actions taken against this license.

If you have questions about this information, please contact the Licensure Unit at (402) 471-2115 or DHHS.LicensureUnit@nebraska.gov.

Appendix B
OU1 Rebound Study and Performance Monitoring Completed Field Forms

WATER SAMPLE COLLECTION FIELD SHEET

PROJECT NAME **CHAAP OU1 Rebound Study- Direct Push GW (Screen Point)** PROJECT NO. **60565355**

SAMPLE NO. NW050R-DP08-20 SAMPLE DEPTH. 20'

DATE/TIME COLLECTED 2-22-22/ 1005 PERSONNEL AE, CD, BN

SAMPLE METHOD Peristaltic Pump w/ Tubing

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500mL Amber	6°C	Explosives + MNX (8330A)

WELL PURGING DATA

Date	2-22-22	PID Measurements	
Time Started	0940	Background	ND
Time Completed	1005	Breathing Zone	ND
Purge Volume (gal)	3	Well Head	ND
Sample Turbidity	12.06	Purge Water	ND
Depth to Water (ft bgs)	11.52		

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

PROJECT NAME **CHAAP OU1 Rebound Study- Direct Push GW (Screen Point)** PROJECT NO. **60565355**

SAMPLE NO. NW050R-DP08-35 SAMPLE DEPTH. 35

DATE/TIME COLLECTED 2-22-22 / 1050 PERSONNEL RF, CD, BN

SAMPLE METHOD Peristaltic Pump w/ Tubing

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	(NO)	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	(NO)	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	(NO)	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500mL Amber	6°C	Explosives + MNX (8330A)

WELL PURGING DATA

Date	2-22-22	PID Measurements	
Time Started	1034	Background	ND
Time Completed	1050	Breathing Zone	ND
Purge Volume (gal)	3	Well Head	ND
Sample Turbidity	711	Purge Water	ND
Depth to Water (ft bgs)	13.94		

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

PROJECT NAME **CHAAP OU1 Rebound Study- Direct Push GW (Screen Point)** PROJECT NO. **60565355**

SAMPLE NO. NW050R-DP08-60 SAMPLE DEPTH. 60'

DATE/TIME COLLECTED 2-22-22/1250 PERSONNEL AE, CD, BN

SAMPLE METHOD Peristaltic Pump w/ Tubing

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	(NO)	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500mL Amber	6°C	Explosives + MNX (8330A)

WELL PURGING DATA

Date	2-22-22	PID Measurements	
Time Started	1129	Background	
Time Completed	1250	Breathing Zone	
Purge Volume (gal)	3	Well Head	
Sample Turbidity	3778	Purge Water	
Depth to Water (ft bgs)	21.82		

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

PROJECT NAME **CHAAP OU1 Rebound Study- Direct Push GW (Screen Point)** PROJECT NO. **60565355**

SAMPLE NO. 05003-DP08-25 SAMPLE DEPTH. 25'

DATE/TIME COLLECTED 2-22-22/ 1610 PERSONNEL AE, CD, BN

SAMPLE METHOD Peristaltic Pump w/ Tubing

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	(NO)	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	(NO)	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	(NO)	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500mL Amber	6°C	Explosives + MNX (8330A)

WELL PURGING DATA

Date	2-22-22	PID Measurements	
Time Started	1445	Background	ND
Time Completed	1610	Breathing Zone	ND
Purge Volume (gal)	3	Well Head	ND
Sample Turbidity	6.72	Purge Water	ND
Depth to Water (ft bgs)	15.89		

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

PROJECT NAME **CHAAP OU1 Rebound Study- Direct Push GW (Screen Point)** PROJECT NO. **60565355**

SAMPLE NO. 05003-DP08-35 SAMPLE DEPTH. 35'

DATE/TIME COLLECTED 2-23-22 / 0920 PERSONNEL BE, CO, BN

SAMPLE METHOD Peristaltic Pump w/ Tubing

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500mL Amber	6°C	Explosives + MNX (8330A)

WELL PURGING DATA

		PID Measurements	
Date	2-23-22		
Time Started	0900	Background	ND
Time Completed	0920	Breathing Zone	ND
Purge Volume (gal)	3	Well Head	ND
Sample Turbidity	929	Purge Water	ND
Depth to Water (ft bgs)	15.01		

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

PROJECT NAME **CHAAP OU1 Rebound Study- Direct Push GW (Screen Point)** PROJECT NO. **60565355**

SAMPLE NO. 05003-DP08-~~S~~MS 45 SAMPLE DEPTH. 45'

DATE/TIME COLLECTED 2-23-22 / 1005 PERSONNEL AE, CD, BN

SAMPLE METHOD Peristaltic Pump w/ Tubing

SAMPLE MEDIA: Groundwater

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO. NA

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO. NA

MS/MSD REQUESTED (YES) NO MS/MSD SAMPLE NO. 05003-DP08-45 MS/MSD

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
6 - 500mL Amber	6°C	Explosives + MNX (8330A)

WELL PURGING DATA

Date	2-23	PID Measurements	
Time Started	0945	Background	ND
Time Completed	1005	Breathing Zone	ND
Purge Volume (gal)	3	Well Head	ND
Sample Turbidity	2225	Purge Water	ND
Depth to Water (ft bgs)	14.56		

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

PROJECT NAME **CHAAP OU1 Rebound Study- Direct Push GW (Screen Point)** PROJECT NO. **60565355**

SAMPLE NO. 05001-DP08-25 SAMPLE DEPTH. 25'

DATE/TIME COLLECTED 2-23-22/1120 PERSONNEL ME, CD, BN

SAMPLE METHOD Peristaltic Pump w/ Tubing

SAMPLE MEDIA: Groundwater

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO. NA

SAMPLE QC DUPLICATE: (YES) NO DUPLICATE SAMPLE NO. ~~0500~~ 05501-DP 05-25 (0800)

MS/MSD REQUESTED YES (NO) MS/MSD SAMPLE NO. NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
4 - 500mL Amber	6°C	Explosives + MNX (8330A)

WELL PURGING DATA

Date	2-23-22	PID Measurements	
Time Started	1050	Background	ND
Time Completed	1120	Breathing Zone	ND
Purge Volume (gal)	3	Well Head	ND
Sample Turbidity	33.0	Purge Water	ND
Depth to Water (ft bgs)	8.83		

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

PROJECT NAME **CHAAP OU1 Rebound Study- Direct Push GW (Screen Point)** PROJECT NO. **60565355**

SAMPLE NO. 05001-DP08-35 SAMPLE DEPTH. 35'

DATE/TIME COLLECTED 2-23-22 / 1205 PERSONNEL AE, CD, BN

SAMPLE METHOD Peristaltic Pump w/ Tubing

SAMPLE MEDIA: Groundwater

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO. NA

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO. NA

MS/MSD REQUESTED YES (NO) MS/MSD SAMPLE NO. NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500mL Amber	6°C	Explosives + MNX (8330A)

WELL PURGING DATA

		PID Measurements	
Date	2-23-22		
Time Started	1145	Background	ND
Time Completed	1205	Breathing Zone	ND
Purge Volume (gal)	3	Well Head	ND
Sample Turbidity	993	Purge Water	ND
Depth to Water (ft bgs)	6.91		

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

PROJECT NAME **CHAAP OU1 Rebound Study- Direct Push GW (Screen Point)** PROJECT NO. **60565355**

SAMPLE NO. 05001-DP08-45 SAMPLE DEPTH. 45'

DATE/TIME COLLECTED 2-23-22 / 1250 PERSONNEL RE, CD, BN

SAMPLE METHOD Peristaltic Pump w/ Tubing

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	(NO)	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	(NO)	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	(NO)	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500mL Amber	6°C	Explosives + MNX (8330A)

WELL PURGING DATA

Date	2-23-22	PID Measurements	
Time Started	1235	Background	ND
Time Completed	1250	Breathing Zone	ND
Purge Volume (gal)	3	Well Head	ND
Sample Turbidity	1,211	Purge Water	ND
Depth to Water (ft bgs)	9.18		

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	CA210-8	WELL NO.	CA210
DATE/TIME COLLECTED	2-28-22 / 1110	PERSONNEL	AE, KD
SAMPLE METHOD	~~PRO-ACTIVE SS MONSOON~~ AA Peristaltic pump		
SAMPLE MEDIA:	Groundwater		
SAMPLE QA SPLIT:	YES / **NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES / **NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES / **NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-28-22	Well Depth (ft BTOC)	16.80
Time Started	1030	Depth to Water (ft BTOC)	~~12.03~~ 12.35
Time Completed	1110	Water Column Length	~~4.77~~ 4.45
PID Measurements		Well Casing Volume (per ft)	4.45 2.47
Background	ND	Volume of Water in Well (L)	~~4.77 x 2.47 = 11.78~~ 10.99
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1035	2.5	6.85	10.64	1.781	3.44	148.4	30.96	12.35	0.5
1040	5.0	6.85	10.93	1.775	3.09	141.6	18.08	12.35	0.5
1045	7.5	6.84	10.92	1.766	3.03	140.0	11.51	12.35	0.5
1050	10	6.84	11.03	1.761	2.96	139.3	9.22	12.35	0.5
1055	12.5	6.84	11.03	1.748	2.85	139.5	5.91	12.35	0.5
1100	15	6.84	11.41	1.745	2.83	139.9	4.69	12.35	0.5
1105	17.5	6.85	11.47	1.739	2.83	140.5	4.14	12.35	0.5
1110	20	6.86	11.52	1.738	2.83	140.7	3.18	12.35	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.28 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 15 ft

Pump Rate = .5 L/min

Well Diameter = 4"

Screen Interval = 7.9 - 17.9

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	61.3	211.8	211.8	**155.5**
DO	0.06	1.99	0.47	**0.55**
PH	5.83	6.75	6.73	**6.51**
Cond.	0.708	1.735	1.735	**1.384**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	CA211-8	WELL NO.	CA211
DATE/TIME COLLECTED	2-28-22/1010	PERSONNEL	RE, KD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-28-22	Well Depth (ft BTOC)	42.75
Time Started	930	Depth to Water (ft BTOC)	12.42
Time Completed	1010	Water Column Length	30.33
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	30.33 x 2.47 = 74.91
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
935	2.5	6.71	11.05	.849	1.17	200.6	3.50	12.43	0.5
940	5.0	6.68	11.27	.842	1.11	190.5	3.33	12.43	0.5
945	7.5	6.67	11.49	.834	1.10	179.4	3.12	12.43	0.5
950	10	6.67	11.49	.834	1.10	179.4	2.88	12.43	0.5
955	12.5	6.67	11.69	.828	1.16	166.4	2.93	12.43	0.5
1000	15	6.67	11.79	.820	1.18	161.5	3.04	12.43	0.5
1005	17.5	6.68	11.82	.811	1.19	158.1	3.12	12.43	0.5
1010	20	6.69	11.95	.818	1.21	155.6	3.16	12.43	0.5
			MM						

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.05 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 38 ft

Pump Rate = .5 L/min

Well Diameter = 4"

Screen Interval = 32.8 - 42.8

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	33.6	188.2	170.0	**137.0**
DO	0.10	0.93	0.23	**0.56**
PH	6.33	6.72	6.63	**6.54**
Cond.	0.662	1.110	0.958	**0.876**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	CA212-8	WELL NO.	CA212
DATE/TIME COLLECTED	2-28-22 / 1155	PERSONNEL	AE, JCD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-28-22	Well Depth (ft BTOC)	67.00
Time Started	1115	Depth to Water (ft BTOC)	12.39
Time Completed	1155	Water Column Length	54.61
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	54.61 x 2.47 = 134.89
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	26

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1120	2.5	7.15	12.15	.588	0.39	91.2	3.99	12.40	0.5
1125	5.0	7.12	12.43	.588	0.15	98.7	2.99	12.40	0.5
1130	7.5	7.11	12.61	.584	0.11	100.8	4.03	12.40	0.5
1135	10	7.13	12.70	.588	0.10	101.4	3.52	12.40	0.5
1140	12.5	7.13	12.81	.588	0.11	102.7	3.29	12.40	0.5
1145	15	7.13	12.90	.587	0.11	104.3	3.33	12.40	0.5
1150	17.5	7.13	12.89	.587	0.12	106.0	3.10	12.40	0.5
1155	20	7.12	12.92	.587	0.12	108.8	3.45	12.40	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.28 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 62 ft

Pump Rate = .5 L/min

Well Diameter = 4"

Screen Interval = 57.0 - 67.0

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	22.3	167.4	135.5	**122.7**
DO	0.05	0.89	0.10	**0.30**
PH	6.64	7.05	6.96	**6.84**
Cond.	0.496	0.732	0.618	**0.608**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	CA213-8	WELL NO.	CA213
DATE/TIME COLLECTED	2-28-22/1245	PERSONNEL	AE, KD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-28-22	Well Depth (ft BTOC)	92.00
Time Started	1205	Depth to Water (ft BTOC)	13.03
Time Completed	1245	Water Column Length	78.97
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	78.97 x 2.47 = 195.06
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1210	2.5	10.49	13.60	.329	6.12	-21.7	5.86	13.05	0.5
1215	5.0	7.90	13.42	.506	0.59	52.8	6.04	13.05	0.5
1220	7.5	7.87	13.59	.505	0.24	53.1	6.38	13.05	0.5
1225	10	7.89	13.60	.502	0.18	48.3	3.44	13.05	0.5
1230	12.5	7.90	13.63	.498	0.16	43.3	2.94	13.05	0.5
1235	15	7.90	13.78	.494	0.14	40.3	3.97	13.05	0.5
1240	17.5	7.90	13.79	.494	0.13	38.4	2.72	13.05	0.5
1245	20	7.89	13.91	.490	0.14	39.3	2.93	13.05	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.16 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 87 ft

Pump Rate = 0.5 L/min

Well Diameter = 4"

Screen Interval = 79.6 - 89.6

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	17.4	172.3	107.5	**102.1**
DO	0.09	1.51	0.15	**0.49**
PH	7.44	7.82	7.81	**7.62**
Cond.	0.366	0.501	0.453	**0.424**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	NW020-8	WELL NO.	NW020
DATE/TIME COLLECTED	2-28 22/1405	PERSONNEL	RE, JLD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED:	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-28-22	Well Depth (ft BTOC)	27.95
Time Started	1325	Depth to Water (ft BTOC)	16.25
Time Completed	1405	Water Column Length	11.70
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	(1.7 X 2.47 = 28.90
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1330	2.5	7.06	13.50	1.355	6.88	146.9	4.25	16.27	0.5
1335	5.0	7.06	13.88	1.359	6.65	143.8	3.10	16.27	0.5
1340	7.5	7.05	13.95	1.361	6.56	140.3	2.66	16.27	0.5
1345	10	7.03	14.11	1.363	6.50	137.6	2.48	16.27	0.5
1350	12.5	7.01	14.34	1.363	6.45	136.5	3.00	16.27	0.5
1355	15	6.99	14.24	1.364	6.41	136.0	2.93	16.27	0.5
1400	17.5	6.98	14.48	1.367	6.40	135.5	2.60	16.27	0.5
1405	20	6.97	14.55	1.366	6.40	135.0	2.58	16.27	0.5
			RPD						

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.09 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 25.5 ft

Pump Rate = ~5 L/min

Well Diameter = 4"

Screen Interval = 15-25

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	41.1	193.0	162.5	**131.5**
DO	3.30	6.69	5.90	**5.60**
PH	6.45	6.90	6.69	**6.69**
Cond.	0.994	1.633	1.301	**1.359**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	NW021-8	WELL NO.	NW021
DATE/TIME COLLECTED	2-28-22 / 1500	PERSONNEL	ME, KD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-28-22	Well Depth (ft BTOC)	45.75
Time Started	1420	Depth to Water (ft BTOC)	16.50
Time Completed	1500	Water Column Length	29.25
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	29.25 X 2.47 = 72.25
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1425	2.5	7.02	14.43	1.007	0.23	137.7	3.96	16.51	0.5
1430	5.0	7.01	14.51	1.004	0.17	139.5	4.14	16.51	0.5
1435	7.5	7.00	14.28	1.006	0.13	140.0	3.26	16.51	0.5
1440	10	6.99	14.35	1.006	0.10	140.0	3.37	16.51	0.5
1445	12.5	7.00	14.46	1.006	0.08	139.1	3.42	16.51	0.5
1450	15	7.00	14.81	1.004	0.07	138.2	3.40	16.51	0.5
1455	17.5	6.99	14.78	1.003	0.07	137.8	3.42	16.51	0.5
1500	20	7.00	14.83	1.001	0.07	136.6	2.83	16.51	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.11 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 43.5 ft

Pump Rate = .5 L/min

Well Diameter = 4"

Screen Interval = 37-42

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-110.2	150.0	94.4	**79.8**
DO	0.04	0.83	0.10	**0.33**
PH	6.69	7.02	6.96	**6.86**
Cond.	0.825	1.180	0.851	**1.021**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	NW022-8	WELL NO.	NW022
DATE/TIME COLLECTED	2-28-22/ 1555	PERSONNEL	AE, KD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-28-22	Well Depth (ft BTOC)	67.00
Time Started	1515	Depth to Water (ft BTOC)	16.40
Time Completed	1555	Water Column Length	50.6
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	50.6 X 2.47 = 124.98
Breathing Zone	ND	Casing Volumes to Purge	~~No. 124.98~~ NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1520	2.5	7.29	13.44	1.139	1.04	-34.0	4.25	16.41	0.5
1525	5.0	7.29	13.88	1.129	1.19	-34.6	4.31	16.41	0.5
1530	7.5	7.27	14.16	1.138	1.15	-35.4	3.93	16.41	0.5
1535	10	7.25	13.97	1.161	0.94	-36.5	3.94	16.41	0.5
1540	12.5	7.24	14.03	1.174	0.78	-37.2	3.74	16.41	0.5
1545	15	7.22	14.10	1.187	0.72	-37.2	3.61	16.41	0.5
1550	17.5	7.22	14.14	1.198	0.70	-37.5	3.86	16.41	0.5
1555	20	7.21	14.10	1.207	0.66	-37.6	3.48	16.41	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.77 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 64.5 ft

Pump Rate = 0.5 L/min

Well Diameter = 4"

Screen Interval = 59 - 64

Historic (7-year average low and high / Q7 / Avg in Bold)				
ORP	-48.5	85.0	-48.5	**-0.8**
DO	0.03	0.72	0.15	**0.22**
PH	6.96	7.29	7.29	**7.07**
Cond.	1.019	1.390	1.051	**1.229**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	NW060-8	WELL NO.	NW060
DATE/TIME COLLECTED	2-27-22/1150	PERSONNEL	BE, IKO
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-27-22	Well Depth (ft BTOC)	20.01
Time Started	1110	Depth to Water (ft BTOC)	14.49
Time Completed	1150	Water Column Length	5.52
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	5.52 x 2.47 = 13.63
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1115	2.5	6.83	11.87	.208	9.96	154.0	4.53	14.60	0.5
1120	5.0	6.71	12.23	.208	9.92	128.9	4.32	14.61	0.5
1125	7.5	6.61	12.52	.208	9.89	130.1	4.60	14.61	0.5
1130	10	6.54	12.68	.208	9.87	134.0	4.60	14.61	0.5
1135	12.5	6.49	12.84	.208	9.87	136.7	4.47	14.61	0.5
1140	15	6.46	12.96	.207	9.86	138.8	4.43	14.61	0.5
1145	17.5	6.44	13.03	.207	9.86	140.2	3.54	14.61	0.5
1150	20	6.42	13.19	.206	9.84	141.0	3.65	14.61	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.11 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 17.5 ft

Pump Rate = 0.5 L/min

Well Diameter = 4"

Screen Interval = 10.0 - 20.0

Historic (7-year average low and high / Q7 / Avg in Bold)				
ORP	29.2	214.5	126.7	**146.5**
DO	9.26	10.89	9.43	**10.20**
PH	5.82	6.56	6.32	**6.17**
Cond.	0.065	0.203	0.171	**0.128**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	**CHAAP**	PROJECT NO.	**60565355**
SAMPLE NO.	**NW061-8**	WELL NO.	**NW061**
DATE/TIME COLLECTED	2-27-22 / 1305	PERSONNEL	ME, KD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	**NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	**NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	**NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-27-22	Well Depth (ft BTOC)	45.20
Time Started	1215	Depth to Water (ft BTOC)	14.18
Time Completed	1305	Water Column Length	31.02
PID Measurements		Well Casing Volume (per ft)	1" 2.47
Background	ND	Volume of Water in Well (L)	31.02 X 2.47 = 76.62
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	25

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
						42.5			
1220	2.5	7.21	13.72	1.008	0.93	~~204~~	13.0	14.18	0.5
1225	5.0	7.20	13.48	1.016	0.05	13.5	17.0	14.18	0.5
1230	7.5	7.20	13.26	1.014	0.05	-0.9	26.0	14.18	0.5
1235	10	7.18	13.30	1.015	0.05	-13.4	22.14	14.18	0.5
1240	12.5	7.18	13.48	1.014	0.01	-24.5	23.01	14.18	0.5
1245	15	7.17	13.52	1.015	0.01	-38.1	23.14	14.18	0.5
1250	17.5	7.17	13.60	1.013	0.01	-49.6	23.48	14.18	0.5
1255	20	7.15	13.65	.874	0.01	-58.7	23.24	14.19	0.5
1300	22.5	7.15	13.70	.885	0.01	-64.5	23.40	14.18	0.5
1305	25.0	7.12	13.75	.896	0.01	-63.8	23.40	14.19	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.73 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 42.5 ft

Pump Rate = .5 L/min

Well Diameter = 4"

Screen Interval = 40.3 - 45.3

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	0.1	243.4	207.5	**142.9**
DO	0.03	0.68	0.41	**0.31**
PH	6.59	7.14	7.14	**6.95**
Cond.	0.308	1.070	0.921	**0.805**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	NW062-8	WELL NO.	NW062
DATE/TIME COLLECTED	2-22-22 / 1415	PERSONNEL	AE, KD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NW062-8 MS/MSD

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-27-22	Well Depth (ft BTOC)	63.80
Time Started	1335	Depth to Water (ft BTOC)	14.33
Time Completed	1415	Water Column Length	49.42
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	49.42 x 2.47 = 122.19
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	22.5

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1340	2.5	7.71	12.95	.773	3.44	-65.5	5.72	14.34	0.5
1345	5.0	7.59	13.16	.825	2.26	-71.3	4.17	14.34	0.5
1350	10	7.49	13.26	.855	1.39	-75.2	3.85	14.34	0.5
1355	12.5	7.41	13.42	.875	0.88	-77.3	4.32	14.34	0.5
1400	15	7.35	13.44	.889	0.56	-79.6	3.29	14.34	0.5
1405	17.5	7.31	13.53	.897	0.35	-82.1	3.44	14.34	0.5
1410	20	7.29	13.51	.901	0.34	-84.2	3.17	14.34	0.5
1415	22.5	7.28	13.49	.895	0.32	-86.0	3.32	14.34	0.5
			AE						

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.84 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 61 ft

Pump Rate = ~5

Well Diameter = 4"

Screen Interval = 58.1 - 63.1

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-100.6	38.6	-81.1	**-49.3**
DO	0.05	0.65	0.22	**0.27**
PH	6.71	8.11	7.49	**7.30**
Cond.	0.270	0.883	0.869	**0.716**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	NW070-8	WELL NO.	NW070
DATE/TIME COLLECTED	2-27-22 / 940	PERSONNEL	RE, ICD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-27-22	Well Depth (ft BTOC)	20.60
Time Started	0905	Depth to Water (ft BTOC)	11.21
Time Completed	0940	Water Column Length	9.39
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	23.19 = 9.39 x 2.47
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
910	2.5	7.12	14.75	.842	0.85	201.6	5.07	11.23	0.5
915	5.0	7.11	15.05	.842	0.58	195.3	3.93	11.23	0.5
920	10	7.11	15.29	.839	0.44	189.6	3.84	11.23	0.5
925	12.5	7.11	15.40	.838	0.35	185.0	2.93	11.25	0.5
930	15	7.10	15.45	.837	0.29	180.8	2.79	11.25	0.5
935	17.5	7.11	15.44	.834	0.28	177.5	2.62	11.23	0.5
940	20	7.11	15.65	.831	0.29	174.5	2.76	11.23	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.08 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 15.5 ft

Pump Rate = 0.5 L/min

Well Diameter = 4"

Screen Interval = 10.6 - 20.6

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-307.4	163.2	78.9	**42.7**
DO	0.07	1.59	0.11	**0.41**
PH	6.51	7.25	7.13	**6.96**
Cond.	0.096	0.926	0.871	**0.494**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	NW071-8	WELL NO.	NW071
DATE/TIME COLLECTED	2-27-22 / 1040	PERSONNEL	AE, KD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-27-22	Well Depth (ft BTOC)	60.20
Time Started	1000	Depth to Water (ft BTOC)	15.01
Time Completed	1040	Water Column Length	49.19
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	49.19 X 2.47 = 121.5
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
	N								
1005	~~6.4925~~	6.49	13.66	.682	2.35	244.7	7.48	11.0	0.5
1010	5.0	6.49	13.63	.683	2.35	222.6	6.10	11.0	0.5
1015	7.5	6.48	13.63	.682	2.33	207.3	5.72	11.0	0.5
1020	10	6.48	13.90	.682	2.29	196.5	5.93	11.0	0.5
1025	12.5	6.47	13.97	.682	2.26	189.4	5.28	11.0	0.5
1030	15	6.48	13.98	.681	2.22	185.9	3.56	11.0	0.5
1035	17.5	6.48	13.95	.682	2.18	183.3	4.20	11.0	0.5
1040	20	6.48	13.91	.681	2.15	181.9	4.34	11.0	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.13 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 57.5 ft

Pump Rate = 0.5 L/min

Well Diameter = 4"

Screen Interval = 55.2 - 60.2

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-151.2	165.3	158.6	**93.8**
DO	0.46	3.43	2.18	**2.14**
PH	6.32	6.66	6.66	**6.47**
Cond.	0.519	0.745	0.664	**0.632**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0024-8	WELL NO.	G0024
DATE/TIME COLLECTED	3-1-22/ 1310	PERSONNEL	AE, AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft BTOC)	33.34
Time Started	1230	Depth to Water (ft BTOC)	13.51
Time Completed	1310	Water Column Length	19.83
PID Measurements		Well Casing Volume (per ft)	2" @ 2.47
Background	ND	Volume of Water in Well (L)	19.83 X 2.47 = 48.98
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	26

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1235	2.5	6.83	13.23	.591	5.20	151.8	1.94	13.64	0.5
1240	5.0	6.82	15.12	.590	5.14	151.3	2.05	13.64	0.5
1245	7.5	6.83	13.98	.588	5.13	150.9	2.11	13.61	0.5
1250	10	6.82	14.38	.593	5.09	149.4	2.37	13.61	0.5
1255	12.5	6.82	14.18	.596	5.09	149.4	2.41	13.61	0.5
1300	15	6.82	14.29	.594	5.06	149.2	2.43	13.61	0.5
1305	17.5	6.81	14.31	.593	5.04	148.7	2.45	13.61	0.5
1310	20	6.81	14.60	.594	5.00	148.8	2.41	13.61	0.5
				APZ					

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.18 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 26' ft

Pump Rate = .5L/min

Well Diameter = 4"

Screen Interval = 16-31

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	22.5	221.4	188.8	**148.4**
DO	4.88	7.26	4.91	**5.43**
PH	6.32	6.74	6.32	**6.58**
Cond.	0.537	1.170	0.537	**0.730**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	**CHAAP**	PROJECT NO.	**60565355**
SAMPLE NO.	**G0070-8**	WELL NO.	**G0070**
DATE/TIME COLLECTED	3-1-22/1235	PERSONNEL	K. Daehling / C. Carson
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		
SAMPLE MEDIA:	**Groundwater**		
SAMPLE QA SPLIT:	YES **NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES **NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	**YES** NO	MS/MSD SAMPLE NO.	**G0070-8 MS/MSD**

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft BTOC)	82.80
Time Started	1155	Depth to Water (ft BTOC)	16.84
Time Completed	1235	Water Column Length	65.96 ft
PID Measurements		Well Casing Volume (per ft)	2.47L
Background	ND	Volume of Water in Well (L)	162.92
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1200	2.5	6.94	13.50	0.487	1.61	63.9	3.31	17.31	0.5
1205	5.0	6.92	13.54	0.491	1.25	68.0	3.21	17.30	0.5
1210	7.5	6.90	13.65	0.497	0.85	65.3	3.16	17.30	0.5
1215	10.0	6.89	13.56	0.499	0.51	52.1	3.09	17.31	0.5
1220	12.5	6.90	13.45	0.499	0.32	36.3	2.93	17.32	0.5
1225	15.0	6.90	13.41	0.499	0.24	21.7	3.20	17.31	0.5
1230	17.5	6.91	13.61	0.499	0.20	20.5	3.41	17.31	0.5
1235	20.0	6.91	13.67	0.501	0.17	20.1	3.14	17.31	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.16 mg/L KD

Multi-Parameter Probe Unit #~~839568~~ 637718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 77.5 ft

Pump Rate = 0.5 L/min

Well Diameter = 4"

Screen Interval = 75-80

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	16.5	176.3	30.9	**83.4**
DO	0.54	5.09	1.76	**2.07**
PH	6.88	7.16	7.16	**7.02**
Cond.	0.427	0.511	0.431	**0.456**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0075-8	WELL NO.	G0075
DATE/TIME COLLECTED	3-1-22 / 1020	PERSONNEL	K. Daechling
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		G. Carson

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	**NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	**NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	**NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft BTOC)	37.72
Time Started	0930	Depth to Water (ft BTOC)	16.79
Time Completed	1020	Water Column Length	20.93
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	51.70
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20 L
Purge Water	ND	Actual Purge (L)	25 L

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
0935	2.5	7.13	12.26	0.905	5.19	92.8	3.05	16.82	0.5
0940	5.0	7.13	12.46	0.904	5.16	92.5	3.16	16.79	0.5
0945	7.5	7.17	12.51	0.903	5.14	91.2	3.03	16.79	0.5
0950	10.0	7.20	12.63	0.903	5.10	90.0	3.44	16.80	0.5
0955	12.5	7.22	12.68	0.901	5.05	89.1	2.95	16.81	0.5
KD ~~0957~~ 1000	15.0	7.23	12.78	0.900	4.75	89.3	2.82	16.81	0.5
1005	17.5	7.18	12.82	0.901	2.77	91.3	3.16	16.82	0.5
1010	20.0	7.14	12.93	0.902	2.17	93.7	2.71	16.81	0.5
1015	22.5	7.11	KD ~~12~~ 13.38	0.903	2.13	96.0	3.31	16.80	0.5
1020	25.0	7.13	14.06	0.905	2.06	95.3	2.99	16.79	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.07 mg/L KD

Multi-Parameter Probe Unit # ~~R39568~~ 637718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 20 ft

Pump Rate = 0.5 L/min

Well Diameter = 4"

Screen Interval = 25-35

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	73.0	257.3	105.0	**136.4**
DO	0.01	6.86	0.06	**1.54**
PH	6.44	6.98	6.81	**6.72**
Cond.	0.730	1.003	1.003	**0.907**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0076-8	WELL NO.	G0076
DATE/TIME COLLECTED	3-1-22 / 1130	PERSONNEL	K. Dachsing
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		G. Carson

SAMPLE MEDIA: **Groundwater**

SAMPLE QA SPLIT:	YES	**NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	**NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	**NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft BTOC)	65.29
Time Started	1050	Depth to Water (ft BTOC)	16.58
Time Completed	1130	Water Column Length	48.71 ft
PID Measurements		Well Casing Volume (per ft)	2.47 L
Background	ND	Volume of Water in Well (L)	120.31
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1055	2.5	6.78	13.31	1.296	0.10	-41.9	3.07	16.55	0.5
1100	KD ~~5.0~~ 5.0	6.79	13.28	1.294	0.03	-62.9	3.28	16.55	0.5
1105	7.5	6.80	13.31	1.291	0.02	-73.8	3.12	16.55	0.5
1110	10.0	6.80	13.50	1.281	0.01	-80.4	3.69	16.55	0.5
1115	12.5	6.80	13.48	1.288	0.01	-84.4	3.78	16.55	0.5
1120	15.0	6.81	13.47	1.284	0.01	-87.9	3.13	16.55	0.5
1125	17.5	6.81	13.53	1.277	0.01	-90.1	3.45	16.55	0.5
1130	20.0	~~6.80~~ KD 6.82 J	13.56	1.286	0.01	-92.3	3.33	16.55	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.99 mg/L KD

Multi-Parameter Probe Unit # ~~R39568~~ 637718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 59 ft ft

Pump Rate = 0.5 L/min

Well Diameter = 4"

Screen Interval = 54-64

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-63.4	83.2	-63.4	**-16.6**
DO	0.01	1.91	0.10	**0.42**
PH	6.62	7.17	7.17	**6.80**
Cond.	1.116	1.264	1.230	**1.199**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0077-8	WELL NO.	G0077
DATE/TIME COLLECTED	3-1-22/1440	PERSONNEL	RE, AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		
SAMPLE MEDIA:	Groundwater		
SAMPLE QA SPLIT:	YES **NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES **NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES **NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft BTOC)	37.73
Time Started	1340	Depth to Water (ft BTOC)	13.91
Time Completed	1440	Water Column Length	23.82
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	23.82x2.47= 58.83
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1345	2.5	6.74	19.95	Mx.503	7.02	161.3	1.83	13.90	0.5
1350	5.0	6.91	15.35	.524	8.27	163.1	1.96	13.90	0.5
1355	7.5	6.74	15.73	.528	7.97	173.2	1.67	13.90	0.5
1400	10	6.65	15.72	.535	7.73	183.7	1.73	13.90	0.5
1405	12.5	6.48	15.63	.541	7.55	188.1	1.68	13.90	0.5
1410	15	6.48	15.43	.563	7.25	189.3	1.71	13.90	0.5
1415	17.5	6.56	15.60	.635	6.20	189.6	1.67	13.90	0.5
1420	20	6.53	15.61	.678	5.49	187.1	1.63	13.90	0.5
1425	22.5	6.54	16.06	.720	4.90	185.4	1.99	13.90	0.5
1430	25	6.55	16.18	.754	4.37	183.7	1.77	13.90	0.5
1435	30	6.56	15.97	.782	3.93	182.3	1.83	13.90	0.5
1440	35	6.57	16.08	.803	3.61	180.8	1.91	13.90	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.17 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 33 ft

Pump Rate = .5 L/min

Well Diameter = 4"

Screen Interval = 25-35

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	20.4	194.5	160.6	**130.9**
DO	1.19	5.43	1.19	**2.52**
PH	6.61	6.87	6.84	**6.71**
Cond.	0.620	1.012	0.965	**0.847**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0078-8	WELL NO.	G0078
DATE/TIME COLLECTED	3-1-22 / 1600	PERSONNEL	BE, AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft BTOC)	62.82
Time Started	1500	Depth to Water (ft BTOC)	13.86
Time Completed	1600	Water Column Length	49.96
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	48.96 x 2.47 = 120.93
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	30

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1505	2.5	7.57	14.45	.699	6.46	149.5	0.23	13.88	0.5
1510	5.0	7.29	14.30	.774	5.36	44.5	1.74	13.88	0.5
1515	7.5	7.12	14.81	.861	4.25	-2.7	0.48	13.88	0.5
1520	10	7.05	14.76	.916	3.46	-3.8	0.63	13.88	0.5
1525	12.5	7.00	14.76	.958	2.97	-4.7	0.26	13.88	0.5
1530	15	6.97	14.58	.994	2.29	-5.5	0.10	13.84	0.5
1535	17.5	6.95	14.65	1.020	1.89	-6.5	0.21	13.88	0.5
1540	20	6.93	14.70	1.039	1.59	-7.4	0.10	13.88	0.5
1545	22.5	6.92	14.81	1.056	1.30	-8.0	0.26	13.88	0.5
1550	25	6.91	14.74	1.071	1.06	-8.5	0.17	13.88	0.5
1555	27.5	6.96	14.59	1.082	0.86	-8.6	0.18	13.88	0.5
1600	30	6.88	14.62	1.089	0.70	-8.9	0.27	13.88	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.54 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 58 ft

Pump Rate = .5 gal/min

Well Diameter = 4"

Screen Interval = 50-60

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-21.5	68.0	-6.1	**6.6**
DO	0.02	0.45	0.02	**0.19**
PH	6.78	6.97	6.97	**6.89**
Cond.	0.957	1.280	1.064	**1.096**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0079-8	WELL NO.	G0079
DATE/TIME COLLECTED	3-1-22 / 0910	PERSONNEL	K. Daehling, G. Carlson
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		
SAMPLE MEDIA:	Groundwater		
SAMPLE QA SPLIT:	YES / **NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES / **NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES / **NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft BTOC)	19.65
Time Started	0830	Depth to Water (ft BTOC)	17.00
Time Completed	0910	Water Column Length	2.65
PID Measurements		Well Casing Volume (per ft)	2.47 L
Background	ND	Volume of Water in Well (L)	6.55
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
				KD					
0835	2.5	6.31	11.49	0.4601	5.35	100.2	3.83	16.79	0.5
0840	5.0	6.33	11.66	0.508	5.56	64.8	3.56	16.81	0.5
0845	7.5	6.37	11.82	0.549	5.67	57.5	3.55	16.84	0.5
0850	10.0	6.40	12.00	0.571	5.86	61.3	3.01	16.84	0.5
0855	12.5	6.44	12.09	0.585	5.91	66.6	3.02	16.84	0.5
0900	15.0	6.48	12.17	0.592	5.95	70.9	3.47	16.84	0.5
0905	17.5	6.51	12.24	0.599	5.94	74.1	3.19	16.83	0.5
0910	20.0	6.54	12.33	0.602	6.00	76.3	2.90	16.81	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.07 mg/L KD

Multi-Parameter Probe Unit # ~~R39568~~ 637718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 17.5 ft

Pump Rate = 0.5 L/min

Well Diameter = 4"

Screen Interval = 8-18

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	18.5	170.4	66.5	**96.3**
DO	0.78	5.90	0.78	**2.86**
PH	5.73	6.67	6.50	**6.36**
Cond.	0.268	0.706	0.268	**0.467**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0080-8	WELL NO.	G0080
DATE/TIME COLLECTED	3-1-22 / 0930	PERSONNEL	RE, ~~AP~~ AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft BTOC)	37.80
Time Started	0850	Depth to Water (ft BTOC)	15.36
Time Completed	0930	Water Column Length	22.44
PID Measurements		Well Casing Volume (per ft)	.62
Background	ND	Volume of Water in Well (L)	22.44 X .62 = 13.91
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
855	2.5	6.89	13.66	.845	0.58	179.0	9.60	15.35	0.5
900	5.0	6.84	13.61	.874	0.22	173.3	5.10	15.35	0.5
905	7.5	6.79	13.91	.890	0.10	167.8	0.26	15.35	0.5
910	10	6.76	13.94	.905	0.10	159.1	0.89	15.35	0.5
915	12.5	6.73	43.14.14	.907	0.08	155.0	1.12	15.35	0.5
920	15	6.72	13.98	.911	0.07	146.8	1.54	15.35	0.5
925	17.5	6.72	14.34	.900	0.08	140.1	1.52	15.35	0.5
930	20	6.72	14.35	.910	0.08	137.9	1.62	15.35	0.5
				A82					

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.14 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 33 ft

Pump Rate = .5 L/M

Well Diameter = 2"

Screen Interval = 25-35

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-16.4	170.1	120.3	**77.0**
DO	0.02	1.23	0.02	**0.43**
PH	6.48	6.82	6.71	**6.63**
Cond.	0.557	0.884	0.811	**0.756**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0081-8	WELL NO.	G0081
DATE/TIME COLLECTED	3-1-22/1410	PERSONNEL	K. Dachling
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		G. Carson

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	**NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	**NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	**NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-2022	Well Depth (ft BTOC)	41.30
Time Started	1330	Depth to Water (ft BTOC)	16.70
Time Completed	1410	Water Column Length	24.60
PID Measurements		Well Casing Volume (per ft)	0.62 L
Background	ND	Volume of Water in Well (L)	15.25
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20.0
Purge Water	ND	Actual Purge (L)	20.0

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1335	2.5	6.40	13.70	0.983	0.03	-2.1	3.98	16.69	0.5
1340	5.0	6.42	13.68	0.978	0.03	-14.6	3.78	16.69	0.5
1345	7.5	6.42	13.65	0.973	0.02	-20.2	3.68	16.69	0.5
1350	10.0	6.40	13.62	0.969	0.02	-22.4	3.86	16.70	0.5
1355	12.5	6.38	13.75	0.959	0.01	-23.7	3.49	16.70	0.5
1400	15.0	6.37	13.45	0.944	0.01	-24.6	3.57	16.70	0.5
1405	17.5	6.37	13.36	0.945	0.01	-25.3	3.22	16.70	0.5
1410	20.0	6.37	13.49	0.951	0.01	-26.1	3.22	16.70	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.74 mg/L KD

Multi-Parameter Probe Unit # ~~R239568~~ 637718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 33 ft

Pump Rate = 0.5 L/min

Well Diameter = 2"

Screen Interval = 28-38

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-25.1	204.1	-18.8	**40.6**
DO	0.01	0.75	0.01	**0.29**
PH	6.19	6.59	6.59	**6.38**
Cond.	0.550	1.020	0.925	**0.820**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	**CHAAP**	PROJECT NO.	**60565355**
SAMPLE NO.	**G0082-8**	WELL NO.	**G0082**
DATE/TIME COLLECTED	3-1-22 / 1525	PERSONNEL	K Dahling G. Carson
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		
SAMPLE MEDIA:	**Groundwater**		
SAMPLE QA SPLIT:	YES **NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES **NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES **NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft BTOC)	41.03
Time Started	1445	Depth to Water (ft BTOC)	16.00
Time Completed	1525	Water Column Length	25.03 ft
PID Measurements		Well Casing Volume (per ft)	0.62 L
Background	ND	Volume of Water in Well (L)	15.52
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20.0
Purge Water	ND	Actual Purge (L)	20.0

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1450	2.5	6.66	16.64	0.948	0.14	~~77.3~~	5.16	16.02	0.5
1455	5.0	6.74	16.01	0.938	0.12	74.4	3.81	16.02	0.5
1500	7.5	6.75	15.83	0.929	0.10	75.7	3.68	16.02	0.5
1505	10.0	6.75	15.51	0.925	0.08	77.6	3.27	16.02	0.5
1510	12.5	6.75	15.64	0.920	0.06	78.8	2.49	16.02	0.5
1515	15.0	6.75	16.01	0.921	0.05	80.0	3.34	16.02	0.5
1520	17.5	6.75	16.02	0.919	0.05	81.2	3.19	16.02	0.5
1525	20.0	6.75	15.72	0.913	0.05	82.1	3.05	16.02	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.08 mg/L KD

Multi-Parameter Probe Unit # ~~E39568~~ 637718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 33.0 ft

Pump Rate = 0.5 L/min

Well Diameter = 2"

Screen Interval = 28-38

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-21.0	178.0	178.0	**57.4**
DO	0.04	0.51	0.04	**0.21**
PH	6.24	6.62	6.37	**6.39**
Cond.	0.637	0.860	0.797	**0.773**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0086-8	WELL NO.	G0086
DATE/TIME COLLECTED	3-1-22 / 1150	PERSONNEL	RE, AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		
SAMPLE MEDIA:	Groundwater		
SAMPLE QA SPLIT:	YES **NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES **NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES **NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft BTOC)	40.29
Time Started	1110	Depth to Water (ft BTOC)	13.87
Time Completed	1150	Water Column Length	26.42
PID Measurements		Well Casing Volume (per ft)	0.62
Background	ND	Volume of Water in Well (L)	26.42 X 0.62 = 16.38
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1115	2.5	7.09	13.66	.921	0.41	141.0	0.25	13.82	0.5
1120	5.0	7.09	13.74	.916	0.28	140.9	0.22	13.83	0.5
1125	7.5	6.99	13.81	.921	0.13	151.0	0.27	13.83	0.5
1130	10	6.93	13.85	.921	0.10	158.6	0.44	13.93	0.5
1135	12.5	6.89	13.54	.919	0.10	163.1	0.50	13.83	0.5
1140	15	6.87	13.75	.918	0.09	166.3	0.22	13.83	0.5
1145	17.5	6.85	13.94	.916	0.09	169.8	0.27	13.83	0.5
1150	20	6.83	14.02	.915	0.09	172.9	0.24	13.83	0.5
				1982					

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.13 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 35 ft

Pump Rate = .5 L/min

Well Diameter = 2"

Screen Interval = 28-38

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	12.2	194.0	194.0	**132.1**
DO	0.05	1.14	0.18	**0.40**
PH	6.67	7.03	6.92	**6.85**
Cond.	0.684	0.966	0.918	**0.843**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0087-8	WELL NO.	G0087
DATE/TIME COLLECTED	3-1-22 / 1040	PERSONNEL	ME, AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		
SAMPLE MEDIA:	Groundwater		
SAMPLE QA SPLIT:	YES **NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES **NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES **NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft BTOC)	37.60
Time Started	1000	Depth to Water (ft BTOC)	14.22
Time Completed	1040	Water Column Length	23.38
PID Measurements		Well Casing Volume (per ft)	0.62
Background	ND	Volume of Water in Well (L)	23.38 X 0.62 = 14.50
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1005	2.5	6.95	12.65	.835	0.27	156.0	1.00	14.22	0.5
1010	5.0	6.92	12.79	.836	0.19	138.0	0.74	14.22	0.5
1015	7.5	6.89	12.89	.839	0.14	129.44	0.57	14.22	0.5
1020	10	6.87	13.08	.836	0.11	127.1	0.30	14.22	0.5
1025	12.5	6.84	13.12	.836	0.09	127.6	0.41	14.22	0.5
1030	15	6.83	13.14	.836	0.07	129.7	0.24	14.22	0.5
1035	17.5	6.81	13.19	.838	0.06	131.9	0.41	14.22	0.5
1040	20	6.80	13.32	.839	0.06	134.1	0.17	14.22	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.12 mg/L

Multi-Parameter Probe Unit # 821270

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 32.5 ft

Pump Rate = .5 L/min

Well Diameter = 2"

Screen Interval = 25-35

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	14.3	203.5	203.5	**118.7**
DO	0.05	0.80	0.15	**0.30**
PH	6.62	7.03	6.69	**6.77**
Cond.	0.663	0.851	0.844	**0.769**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0091-8	WELL NO.	G0091
DATE/TIME COLLECTED	2-27-22/ 1555	PERSONNEL	RE, KD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-27-22	Well Depth (ft BTOC)	31.89
Time Started	1515	Depth to Water (ft BTOC)	14.60
Time Completed	1555	Water Column Length	17.29
PID Measurements		Well Casing Volume (per ft)	0.62
Background	ND	Volume of Water in Well (L)	10.72 = 17.29 x 0.62
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1520	2.5	6.98	13.19	1.130	5.18	130.1	3.62	14.56	0.5
1525	5.0	6.93	13.31	1.113	5.12	127.6	2.99	14.56	0.5
1530	7.5	6.88	13.27	1.109	5.13	129.6	3.16	14.56	0.5
1535	10	6.85	13.36	1.103	5.07	132.0	3.23	14.56	0.5
1540	12.5	6.83	13.23	1.112	5.09	134.2	3.25	14.56	0.5
1545	15	6.82	13.22	1.104	5.14	136.3	3.17	14.56	0.5
1550	17.5	6.81	13.20	1.097	5.13	138.4	3.16	14.56	0.5
1555	20	6.80	13.16	1.096	5.12	139.5	3.00	14.56	0.5
			PQL						

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.06 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 27 ft

Pump Rate = ~0.5 L/min

Well Diameter = 2"

Screen Interval = 20-30

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	27.4	196.8	126.0	**125.2**
DO	2.79	6.99	6.00	**5.10**
PH	6.65	7.29	7.07	**6.95**
Cond.	0.973	1.325	1.050	**1.165**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0092-8	WELL NO.	G0092
DATE/TIME COLLECTED	2-27-22/1650	PERSONNEL	RE, KD
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA: **Groundwater**

SAMPLE QA SPLIT:	YES	**NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	**NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	**NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-27-22	Well Depth (ft BTOC)	52.78
Time Started	1610 ~~1410~~ MP	Depth to Water (ft BTOC)	14.79
Time Completed	1650	Water Column Length	37.99
PID Measurements		Well Casing Volume (per ft)	.62
Background	MP ~~RB~~ ND	Volume of Water in Well (L)	37.99 X 0.62 = 23.55
Breathing Zone	ND	Casing Volumes to Purge	MP ~~RB~~ NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
16~~14~~15 MP	2.5	7.16	12.55	1.412	1.53	28.0	5.35	14.75	0.5
16~~17~~20 MP	5.0	7.15	12.95	1.398	0.08	7.9	4.26	14.76	0.5
1625	7.5	7.15	12.93	1.403	0.02	2.0	3.64	14.76	0.5
1630	10	7.14	12.92	1.405	0.01	-0.5	3.37	14.76	0.5
1635	12.5	7.14	12.92	1.411	0.01	-1.8	3.82	14.76	0.5
1640	15	7.14	12.94	1.407	0.01	-2.9	3.10	14.76	0.5
1645	17.5	7.14	12.96	1.401	0.01	-4.0	3.19	14.76	0.5
1650	20	7.13	12.94	1.410	0.01	-5.2	3.27	14.76	0.5
			MP						

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.21 mg/L

Multi-Parameter Probe Unit # 821296

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 48 ft

Pump Rate = .5 L/min

Well Diameter = 2"

Screen Interval = 40-50

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	5.0	122.9	5.0	**51.5**
DO	0.03	0.74	0.03	**0.24**
PH	7.06	7.54	7.37	**7.28**
Cond.	0.940	1.323	1.323	**1.201**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	PZ017R-8	WELL NO.	PZ017R
DATE/TIME COLLECTED	3-2-22/ 1145	PERSONNEL	RE AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA: **Groundwater**

SAMPLE QA SPLIT:	YES	**NO**	SPLIT SAMPLE NO.	NA Time
SAMPLE QC DUPLICATE:	**YES**	NO	DUPLICATE SAMPLE NO.	PZ021-8 (800)
MS/MSD REQUESTED	YES	**NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft. BTOC)	32.40
Time Started	1105	Depth to Water (ft. BTOC)	12.53
Time Completed	1145	Water Column Length	19.87
PID Measurements		Well Casing Volume (per ft)	0.62
Background	ND	Volume of Water in Well (L)	19.87 x 0.62 = 12.32
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1110	2.5	6.63	14.12	.618	4.04	8.6	4.08	12.52	0.5
1115	5.0	6.61	14.66	.987	0.08	-22.2	3.62	12.52	0.5
1120	7.5	6.58	14.64	1.003	0.02	-53.3	2.99	12.52	0.5
1125	10	6.57	14.82	1.011	0.01	-57.2	2.75	12.52	0.5
1130	12.5	6.57	14.82	1.018	0.01	-58.4	2.62	12.52	0.5
1135	15	6.57	15.13	1.023	0.01	-57.7	2.41	12.52	0.5
1140	17.5	6.58	14.95	1.024	0.01	-56.6	2.68	12.52	0.5
~~1145~~ 1145	20	6.58	15.16	1.026	0.01	-57.3	3.30	12.52	0.5
			MPZ						

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.11 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 22 ft

Pump Rate = .5 L/min

Well Diameter = 2"

Screen Interval = 10-30

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-81.9	173.9	-81.9	**82.5**
DO	0.01	5.68	0.02	**1.78**
PH	6.07	6.90	6.31	**6.33**
Cond.	0.652	1.034	1.034	**0.846**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	PZ018-8	WELL NO.	PZ018
DATE/TIME COLLECTED	3-2-22 / 1040	PERSONNEL	BE, AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft. BTOC)	31.93
Time Started	1000	Depth to Water (ft. BTOC)	14.19
Time Completed	1040	Water Column Length	17.74
PID Measurements		Well Casing Volume (per ft)	.62 NR
Background	ND	Volume of Water in Well (L)	17.74 x 0.62 = 10.1 11.0
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1000	2.5	6.36	13.02	1.114	0.43	-87.0	11.4	14.18	0.5
1010	5.0	6.36	13.60	1.157	0.32	-92.0	9.92	14.18	0.5
1015	7.5	6.35	13.84	1.158	0.20	-92.7	8.74	14.18	0.5
1020	10	6.35	13.80	1.173	0.17	-92.3	8.26	14.18	0.5
1025	12.5	6.35	13.95	1.169	0.15	-92.3	7.36	14.18	0.5
1030	15	6.36	14.13	1.173	0.11	-93.0	6.61	14.18	0.5
1035	17.5	6.37	14.34	1.174	0.10	-95.8	6.42	14.18	0.5
1040	20	6.38	14.35	1.174	0.11	-97.0	6.24	14.18	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.32 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 33 ft

Pump Rate = .5 L/min

Well Diameter = 2"

Screen Interval = 10-30

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-32.3	177.2	-32.3	**82.5**
DO	0.01	9.26	0.01	**3.72**
PH	5.52	6.57	6.40	**6.17**
Cond.	0.520	0.870	0.798	**0.672**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	PZ019-8	WELL NO.	PZ019
DATE/TIME COLLECTED	3-2-22/ 0910	PERSONNEL	AE, AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	**NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	**NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	**YES**	NO	MS/MSD SAMPLE NO.	**PZ019-8 MS/MSD**

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft. BTOC)	32.22
Time Started	0830	Depth to Water (ft. BTOC)	18.35
Time Completed	0910	Water Column Length	13.87
PID Measurements		Well Casing Volume (per ft)	0.62
Background	ND	Volume of Water in Well (L)	13.87 X .62 = 8.60
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
0835	2.5	6.46	12.11	.733	8.57	206.4	2.52	18.32	0.5
0840	5.0	6.34	12.37	.752	8.32	204.3	2.06	18.32	0.5
0845	7.5	6.32	12.68	.764	8.00	196.6	2.03	18.32	0.5
0850	10	6.32	12.70	.768	7.82	187.5	1.35	18.32	0.5
0855	12.5	6.32	12.80	~~.774~~	7.75	182.2	1.77	18.32	0.5
0900	15	6.32	12.88	.773	7.75	180.0	1.11	18.32	0.5
0905	17.5	6.32	12.97	.778	7.73	179.4	0.89	18.32	0.5
0910	20	6.32	13.01	.779	7.76	177.8	0.99	18.32	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.33 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 25 ft

Pump Rate = .5 L/min

Well Diameter = 2"

Screen Interval = 10-30

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-4.3	207.1	207.1	**123.8**
DO	6.44	10.83	9.01	**8.68**
PH	6.03	6.49	6.49	**6.30**
Cond.	0.377	0.709	0.627	**0.595**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	PZ020-8	WELL NO.	PZ020
DATE/TIME COLLECTED	3-1-22 / 1715	PERSONNEL	RE, AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-1-22	Well Depth (ft. BTOC)	32.32
Time Started	~~1535~~ 1635	Depth to Water (ft. BTOC)	16.85
Time Completed	1715	Water Column Length	15.47
PID Measurements		Well Casing Volume (per ft)	0.62
Background	ND	Volume of Water in Well (L)	15.47 X 0.62 = 9.59
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	

FIELD MEASUREMENTS

	Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
RE	1645	2.5	7.02	14.06	.947	1.36	61.0	2.25	16.85	0.5
RE	1645	5.0	6.98	14.06	.945	1.12	73.1	1.93	16.85	0.5
RE	1650	7.5	6.96	14.42	.956	1.12	80.2	1.87	16.85	0.5
	1655	10	6.94	14.20	.965	1.18	85.2	1.93	16.85	0.5
	1700	12.5	6.92	14.13	.980	~~1.29~~	89.6	1.91	16.85	0.5
	1705	15	6.91	13.98	.987	1.33	94.2	2.02	16.85	0.5
	1710	17.5	6.89	14.01	.989	1.35	97.1	2.32	16.85	0.5
	1715	20	6.88	13.94	.994	1.37	99.6	1.89	16.85	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.07 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 24 ft

Pump Rate = 0.5 L/min

Well Diameter = 2"

Screen Interval = 10-30

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	92.8	166.3	134.4	**125.1**
DO	0.76	7.07	0.76	**3.43**
PH	6.54	6.91	6.78	**6.78**
Cond.	0.916	1.350	1.041	**1.083**

WELL DEVELOPMENT LOG

Project: CHAAP OU1 RAO Performance Monitoring
Project No: 60565355
Develo. Method Peristaltic pump and tubing

Well No: EW7-PM21A
Date: 2-26-22
Samplers: BE, KD

WELL MEASUREMENTS

Well inside diameter (in): 1
Screen length (ft): 10
Depth of well ~~casing~~ (ft bgs): 30
Initial water level (ft bgs): 13.71
Top of Casing Stick-up (ft): 2
Fluid well casing volume (Liters): 2.60
Weather conditions: clear 40s

SAMPLING MEASUREMENT

DISCHARGE

Time	1505	1510	1515	1520	1525	1530	1535	1540		
Water level (ft. bgs)	13.80	13.72	13.75	13.75	13.75	13.75	13.75	13.75		
Pump Placement Depth (ft bgs)	29	29	25	25	21	21	25	25		
Discharge (Liters)	5	10	15	20	25	30	35	40		

WATER QUALITY DATA

pH	6.59	6.59	6.60	6.61	6.61	6.61	6.61	6.61		
Temperature (°C)	11.66	11.57	11.56	11.54	11.45	11.52	11.41	11.41		
Conductivity (mS/cm)	.980	.994	.997	.997	.997	.998	.998	.999		
Dissolved Oxygen (mg/L)	0.30	0.14	0.12	0.10	0.10	0.11	0.10	0.10		
Redox (ORP) (mV)	0.8	-12.2	-14.8	-17.5	-26.4	-31.1	-34.0	-29.7		
Turbidity (NTUs) initial/end	NA / 33.0	33.0 / 24.92	24.92 / 12.49	12.49 / 8.81	8.81 / 6.92	6.92 / 5.93	5.93 / 5.23	5.23 / 4.8	/	/
Color	clear	clear	clear	clear	clear	clear	clear	clear		
Odor	None	None	None	None	None	None	None	None		

Total discharge: 40
Casing volumes removed: 15.38
Method of disposal of discharged water: IDW polly tank at GWTF (pending analysis)

QUALITY ASSURANCE

Water Level Indicator: Horiba — Calibrated: ✓
Water Quality Meters: Aqua TROLL 500 w/ flow through cell — Calibrated: ✓
Comments: 30 - 13.71 = 16.29 x 0.16 = 2.60 x 10 = 26.0
3.79 x 3 = 11.37 TOTAL = 37.37
1gal H2O used during Installation

WELL DEVELOPMENT LOG

Project: CHAAP OU1 RAO Performance Monitoring
Project No: 60565355
Develo. Method Peristaltic pump and tubing

Well No: EW7-PM24A
Date: 2-26-22
Samplers: BE, KD, BN

WELL MEASUREMENTS

Well inside diameter (in): 1
Screen length (ft): 10
Depth of well ~~casing~~ (ft bgs): 30
Initial water level (ft bgs): 14.84
Top of Casing Stick-up (ft): 2
Fluid well casing volume (Liters): 2.43
Weather conditions: Clear 40s

SAMPLING MEASUREMENT

DISCHARGE

Time	1340	1345	1350	1355	1400	1405	1410	1415		
Water level (ft. bgs)	14.83	14.82	14.82	14.82	14.82	14.83	14.83	14.83		
Pump Placement Depth (ft bgs)	29	29	25	25	21	21	25	25		
Discharge (Liters)	5	10	15	20	25	30	35	40		

WATER QUALITY DATA

pH	6.62	6.59	6.59	6.59	6.59	6.59	6.58	6.58		
Temperature (°C)	12.43	12.41	12.44	12.44	12.52	12.52	12.53	12.39		
Conductivity (mS/cm)	.063 ~~.0063~~	.233	.041	.997	1.044	1.045	1.044	1.043		
Dissolved Oxygen (mg/L)	2.28	2.47	2.33	2.38	2.13	2.14	2.14	2.14		
Redox (ORP) (mV)	-58.5	-68.3	-68.8	-71.0	-70.8	-72.7	-72.2	-71.5		
Turbidity (NTUs) initial/end	NA / 4.82	9.82 / 7.40	7.40 / 6.35	6.35 / 7.42	7.42 / 5.79	5.79 / 5.75	5.75 / 5.77	5.77 / 5.46	/	/
Color	clear	clear	clear	clear	clear	clear	clear	clear		
Odor	None	None	None	None	None	None	None	None		

Total discharge: 40
Casing volumes removed: 16.46
Method of disposal of discharged water: IDW polly tank at GWTF (pending analysis)

QUALITY ASSURANCE

Water Level Indicator: Horiba — Calibrated: ✓
Water Quality Meters: Aqua TROLL 500 w/ flow through cell — Calibrated: ✓
Comments: 30 - 14.84 = 15.16 X 0.16 = 2.43 ~~X 4.30~~ X 10 = 24.30
3.79 X 3 = 11.37 TOTAL = 35.67
used 1gal H_2O during Installation

WELL DEVELOPMENT LOG

Project: CHAAP OU1 RAO Performance Monitoring
Project No: 60565355
Develo. Method Peristaltic pump and tubing

Well No: EW7-PM25A
Date: 2-25-22
Samplers: AE, KD, BN

WELL MEASUREMENTS

Well inside diameter (in): 1"
Screen length (ft): 10'
Depth of well ~~casing~~ (ft bgs): 30
Initial water level (ft bgs): 9.60
Top of Casing Stick-up (ft): 2'
Fluid well casing volume (Liters): 3.26
Weather conditions: Clear-1, wind calm

SAMPLING MEASUREMENT

DISCHARGE

Time	905	915	920	925	930	935	940	945	0950	0955
Water level (ft. bgs)	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.65
Pump Placement Depth (ft bgs)	29	29	25	25	21	21	21	25	25	25
Discharge (Liters)	10	20	25	30	35	40	45	50	55	60

WATER QUALITY DATA

pH	6.20	6.21	6.21	6.21	6.21	6.21	6.21	6.21	6.21	6.21
Temperature (°C)	10.64	10.24	10.33	10.36	10.39	10.36	10.34	10.36	10.41 ~~10.41~~ AE	10.56
Conductivity (mS/cm)	1.223	1.240	1.190	1.135	1.229	1.185	.620	1.111	1.111	1.124
Dissolved Oxygen (mg/L)	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Redox (ORP) (mV)	-129.0	-136.9	-138.6	-134.0	-137.4	-134.4	-136.7	-136.4	-136.5	-137.2
Turbidity (NTUs) initial/end	NA/9.12	4.72/9.30	4.30/8.23	8.23/7.45	7.45/7.92	7.92/6.97	6.97/6.40	6.40/6.14	6.14/5.4	5.4/6.65
Color	clear	→	→	→	→	→	→	→	→	→
Odor	None	→	→	→	→	→	→	→	→	→

Total discharge: 60
Casing volumes removed: 18.4
Method of disposal of discharged water: IDW polly tank at GWTF (pending analysis)

QUALITY ASSURANCE

Water Level Indicator: Horiba — Calibrated: V
Water Quality Meters: Aqua TROLL 500 w/ flow through cell — Calibrated: V
Comments: 30 - 9.6 = 20.4 x .16 = 3.26 x 10 = 32.6
3.79 x 3 = 11.37 Total 43.97
1 gal H2O used during Installation

WELL DEVELOPMENT LOG

Project: CHAAP OU1 RAO Performance Monitoring
Project No: 60565355
Develo. Method Peristaltic pump and tubing

Well No: EW7-PM25B
Date: 2-25-22
Samplers: BE, KV, BN

WELL MEASUREMENTS

Well inside diameter (in): 1"
Screen length (ft): 10'
Depth of well ~~casing~~ (ft bgs): 40
Initial water level (ft bgs): 9.63
Top of Casing Stick-up (ft): 2'
Fluid well casing volume (Liters): 4.86
Weather conditions: clear, 10°

SAMPLING MEASUREMENT

DISCHARGE

Time	1045	1055	1105	1115	1125	1130	1135	1140	1145	1150
Water level (ft. bgs)	9.63	9.63	9.63	9.63	9.63	9.63	9.63	9.63	9.63	9.63
Pump Placement Depth (ft bgs)	39	39	39	35	35	31	31	35	35	35
Discharge (Liters)	10	20	30	40	50	55	60	~~R~~ 65	70	75

WATER QUALITY DATA

pH	6.42	6.45	6.49	6.52	6.55	6.56	6.57	6.58	6.58	6.59
Temperature (°C)	10.43	11.04	10.9	11.19	11.10	11.30	11.36	11.38	11.25	11.21
Conductivity (mS/cm)	1.016	.942	.867	.826	.932	.907	.814	.820	.815	.820
Dissolved Oxygen (mg/L)	1.19	1.19	1.08	1.01	0.96	0.93	0.93	0.94	0.95	0.95
Redox (ORP) (mV)	-101.5	-101.8	-104.1	-105.5	-106.7	-108.1	-108.2	-108.9	-108.5	-109.3
Turbidity (NTUs) initial/end	NA / 4.53	4.53 / 4.51	4.51 / 3.82	3.82 / 4.15	4.15 / 5.15	5.15 / 3.9	3.4 / 4.71	4.71 / 5.7	5.7 / 4.43	4.93 / 5.31
Color	clear	clear	clear	clear	clear	clear	clear	clear	clear	clear
Odor	None	None	None	None	None	None	None	None	None	None

Total discharge: 75
Casing volumes removed: 15.4
Method of disposal of discharged water: IDW polly tank at GWTF (pending analysis)

QUALITY ASSURANCE

Water Level Indicator: Horiba — Calibrated: X
Water Quality Meters: Aqua TROLL 500 w/ flow through cell — Calibrated: X
Comments: 40 - 9.63 = 30.37 X 10.16 = 4.86 X 10 = 48.60
3.79 X 6 = 22.74 Total = 71.33
used 2gal H_2O during installation

WELL DEVELOPMENT LOG

Project: CHAAP OU1 RAO Performance Monitoring
Project No: 60565355
Develo. Method Peristaltic pump and tubing

Well No: EW7-PM26A
Date: 2-25-22
Samplers: RE, KD, BN

WELL MEASUREMENTS

Well inside diameter (in): 1
Screen length (ft): 10
Depth of well ~~casing~~ (ft bgs): 30
Initial water level (ft bgs): 14.43
Top of Casing Stick-up (ft): 2'
Fluid well casing volume (Liters): 2.49
Weather conditions: clear 10° wind calm

SAMPLING MEASUREMENT

DISCHARGE

Time	1240	1245	1250	1255	1300	1305	1310	1315		
Water level (ft. bgs)	~~14.38~~ 14.58	14.39	14.39	14.39	14.39	14.39	14.39	14.39		
Pump Placement Depth (ft bgs)	29	29	25	25	21	21	25	25		
Discharge (Liters)	5	10	15	20	25	30	35	40		

WATER QUALITY DATA

pH	6.71	6.75	6.76	6.77	6.76	6.77	6.77	6.78		
Temperature (°C)	10.69	10.66	10.93	10.81	11.04	10.94	10.94	10.90		
Conductivity (mS/cm)	.997	1.006	1.030	1.075	1.053	1.088	1.073	1.075		
Dissolved Oxygen (mg/L)	0.12	0.09	0.09	0.08	0.09	0.08	0.09	0.09		
Redox (ORP) (mV)	-56.6	-59.5	-61.0	-61.6	-61.8	-61.3	-61.3	-62.5		
Turbidity (NTUs) initial/end	NT / 6.0	6.0 / 9.7	9.7 / 5.39	5.39 / 4.14	4.18 / 3.5	3.5 / 5.21	5.21 / 6.43	6.43 / 3.58	/	/
Color	cloudy	clear	clear	clear	clear	clear	clear	clear		
Odor	None	None	None	None	None	None	None	None		

Total discharge: 40
Casing volumes removed: 16.06
Method of disposal of discharged water: IDW polly tank at GWTF (pending analysis)

QUALITY ASSURANCE

Water Level Indicator: Horiba — Calibrated: U
Water Quality Meters: Aqua TROLL 500 w/ flow through cell — Calibrated: U
Comments: 30 - 14.43 = 15.57 X 0.16 = 2.49 X 10 = 24.90
3.79 X 3 = 11.37 Total 36.28
used 1gal H_2O during Installation

WELL DEVELOPMENT LOG

Project: CHAAP OU1 RAO Performance Monitoring
Project No: 60565355
Develo. Method Peristaltic pump and tubing

Well No: EW7-PM26B
Date: ~~11~~ 2-25-22
Samplers: AE, KD, BN

WELL MEASUREMENTS

Well inside diameter (in): 1
Screen length (ft): 10
Depth of well ~~casing~~ (ft bgs): 40
Initial water level (ft bgs): 14.48
Top of Casing Stick-up (ft): 2
Fluid well casing volume (Liters): 4.08
Weather conditions: clear 26° windchill

SAMPLING MEASUREMENT

DISCHARGE

Time	1355	1405	1415	1420	1425	1430	1435	1440	1445	1450
Water level (ft. bgs)	14.48	14.48	14.48	14.48	14.48	14.46	14.46	14.46	14.45	14.46
Pump Placement Depth (ft bgs)	39	39	35	35	31	31	31	35	35	35
Discharge (Liters)	10	20	30	35	40	45	50	55	60	65

WATER QUALITY DATA

pH	6.39	6.43	6.44	6.43	6.44	6.44	6.45	6.43	6.43	6.43
Temperature (°C)	11.32	11.30	11.49	11.35	11.15	11.24	11.14	11.08	11.27	11.07
Conductivity (mS/cm)	.993	.998	1.062	.973	1.061	1.030	.934	1.083	1.075	1.070
Dissolved Oxygen (mg/L)	0.17	0.18	0.16	0.17	0.17	0.20	0.20	0.21	0.21	0.22
Redox (ORP) (mV)	-93.7	-99.3	-100.5	-83.8	-96.8	-97.9	-98.3	-97.8	-98.4	-97.5
Turbidity (NTUs) initial/end	NA / 6.90	6.90 / 5.00	5.00 / 5.68	5.68 / 6.08	6.08 / 5.79	5.79 / 6.26	6.26 / 4.18	4.18 / 3.93	3.93 / 3.91	3.81 / 5.22
Color	clear	clear	clear	clear	clear	clear	clear	clear	clear	clear
Odor	None	None	None	None	None	None	None	None	None	None

Total discharge: 65
Casing volumes removed: 15.93
Method of disposal of discharged water: IDW polly tank at GWTF (pending analysis)

QUALITY ASSURANCE

Water Level Indicator: Horiba — Calibrated: ✓
Water Quality Meters: Aqua TROLL 500 w/ flow through cell — Calibrated: ✓
Comments: 40 - 14.48 = 25.52 x 0.16 = 4.08 x 10 = 40.80
3.79 x 6 = 22.74 TOTAL = 63.54

used 2 gal H2O during Installation

WELL DEVELOPMENT LOG

Project: CHAAP OU1 RAO Performance Monitoring
Project No: 60565355
Develo. Method Peristaltic pump and tubing

Well No: EW7-PM2713
Date: 2-26-22
Samplers: AE, KD, BN

WELL MEASUREMENTS

Well inside diameter (in): 1
Screen length (ft): 10
Depth of well ~~casing~~ (ft bgs): 40
Initial water level (ft bgs): 12.46
Top of Casing Stick-up (ft): 2
Fluid well casing volume (Liters): 4.41
Weather conditions: Clear 30s

SAMPLING MEASUREMENT

DISCHARGE

Time	1145	1155	1205	1215	1220	1225	1230	1235	1240	1245
Water level (ft. bgs)	~~12.60 14.60~~ Apr	~~12.55 14.~~ Br	12.55	12.55	12.55	12.55	12.55	12.55	12.55	12.55
Pump Placement Depth (ft bgs)	39	39	39	35	35	31	31	35	35	35
Discharge (Liters)	10	20	30	40	45	50	55	60	65	70

WATER QUALITY DATA

pH	6.38	6.40	6.43	6.46	6.47	6.49	6.50	6.51	6.52	6.54
Temperature (°C)	11.79	11.68	11.79	11.84	11.76	11.71	11.81	11.81	11.90	11.80
Conductivity (mS/cm)	.798	.881	.986	1.006	.997	1.016	.990	.991	.985	.981
Dissolved Oxygen (mg/L)	3.95	3.90	3.72	3.70	3.67	3.65	3.78	3.76	3.67	3.62
Redox (ORP) (mV)	-62.9	-61.2	-52.0	-56.6	-55.2	-50.0	-51.8	-53.9	-50.5	-51.3
Turbidity (NTUs) initial/end	NA / 7.72	7.72 / 4.89	4.89 / 7.25	7.25 / 7.06	7.06 / 7.23	7.23 / 7.35	7.35 / 5.96	5.96 / 7.21	7.21 / 7.45	7.45 / 7.89
Color	clear	clear	clear	clear	clear	clear	clear	clear	clear	clear
Odor	None	~~Clear~~ None	~~Clear~~ None	~~Clear~~ None	None	None	None	None	None	None

Total discharge: 70
Casing volumes removed: 15.87
Method of disposal of discharged water: IDW polly tank at GWTF (pending analysis)

QUALITY ASSURANCE

Water Level Indicator: Horiba — Calibrated: ✓
Water Quality Meters: Aqua TROLL 500 w/ flow through cell — Calibrated: ✓
Comments: 40 - 12.46 = 27.54 X 0.16 = 4.41 X 10 = 44.10
3.7946 = 22.74 Total 66.87
used 2 gal H2O during Installation

WELL DEVELOPMENT LOG

Project: CHAAP OU1 RAO Performance Monitoring
Project No: 60565355
Develo. Method Peristaltic pump and tubing

Well No: PM 28A
Date: 2-26-22
Samplers: AE, KD, BN

WELL MEASUREMENTS

Well inside diameter (in): 1
Screen length (ft): 10
Depth of well ~~casing~~ (ft bgs): 30
Initial water level (ft bgs): 9.82
Top of Casing Stick-up (ft): 2
Fluid well casing volume (Liters): 3.23
Weather conditions: Clear 40s

SAMPLING MEASUREMENT

DISCHARGE

Time	840	845	850	855	900	905	910	915	920	
Water level (ft. bgs)	9.88	9.90	9.91	9.90	9.90	9.90	9.90	9.90	9.90	
Pump Placement Depth (ft bgs)	29	29	25	25	21	21	25	25	25	
Discharge (Liters)	5	10	15	20	25	30	35	40	45	

WATER QUALITY DATA

pH	6.22	6.23	6.24	6.26	6.27	6.29	6.31	6.33	6.35	
Temperature (°C)	11.34	11.30	11.43	11.44	11.35	11.53	11.64	11.70	11.72	
Conductivity (mS/cm)	1.101	1.152	1.056	526	1.089	1.049	1.065	1.070	1.088	
Dissolved Oxygen (mg/L)	0.27	0.26	0.25	0.23	0.22	0.23	0.21	0.22	0.21	
Redox (ORP) (mV)	-110.5	-108.7	-106.8	-103.8	-103.3	-103.6	-102.3	-102.6	-102.4	
Turbidity (NTUs) initial/end	NA / 10.23	10.23 / 8.34	8.34 / 7.48	7.48 / 6.59	6.59 / 7.05	7.05 / 7.96	7.96 / 6.35	6.35 / 7.25	7.25 / 6.50	/
Color	clear	clear	clear	clear	clear	clear	clear	clear	clear	
Odor	None	None	None	None	None	None	None	None	None	

Total discharge: 45
Casing volumes removed: 13.93
Method of disposal of discharged water: IDW polly tank at GWTF (pending analysis)

QUALITY ASSURANCE

Water Level Indicator: Horiba — Calibrated: V
Water Quality Meters: Aqua TROLL 500 w/ flow through cell — Calibrated: V
Comments: 30 - 9.82 = 20.18 x 0.16 = 3.23 x 10 = 32.30
3.79 x 3 = 11.37 Total 43.60
Used 1 gal H2O during Installation

WELL DEVELOPMENT LOG

Project: CHAAP OU1 RAO Performance Monitoring
Project No: 60565355
Develo. Method Peristaltic pump and tubing

Well No: EW7-PM29A
Date: 2-26-22
Samplers: AE, KD, BN

WELL MEASUREMENTS

Well inside diameter (in): 1
Screen length (ft): 10
Depth of well casing (ft bgs): 30
Initial water level (ft bgs): 10.27
Top of Casing Stick-up (ft): 2
Fluid well casing volume (Liters): 3.1
Weather conditions:

SAMPLING MEASUREMENT

DISCHARGE

Time	1010	1015	1020	1025	1030	1035	1040	1045	1050	
Water level (ft. bgs)	10.41	10.34	10.39	10.40	10.40	10.40	10.40	10.40	10.4	
Pump Placement Depth (ft bgs)	29	29	25	25	21	21	25	25	25	
Discharge (Liters)	5	10	15	20	25	30	35	40	45	

WATER QUALITY DATA

pH	6.34	6.33	6.35	6.42	6.45	6.45	6.48	6.48	6.50	
Temperature (°C)	12.05	11.91	12.00	12.11	12.04	12.09	12.07	12.11	12.09	
Conductivity (mS/cm)	~~.9044 44.500~~	~~.9042 44.76~~	.777	~~74.24 74.214 0.0574~~	.852	.700	.841	.830	.931	
Dissolved Oxygen (mg/L)	0.06	0.03	0.02	0.01	0.01	0.01	0.01	0.02	0.02	
Redox (ORP) (mV)	-68.0	-74.9	79.9	-85.7	-82.2	-88.1	-91.2	-92.0	-93.6	
Turbidity (NTUs) initial/end	NA / 14.56	14.56 / 9.33	9.33 / 5.42	5.42 / 4.44	4.98 / 5.01	5.09 / 4.04	4.04 / 4.74	4.74 / 6.09	6.09 / 7.30	
Color	clear	clear	clear	clear	clear	clear	clear	clear	clear	
Odor	~~Slight~~ None	None	None	None	None	None	None	None	None	

Total discharge: 45
Casing volumes removed: 14.28
Method of disposal of discharged water: IDW polly tank at GWTF (pending analysis)

QUALITY ASSURANCE

Water Level Indicator: Horiba — Calibrated: U
Water Quality Meters: Aqua TROLL 500 w/ flow through cell — Calibrated: U
Comments: 30 - 10.29 = 19.73 X 0.16 = 3.15 X 10 = 31.50
3.79 X 3 = 11.37 Total = 42.87
~~Used~~ Used 1 gal H_2O during Installation

WELL DEVELOPMENT LOG

Project: CHAAP OU1 RAO Performance Monitoring
Project No: 60565355
Develo. Method Peristaltic pump and tubing

Well No: EW7 - PM 29B
Date: 2-24-22
Samplers: ME, CD, BN

WELL MEASUREMENTS

Well inside diameter (in): 1
Screen length (ft): 10'
Depth of well ~~casing~~ (ft bgs): 40
Initial water level (ft bgs): 10.45
Top of Casing Stick-up (ft): 2
Fluid well casing volume (Liters): 4.73
Weather conditions: 15° Wind calm PC

SAMPLING MEASUREMENT

DISCHARGE

Time	1430	1440	1450	1455	1500	1505	1510	1515	1520	1525
Water level (ft. bgs)	10.42	10.40	10.39	10.39	10.40	10.40	10.40	10.40	10.4	10.4
Pump Placement Depth (ft bgs)	31	31	35	35	39	39	39	35	35	35
Discharge (Liters)	10	20	30	35	40	45	50	55	60	65

WATER QUALITY DATA

pH	6.4	6.48	6.46	6.49	6.50	6.51	6.54	6.56	6.53	6.54
Temperature (°C)	10.91	11.04	11.01	10.98	10.97	10.95	10.90	10.93	10.91	10.90
Conductivity (mS/cm)	0.930	0.960	.940	.910	.910	.910	.920	.910	.910	.910
Dissolved Oxygen (mg/L)	0.07	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Redox (ORP) (mV)	-219.0	-225.5	225.3	225.4	225.1	-224.7	-227.3	-229.2	-229.9	-225.9
Turbidity (NTUs) initial/end	NA / 14.84	14.98 / 15.21	15.21 / 12.8	12.8 / 11.4	11.4 / 10.12	10.12 / 9.62	9.62 / 9.67	9.67 / 9.91	9.91 / 10.18	10.18 / 8.42
Color	clear	clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Odor	Sulfer	Sulfer	Sulfer	Sulfer	Sulfer	Sulfer	Sulfer	Sulfer	Sulfer	Sulfer

Total discharge: 65 L
Casing volumes removed: 13.74
Method of disposal of discharged water: IDW polly tank at GWTF (pending analysis)

Fe= 2.26

QUALITY ASSURANCE

Water Level Indicator: Horiba — Calibrated: U
Water Quality Meters: Aqua TROLL 500 w/ flow through cell — Calibrated: U
Comments: (40 - 10.45) = 29.55 X .16 = 4.73 X 10 = 40.73
3.79 X 6 = 22.74 = 22.74 Total = 63.57

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **CHAAP OU1 RAO_Performance Monitoring** PROJECT NO.: **60565355**

SAMPLE NO.: EW7-PM21A WELL NO.: EW7-PM21A

DATE/TIME COLLECTED: 2-26-22/1555 PERSONNEL: AE, KD

SAMPLE METHOD: Peristaltic Pump and tubing

SAMPLE MEDIA: **Groundwater**

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.: NA

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.: NA

MS/MSD REQUESTED: YES (NO) MS/MSD SAMPLE NO.: NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-26-22	Well Depth (ft bgs)	30
Time Started	1540	Depth to Water (ft bgs)	13.71
Time Completed	1555	Water Column Length	16.29
PID Measurements		Well Casing Volume (per ft)	0.16
Background	ND	Volume of Water in Well (L)	2.60
Breathing Zone	ND	Casing Volumes to Purge	NA -
Well Head	ND	Minimum to Purge (L)	NA -
Purge Water	ND	Actual Purge (L)	7.5

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1545	2.5	6.61	11.35	.995	0.10	-28.5	6.45	13.75	0.5
1550	5.0	6.61	11.36	.998	0.10	-34.0	4.52	13.75	0.5
1555	7.5	6.63	11.55	1.001	0.10	-37.90	4.50	13.75	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.75 mg/L

Multi-Parameter Probe Unit # 637589

Field Parameters Measured in Flow-Through Cell

Sample Depth (ft bgs) = 25

Pump Rate = 0.5 L/min

Temp Well Diameter = 1

Screen Interval (ft bgs) = 20 - 30

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **CHAAP OU1 RAO_Performance Monitoring** PROJECT NO.: **60565355**

SAMPLE NO.: EW7-PM24A-8-25 WELL NO.: EW7-PM 24A

DATE/TIME COLLECTED: 2-26-22 / 1430 PERSONNEL: AE, KD

SAMPLE METHOD: Peristaltic Pump and tubing

SAMPLE MEDIA: **Groundwater**

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.: NA

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.: NA

MS/MSD REQUESTED: YES (NO) MS/MSD SAMPLE NO.: NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-26-22	Well Depth (ft bgs)	30
Time Started	1415	Depth to Water (ft bgs)	14.84
Time Completed	1430	Water Column Length	15.16
PID Measurements		Well Casing Volume (per ft)	0.16
Background	~~NA~~ NA ND	Volume of Water in Well (L)	2.43
Breathing Zone	~~NA~~ ND	Casing Volumes to Purge	NA -
Well Head	ND	Minimum to Purge (L)	NA -
Purge Water	ND	Actual Purge (L)	7.5

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1420	2.5	6.57	12.44	1.047	2.15	-71.0	5.08	14.83	0.5
1425	5.0	6.58	12.35	1.046	2.15	-70.4	5.27	14.83	0.5
1430	7.5	6.58	12.36	1.045	2.14	-70.1	6.16	14.83	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 2.39 mg/L

Multi-Parameter Probe Unit # 637589

Field Parameters Measured in Flow-Through Cell

Sample Depth (ft bgs) = 25

Pump Rate = 0.5 L/min

Temp Well Diameter = 1

Screen Interval (ft bgs) = 20 - 30

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **CHAAP OU1 RAO_Performance Monitoring** PROJECT NO.: **60565355**

SAMPLE NO.: EW7-PM25A-S-25 WELL NO.: EW7-PM25A

DATE/TIME COLLECTED: 2-25-22 / 1010 PERSONNEL: AE, KO, BN

SAMPLE METHOD: Peristaltic Pump and tubing

SAMPLE MEDIA: **Groundwater**

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.: NA

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.: NA

MS/MSD REQUESTED: YES (NO) MS/MSD SAMPLE NO.: NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-25-22	Well Depth (ft bgs)	30
Time Started	0955	Depth to Water (ft bgs)	9.60
Time Completed	1010	Water Column Length	20.40
PID Measurements		Well Casing Volume (per ft)	0.16
Background	ND	Volume of Water in Well (L)	3.26
Breathing Zone	ND	Casing Volumes to Purge	NA -
Well Head	ND	Minimum to Purge (L)	NA -
Purge Water	ND	Actual Purge (L)	7.5

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1000	2.5	6.24	10.55	1.136	0.01	-134.8	5.71	9.65	0.5
1005	5.0	6.25	10.51	1.119	0.01	-137.2	5.51	9.65	0.5
1010	7.5	6.25	10.50	1.125	0.01	-136.8	4.42	9.65	0.5

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FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 2.15 mg/L

Multi-Parameter Probe Unit # 637589

Field Parameters Measured in Flow-Through Cell

Sample Depth (ft bgs) = 25

Pump Rate = 0.5 L/min

Temp Well Diameter = 1"

Screen Interval (ft bgs) = 20 - 30

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP OU1 RAO_Performance Monitoring	PROJECT NO.	60565355
SAMPLE NO.	EW7-PM25B-8-35	WELL NO.	EW7-PM 25 B
DATE/TIME COLLECTED	2-25-22 / 1205	PERSONNEL	2-25-22
SAMPLE METHOD	Peristaltic Pump and tubing		AE, ICD, BN

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-25-22	Well Depth (ft bgs)	40
Time Started	1150	Depth to Water (ft bgs)	9.63
Time Completed	1205	Water Column Length	30.37
PID Measurements		Well Casing Volume (per ft)	0.16
Background	ND	Volume of Water in Well (L)	4.86
Breathing Zone	ND	Casing Volumes to Purge	NA -
Well Head	ND	Minimum to Purge (L)	NA -
Purge Water	ND	Actual Purge (L)	7.5

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1155	2.5	6.59	11.37	.801	0.90	-109.1	3.86	9.63	0.5
1200	5.0	6.59	11.33	.809	0.89	-108.5	4.13	9.63	0.5
1205	7.5	6.58	11.35	.810	0.88	-108.4	5.93	9.63	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.67 mg/L

Multi-Parameter Probe Unit # 637589

Field Parameters Measured in Flow-Through Cell

Sample Depth (ft bgs) = 35

Pump Rate = 0.5 L/m.n

Temp Well Diameter = 1"

Screen Interval (ft bgs) = 30-40

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CHAAP OU1 RAO_Performance Monitoring | PROJECT NO.: 60565355

SAMPLE NO.: EW7-PM26A-8-25 | WELL NO.: EW7-PM26A

DATE/TIME COLLECTED: 2-25-22 / 1325 | PERSONNEL: AE, KD, BN

SAMPLE METHOD: Peristaltic Pump and tubing

SAMPLE MEDIA: Groundwater

SAMPLE QA SPLIT:	YES	(NO)	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	(NO)	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	(NO)	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-25-22	Well Depth (ft bgs)	30
Time Started	1315	Depth to Water (ft bgs)	14.43
Time Completed	1325	Water Column Length	15.57
PID Measurements		Well Casing Volume (per ft)	0.16
Background	ND	Volume of Water in Well (L)	2.49
Breathing Zone	ND	Casing Volumes to Purge	NA -
Well Head	ND	Minimum to Purge (L)	NA -
Purge Water	ND	Actual Purge (L)	7.5

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1315	2.5	6.78	10.84	1.070	0.09	-62.0	3.78	14.39	0.5
1320	5.0	6.78	10.80	1.075	0.09	-61.9	5.73	14.39	0.5
1325	7.5	6.77	10.80	1.073	0.09	-61.6	3.05	14.39	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.64 mg/L

Multi-Parameter Probe Unit # 637589

Field Parameters Measured in Flow-Through Cell

Sample Depth (ft bgs) = 25

Pump Rate = 0.5 L/min

Temp Well Diameter = 1"

Screen Interval (ft bgs) = 20-30

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CHAAP OU1 RAO_Performance Monitoring | PROJECT NO.: 60565355

SAMPLE NO.: EW7-PM26B-8-35 | WELL NO.: EW7-PM26B

DATE/TIME COLLECTED: 2-25-22/1505 | PERSONNEL: ME, KD, BN

SAMPLE METHOD: Peristaltic Pump and tubing

SAMPLE MEDIA: Groundwater

SAMPLE QA SPLIT:	YES	(NO)	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	(NO)	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	(NO)	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-25-22	Well Depth (ft bgs)	40
Time Started	1450	Depth to Water (ft bgs)	14.48
Time Completed	1505	Water Column Length	25.52
PID Measurements		Well Casing Volume (per ft)	0.16
Background	ND	Volume of Water in Well (L)	4.08
Breathing Zone	ND	Casing Volumes to Purge	NA -
Well Head	ND	Minimum to Purge (L)	NA -
Purge Water	ND	Actual Purge (L)	7.5

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1455	2.5	6.44	11.16	1.084	0.21	-98.3	4.59	14.45	0.5
1500	5.0	6.43	11.22	1.070	0.20	-98.9	4.11	14.45	0.5
1505	7.5	6.43	11.14	1.064	0.20	-97.2	4.85	14.45	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.73 mg/L

Multi-Parameter Probe Unit # 637589

Field Parameters Measured in Flow-Through Cell

Sample Depth (ft bgs) = 35

Pump Rate = 0.5 L/min

Temp Well Diameter = 1

Screen Interval (ft bgs) = 30 - 40

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **CHAAP OU1 RAO_Performance Monitoring** PROJECT NO.: **60565355**

SAMPLE NO.: EW7-PM27B-8-35 WELL NO.: EW7-PM27B

DATE/TIME COLLECTED: 2-26-22 / 1300 PERSONNEL: BE, KD, BN

SAMPLE METHOD: Peristaltic Pump and tubing

SAMPLE MEDIA: **Groundwater**

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.: NA

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.: NA

MS/MSD REQUESTED: YES (NO) MS/MSD SAMPLE NO.: NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

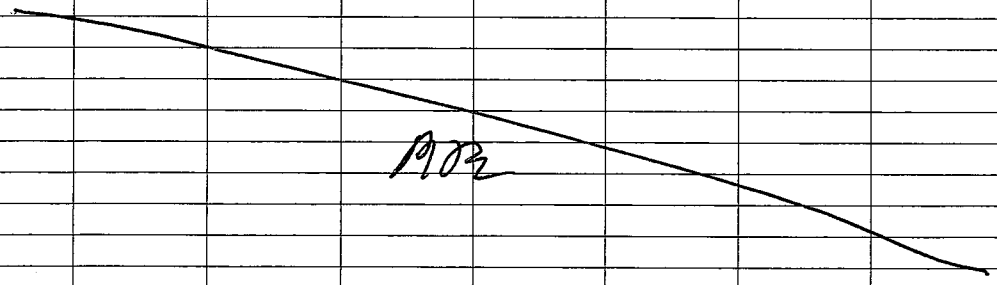
Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-26-22	Well Depth (ft bgs)	40
Time Started	1245	Depth to Water (ft bgs)	12.46
Time Completed	1300	Water Column Length	27.54
PID Measurements		Well Casing Volume (per ft)	0.16
Background	ND	Volume of Water in Well (L)	4.41
Breathing Zone	ND	Casing Volumes to Purge	NA -
Well Head	ND	Minimum to Purge (L)	NA -
Purge Water	ND	Actual Purge (L)	7.5

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1250	2.5	6.54	11.41	.969	3.69	-52.0	7.01	12.55	0.5
1255	5.0	6.54	11.83	.975	3.65	-53.0	6.87	12.55	0.5
1300	7.5	6.54	11.78	.977	3.63	-49.5	6.66	12.55	0.5



FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.7 mg/L

Multi-Parameter Probe Unit # 637589

Field Parameters Measured in Flow-Through Cell

Sample Depth (ft bgs) = 35

Pump Rate = 0.5 L/min

Temp Well Diameter = 1

Screen Interval (ft bgs) = 30-40

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **CHAAP OU1 RAO_Performance Monitoring** PROJECT NO.: **60565355**

SAMPLE NO.: EW7-PM28A-8-25 WELL NO.: EW7-PM28A

DATE/TIME COLLECTED: 2-26-22/935 PERSONNEL: ME, KD, BN

SAMPLE METHOD: Peristaltic Pump and tubing

SAMPLE MEDIA: **Groundwater**

SAMPLE QA SPLIT:	YES	(NO)	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	(NO)	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	(NO)	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-26-22	Well Depth (ft bgs)	30
Time Started	0920	Depth to Water (ft bgs)	9.82
Time Completed	0935	Water Column Length	20.18
PID Measurements		Well Casing Volume (per ft)	0.16
Background	ND	Volume of Water in Well (L)	3.23
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	NA
Purge Water	ND	Actual Purge (L)	7.5

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
925	2.5	6.37	11.78	1.099	0.21	-102.4	6.70	9.90	0.5
930	5.0	6.39	11.88	1.100	0.21	-104.3	6.49	9.90	0.5
935	7.5	6.40	11.96	1.092	0.21	-104.6	6.69	9.90	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.81 mg/L

Multi-Parameter Probe Unit # 637589

Field Parameters Measured in Flow-Through Cell

Sample Depth (ft bgs) = 25

Pump Rate = 0.5 L/min

Temp Well Diameter = 1

Screen Interval (ft bgs) = 20-30

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **CHAAP OU1 RAO_Performance Monitoring** PROJECT NO.: **60565355**

SAMPLE NO.: EW7-PM29A-8-25 WELL NO.: EW7-PM29A

DATE/TIME COLLECTED: 2-26-22 / 1105 PERSONNEL: RE, KD, BN

SAMPLE METHOD: Peristaltic Pump and tubing

SAMPLE MEDIA: **Groundwater**

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.: NA

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.: NA

MS/MSD REQUESTED: YES (NO) MS/MSD SAMPLE NO.: NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	2-26-22	Well Depth (ft bgs)	30
Time Started	1050	Depth to Water (ft bgs)	10.27
Time Completed	1105	Water Column Length	19.73
PID Measurements		Well Casing Volume (per ft)	0.16
Background	ND	Volume of Water in Well (L)	3.15
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	NA
Purge Water	ND	Actual Purge (L)	7.5

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1055	2.5	6.51	12.14	.820	0.02	-94.7	8.42	10.40	0.5
1100	5.0	6.52	12.09	.810	0.02	-95.4	8.74	10.40	0.5
1105	7.5	6.52	12.14	.827	0.02	-95.5	8.52	10.40	0.5
			ARC						

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 2.34 mg/L

Multi-Parameter Probe Unit # 637589

Field Parameters Measured in Flow-Through Cell

Sample Depth (ft bgs) = 25

Pump Rate = 0.5 L/Min

Temp Well Diameter = 1

Screen Interval (ft bgs) = 20-30

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP OU1 RAO_Performance Monitoring	PROJECT NO.	60565355
SAMPLE NO.	EW7-PM29B-8-35	WELL NO.	PM29B
DATE/TIME COLLECTED	2-24-22/ 1540	PERSONNEL	AE, CO, BN
SAMPLE METHOD	Peristaltic Pump and tubing		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	(NO)	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	(NO)	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	(NO)	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	MW 5-2 2-24-22	Well Depth (ft bgs)	40
Time Started	1525	Depth to Water (ft bgs)	1045
Time Completed	1540	Water Column Length	28.55
PID Measurements		Well Casing Volume (per ft)	.16 L
Background	ND	Volume of Water in Well (L)	4.73
Breathing Zone	ND	Casing Volumes to Purge	NA -
Well Head	ND	Minimum to Purge (L)	NA -
Purge Water	ND	Actual Purge (L)	7.5

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (ORP) (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
									0.5
1530	~~2.5~~ 2.5	6.54	10.91	0.910	0.01	-225.7	8.44	10.40	~~.500 mL/m~~
1535	~~5.0~~ 5.0	6.55	10.90	0.910	0.01	-226.0	8.41	10.40	0.5
1540	~~7.5~~ 7.5	6.54	10.90	0.910	0.01	-225.9	8.42	10.40	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 2.26 mg/L

Multi-Parameter Probe Unit # 637589

Field Parameters Measured in Flow-Through Cell

Sample Depth (ft bgs) = 35

Pump Rate = .5 L/min

Temp Well Diameter = 1"

Screen Interval (ft bgs) = 30-40

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0022-8	WELL NO.	G0022
DATE/TIME COLLECTED	3-2-22 / 1330	PERSONNEL	AE, AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	**NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	**NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	**NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft BTOC)	35.04
Time Started	1250	Depth to Water (ft BTOC)	13.34
Time Completed	1330	Water Column Length	21.66
PID Measurements		Well Casing Volume (per ft)	2.47
Background	ND	Volume of Water in Well (L)	21.66 X 2.47 = 53.5
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
							1.92		
1255	2.5	7.07	13.81	.971	0.25	17.8	~~13.14~~	13.45	0.5
1300	5.0	6.91	13.55	.965	0.02	39.0	2.18	13.45	0.5
1305	7.5	6.82	13.90	.963	0.01	52.7	3.01	13.45	0.5
1310	10	6.81	13.99	.959	0.01	54.8	2.25	13.45	0.5
1315	12.5	6.79	14.26	.955	0.01	52.1	2.07	13.45	0.5
1320	15	6.79	14.12	.954	0.01	48.0	2.31	13.45	0.5
1325	17.5	6.79	14.15	.950	0.01	41.5	2.14	13.45	0.5
1330	20	6.79	14.25	.948	0.01	34.6	2.56	13.45	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.14 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 27.5 ft

Pump Rate = .5 L/min

Well Diameter = 4"

Screen Interval = 18-33

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-94.9	64.0	7.9	**-1.2**
DO	0.02	3.32	0.02	**1.38**
PH	6.68	7.08	6.99	**6.91**
Cond.	0.783	0.940	0.783	**0.859**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0094-8	WELL NO.	G0094
DATE/TIME COLLECTED	3-2-22 / 1000	PERSONNEL	K. Dachling
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		G. Carson
SAMPLE MEDIA:	Groundwater		
SAMPLE QA SPLIT:	YES **NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES **NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES **NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft BTOC)	27.50
Time Started	KD ~~0825~~ 0920	Depth to Water (ft BTOC)	15.32
Time Completed	1000	Water Column Length	12.18
PID Measurements		Well Casing Volume (per ft)	0.62 L
Background	ND	Volume of Water in Well (L)	7.55
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20.0
Purge Water	ND	Actual Purge (L)	20.0

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
0925 KD 0930 ~~0830~~	2.5	6.06	12.40	1.015	0.03	110.6	4.36	15.48	0.5
~~0835~~	5.0	6.07	12.68	0.988	0.03	57.8	2.17	15.48	0.5
0935	7.5	6.09	12.79	0.960	0.02	26.2	2.16	15.45	0.5
0940	10.0	6.14	12.85	0.940	0.02	7.0	2.05	15.44	0.5
0945	12.5	6.21	13.15	0.923	0.03	7.0	2.64	15.43	0.5
0950	15.0	6.29	13.26	0.945	0.03	-17.6	2.41	15.43	0.5
0955	17.5	6.35	13.32	0.949	0.03	-25.1	2.32	15.43	0.5
1000	20.0	6.39	13.54	0.951	0.03	-30.0	2.26	15.43	0.5
	KD								

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 2.19 mg/L

Multi-Parameter Probe Unit # 637718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 20.16 ft

Pump Rate = 0.5 L/min

Well Diameter = 2"

Screen Interval = 15-25

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-62.6	27.7	3.7	**-15.8**
DO	0.02	0.64	0.14	**0.28**
PH	6.01	6.49	6.49	**6.19**
Cond.	0.576	1.080	0.912	**0.824**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0096-8	WELL NO.	G0096
DATE/TIME COLLECTED	3-2-22 / 1110	PERSONNEL	K. Dachling
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		G. Carson
SAMPLE MEDIA:	Groundwater		
SAMPLE QA SPLIT:	YES **NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	**YES** NO	DUPLICATE SAMPLE NO.	G0296-8 @ 0806
MS/MSD REQUESTED	YES **NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2SO_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft BTOC)	27.91
Time Started	1030	Depth to Water (ft BTOC)	17.49
Time Completed	1110	Water Column Length	10.42
PID Measurements		Well Casing Volume (per ft)	0.62 L
Background	ND	Volume of Water in Well (L)	6.46
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20.0
Purge Water	ND	Actual Purge (L)	20.0

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1035	2.5	6.18	12.91	1.029	0.08	-14.9	9.57	17.50	0.5
1040	5.0	6.20	13.48	1.034	0.05	-35.5	8.82	17.50	0.5
1045	7.5	6.31	14.11	1.038	0.06	-50.3	7.45	17.50	0.5
1050	10.0	6.41	13.81	1.044	0.01	-60.9	6.70	17.51	0.5
1055	12.5	6.50	13.97	1.041	0.01	-68.5	5.61	17.51	0.5
1100	15.0	6.53	13.97	1.041	0.01	-73.1	4.79	17.51	0.5
1105	17.5	6.54	14.26	1.044	0.01	-75.7	5.19	17.51	0.5
1110	20.0	6.54	14.41	1.040	0.03	-77.3	3.93	17.51	0.5
	KD								

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 3.29 mg/L

Multi-Parameter Probe Unit # 637718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 21.25 ft

Pump Rate = 0.5 L/min

Well Diameter = 2"

Screen Interval = 15-25

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-138.6	133.1	-136.1	**-30.0**
DO	0.01	0.61	0.01	**0.30**
PH	6.19	7.04	6.51	**6.56**
Cond.	0.545	1.230	0.996	**0.931**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0102-8	WELL NO.	G0102
DATE/TIME COLLECTED	3-2-22/ 1510	PERSONNEL	RE, AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft BTOC)	28.14
Time Started	1410	Depth to Water (ft BTOC)	13.88
Time Completed	1510	Water Column Length	14.26
PID Measurements		Well Casing Volume (per ft)	0.62
Background	ND	Volume of Water in Well (L)	14.26 X 0.62 = 8.84
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	30

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
							New 288.9		
1415	2.5	7.20	14.72	2.737	0.04	-158.5	2.65	13.88	0.5
1420	5.0	7.19	14.67	2.737	0.01	-190.3	2.79	13.88	0.5
1425	7.5	7.18	14.70	2.736	0.01	-210.0	2.44	13.88	0.5
1430	10	7.17	14.90	2.746	0.01	-236.2	2.12	13.88	0.5
1435	12.5	7.17	14.72	2.755	0.01	~~-318.4~~	1.85	13.88	0.5
1440	15	7.16	14.87	2.759	0.01	-318.4	1.39	13.88	0.5
1445	17.5	7.15	14.90	2.756	0.01	-342.8	1.02	13.88	0.5
1450	20	7.15	14.83	2.757	0.01	-364.9	0.78	13.88	0.5
1455	22.5	7.15	14.79	2.763	0.01	-383.5	0.65	13.88	0.5
1500	25.0	7.15	14.68	2.765	0.01	-395.7	0.50	13.88	0.5
1505	27.0	7.14	14.69	2.767	0.01	-405.7	0.42	13.88	0.5
1510	30.0	7.14	14.69	2.769	0.01	-409.9	0.40	13.88	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.12 mg/L

Strong Sulfer Odor

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 23 ft

Pump Rate = .5 L/min

Well Diameter = 2"

Screen Interval = 15-25

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-358.6	-60.0	-358.6	**-258.4**
DO	0.01	0.43	0.01	**0.12**
PH	6.68	7.29	7.29	**6.92**
Cond.	0.805	2.740	0.805	**2.087**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0111-8	WELL NO.	G0111
DATE/TIME COLLECTED	3-2-22 / 1355	PERSONNEL	K. Dahling, C. Carson
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		
SAMPLE MEDIA:	Groundwater		
SAMPLE QA SPLIT:	YES **NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	**YES** NO	DUPLICATE SAMPLE NO.	G0311-8
MS/MSD REQUESTED	YES **NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft BTOC)	27.55
Time Started	1315	Depth to Water (ft BTOC)	19.98
Time Completed	1355	Water Column Length	7.57 ft
PID Measurements		Well Casing Volume (per ft)	0.62 L
Background	ND	Volume of Water in Well (L)	4.69
Breathing Zone	ND	Casing Volumes to Purge	ND
Well Head	ND	Minimum to Purge (L)	20.0
Purge Water	ND	Actual Purge (L)	20.0

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1320	2.5	6.32	14.32	2.066	0.04	13.1	4.37	20.06	0.5
1325	5.0	6.34	14.92	2.097	0.02	12.6	3.06	20.06	0.5
1330	7.5	6.35	15.54	2.107	0.02	10.0	2.77	20.05	0.5
1335	10.0	6.37	15.83	2.110	0.04	4.0	2.67	20.05	0.5
1340	12.5	6.43	16.12	2.097	0.02	-0.7	2.65	20.05	0.5
1345	15.0	6.48	15.29	2.096	0.02	-5.1	2.39	20.05	0.5
1350	17.5	6.45	15.42	2.103	0.02	-5.6	2.95	20.05	0.5
1355	20.0	6.44	15.53	2.112	0.02	-9.2	2.32	20.05	0.5
		ND							

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 0.61 mg/L

Multi-Parameter Probe Unit # 637718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 22.5 ft

Pump Rate = 0.5 L/min

Well Diameter = 2"

Screen Interval = 15-25

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-213.0	14.0	-213.0	**-115.3**
DO	0.01	0.86	0.01	**0.28**
PH	6.38	7.06	6.77	**6.73**
Cond.	1.620	2.170	2.170	**1.921**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	**CHAAP**	PROJECT NO.	**60565355**
SAMPLE NO.	**G0121-8**	WELL NO.	**G0121**
DATE/TIME COLLECTED	3-2-22 / 1510	PERSONNEL	K. Daehling
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		G. Carson
SAMPLE MEDIA:	**Groundwater**		
SAMPLE QA SPLIT:	YES **NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES **NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES **NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft BTOC)	32.30
Time Started	1430	Depth to Water (ft BTOC)	16.42
Time Completed	1510	Water Column Length	15.88 ft
PID Measurements		Well Casing Volume (per ft)	0.62 L
Background	ND	Volume of Water in Well (L)	9.85
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20.0
Purge Water	ND	Actual Purge (L)	

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
								16.52	
1435	2.5	6.49	17.16	1.659	1.68	-106.2	24	~~16.82~~	0.5
1440	5.0	6.44	13.97	1.690	0.05	-117.4	20	16.52	0.5
1445	7.5	6.43	13.52	1.735	0.03	-123.5	20	16.52	0.5
1450	10.0	6.43	13.53	1.790	0.01	-126.2	10.47	16.52	0.5
1455	12.5	6.41	13.24	1.776	0.01	-128.4	8.47	16.52	0.5
~~1460~~ 1500	15.0	6.43	13.46	1.838	0.01	-133.2	7.31	16.52	0.5
1505	17.5	6.43	13.61	1.825	0.01	-138.2	5.40	16.52	0.5
1510	20.0	6.44	13.54	1.827	0.01	-141.5	5.66	16.52	0.5
		VOID							

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 2.24 mg/L

Water has a grey tint

Multi-Parameter Probe Unit # 837718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 25.0 ft

Pump Rate = 0.5 L/min

Well Diameter = 2"

Screen Interval = 20-30

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-244.6	-80.0	-244.6	**-156.5**
DO	0.01	0.50	0.01	**0.16**
PH	5.02	6.86	6.54	**6.00**
Cond.	1.713	3.539	1.713	**2.338**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	G0122-8	WELL NO.	G0122
DATE/TIME COLLECTED	3-2-22/1245	PERSONNEL	K. Dachling
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		G. Carson

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	**NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	**NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	**NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft BTOC)	32.80
Time Started	1205	Depth to Water (ft BTOC)	18.01
Time Completed	1245	Water Column Length	14.79 ft
PID Measurements		Well Casing Volume (per ft)	0.62
Background	ND	Volume of Water in Well (L)	9.17
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20.0
Purge Water	ND	Actual Purge (L)	20.0

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1210	2.5	6.50	14.74	2.435	0.03	-19.6	4.01	KD ~~18.01~~ 18.04	0.5
1215	5.0	6.55	15.05	2.485	0.03	-62.8	5.32	18.04	0.5
1220	7.5	6.59	16.13	2.537	0.01	-83.6	1.77	18.03	0.5
1225	10.0	6.72	17.26	2.500	0.01	-97.3	2.04	18.03	0.5
1230	12.5	6.77	17.50	2.527	0.01	-108.0	2.09	18.03	0.5
1235	15.0	6.76	16.33	2.537	0.01	-113.0	3.14	18.04	0.5
1240	17.5	6.76	16.60	2.530	0.01	-118.5	~~2.873~~	18.04	0.5
1245	20.0	6.61	16.43	2.555	0.01	-112.9	2.39	18.04	0.5
		KD							

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.33 mg/L

Multi-Parameter Probe Unit # 637718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 25.0 ft

Pump Rate = 0.5 L/min

Well Diameter = 2"

Screen Interval = 20-30

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-341.4	-61.0	-340.3	**-252.3**
DO	0.01	0.30	0.01	**0.10**
PH	6.48	7.01	6.78	**6.74**
Cond.	2.339	2.625	2.625	**2.436**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	**CHAAP**	PROJECT NO.	**60565355**
SAMPLE NO.	**G0123-8**	WELL NO.	**G0123**
DATE/TIME COLLECTED	3-2-22 / 1635	PERSONNEL	K. Dochling
SAMPLE METHOD	PRO/ACTIVE SS MONSOON		G. Carson

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	**NO**	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	**NO**	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	**NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	32.00
Date	3-2-22	Depth to Water (ft BTOC)	16.05
Time Started	1555	Water Column Length	15.95ft
Time Completed	1635	Well Casing Volume (per ft)	0.62 L
PID Measurements		Volume of Water in Well (L)	9.89
Background	ND	Casing Volumes to Purge	NA
Breathing Zone	ND	Minimum to Purge (L)	20.0
Well Head	ND	Actual Purge (L)	20.0
Purge Water	ND		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1600	2.5	6.36	13.09	1.775	0.01	-62.6	1.63	16.38	0.5
1605	5.0	6.36	13.20	1.774	0.01	-74.0	1.49	16.38	0.5
1610	7.5	6.37	13.37	1.773	0.01	-80.5	1.52	16.36	0.5
1615	10.0	6.38	13.29	1.771	0.01	-84.7	1.42	16.35	0.5
1620	12.5	6.39	13.29	1.769	0.01	-88.0	1.42	16.35	0.5
1625	15.0	6.40	13.33	1.768	0.01	-90.4	1.65	16.35	0.5
1630	17.5	6.41	13.39	1.767	0.01	-92.4	1.54	16.35	0.5
1635	20.0	6.42	13.12	1.765	0.01	-94.2	1.59	16.35	0.5
		KD							

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 3.00 mg/L

Multi-Parameter Probe Unit # 637718

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 25.0 ft

Pump Rate = 0.5

Well Diameter = 2"

Screen Interval = 20-30

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-128.6	45.0	-123.8	**-83.4**
DO	0.02	0.31	0.02	**0.10**
PH	6.00	6.85	6.34	**6.40**
Cond.	1.673	1.880	1.709	**1.781**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	**CHAAP**	PROJECT NO.	**60565355**
SAMPLE NO.	**PZ017R-8**	WELL NO.	**PZ017R**
DATE/TIME COLLECTED	3-2-22/ 1145	PERSONNEL	RE AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA: **Groundwater**

SAMPLE QA SPLIT:	YES	**NO**	SPLIT SAMPLE NO.	NA Time
SAMPLE QC DUPLICATE:	**YES**	NO	DUPLICATE SAMPLE NO.	**PZ021-8** (800)
MS/MSD REQUESTED	YES	**NO**	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft. BTOC)	32.40
Time Started	1105	Depth to Water (ft. BTOC)	12.53
Time Completed	1145	Water Column Length	19.87
PID Measurements		Well Casing Volume (per ft)	0.62
Background	ND	Volume of Water in Well (L)	19.87 x 0.62 = 12.32
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1110	2.5	6.63	14.12	.618	4.04	8.6	4.08	12.52	0.5
1115	5.0	6.61	14.66	.987	0.08	-22.2	3.62	12.52	0.5
1120	7.5	6.58	14.64	1.003	0.02	-53.3	2.99	12.52	0.5
1125	10	6.57	14.82	1.011	0.01	-57.2	2.75	12.52	0.5
1130	12.5	6.57	14.82	1.018	0.01	-58.4	2.62	12.52	0.5
1135	15	6.57	15.13	1.023	0.01	-57.7	2.41	12.52	0.5
1140	17.5	6.58	14.95	1.024	0.01	-56.6	2.68	12.52	0.5
~~1145~~ 1145	20	6.58	15.16	1.026	0.01	-57.3	3.30	12.52	0.5
			MB2						

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.11 mg/L

Multi-Parameter Probe Unit # 82196

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 22 ft

Pump Rate = .5 L/min

Well Diameter = 2"

Screen Interval = 10-30

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-81.9	173.9	-81.9	**82.5**
DO	0.01	5.68	0.02	**1.78**
PH	6.07	6.90	6.31	**6.33**
Cond.	0.652	1.034	1.034	**0.846**

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME	CHAAP	PROJECT NO.	60565355
SAMPLE NO.	PZ018-8	WELL NO.	PZ018
DATE/TIME COLLECTED	3-2-22 / 1040	PERSONNEL	BE, AP
SAMPLE METHOD	PRO-ACTIVE SS MONSOON		

SAMPLE MEDIA:	Groundwater			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	NA
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	NA
MS/MSD REQUESTED	YES	NO	MS/MSD SAMPLE NO.	NA

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 500 mL Amber	6°C	Explosives + MNX (8330A)
3 - 40 mL VOA	6°C, HCl	Methane (RSK 175)
1 - 500 mL HDPE	6°C, H_2S0_4	TKN (351.2), NH_3 (350.1), NO_2/NO_3 (353.2)
1 - 250 mL HDPE	6°C	SO_4 (9056A), Alkalinity (2320B)
1 - 250 mL HDPE	6°C, ZnOAc/NaOH	Sulfide (9034)
1 - 250 mL Amber	6°C	DOC (9060A)

WELL PURGING DATA

Date	3-2-22	Well Depth (ft. BTOC)	31.93
Time Started	1000	Depth to Water (ft. BTOC)	14.19
Time Completed	1040	Water Column Length	17.74
PID Measurements		Well Casing Volume (per ft)	.62 NR
Background	ND	Volume of Water in Well (L)	17.74 x 0.62 = 10 11.0
Breathing Zone	ND	Casing Volumes to Purge	NA
Well Head	ND	Minimum to Purge (L)	20
Purge Water	ND	Actual Purge (L)	20

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU)	Depth to Water (ft BTOC)	Purge Rate (L/min)
1000 NR	2.5	6.36	13.02	1.114	0.43	-87.0	11.4	14.18	0.5
1010	5.0	6.36	13.60	1.157	0.32	-92.0	9.92	14.18	0.5
1015	7.5	6.35	13.84	1.158	0.20	-92.7	8.74	14.18	0.5
1020	10	6.35	13.80	1.173	0.17	-92.3	8.26	14.18	0.5
1025	12.5	6.35	13.95	1.169	0.15	-92.3	7.36	14.18	0.5
1030	15	6.36	14.13	1.173	0.11	-93.0	6.61	14.18	0.5
1035	17.5	6.37	14.34	1.174	0.10	-95.8	6.42	14.18	0.5
1040	20	6.38	14.35	1.174	0.11	-97.0	6.24	14.18	0.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron	Checked Against Calibrated Length
Water Quality Meter	Aqua TROLL 500 w/ flow through cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = 1.32 mg/L

Multi-Parameter Probe Unit # 821290

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 33 ft

Pump Rate = .5 L/min

Well Diameter = 2"

Screen Interval = 10-30

	Historic (7-year average low and high / Q7 / Avg in Bold)			
ORP	-32.3	177.2	-32.3	**82.5**
DO	0.01	9.26	0.01	**3.72**
PH	5.52	6.57	6.40	**6.17**
Cond.	0.520	0.870	0.798	**0.672**

DAILY QUALITY CONTROL REPORT

Date **02/22/22**

Day	S	S	M	T	W	T	F
				X			

On Site Hours	9.5
Travel Time	0.5
Office Time	0.5

COE Project Manager Brian Fettin
Project CHAAP OU1 Rebound Study/ PMs-Q#8
Project No. 60565355
Contract No. W9128F-18-D-0020

Weather	Bright Sun	Clear	Overcast	Rain	Snow
			X		X

Temp	To 32	32-50	50-70	70-85	85 up
	X				

Wind	Still	Moderate	High	**Report No.**
			X	

Humidity	Dry	Moderate	Humid	
		X		1

Subcontractors on Site:

Plains Environmental Services (PES) (Direct Push Subcontractor) - Jason Auernheimer

Equipment on Site:

One direct push rig (Geoprobe 6620DT), Screen point sampler (SP15), support trucks, hand-held GPS unit, performance monitoring (PM) temporary well materials (1"-OD PVC., 10' screens, filter pack sand, granular bentonite, coated chips, grout mix), peristaltic pump and tubing, laboratory provided sample containers, IDW buckets, decon supplies, AquaTroll 500, LaMotte turbidity meter, Hach Colormeter, water level meters, MiniRAE PID, level D PPE, first-aid/safety supplies, and field/safety paperwork.

Visitors on Site:

None.

AECOM/Brice Personnel on Site:

AECOM - Ryan Herold, Kameron Daehling, Bob Exceen, Brayton Novak

Field Work Performed (including sampling):

-Began OU1 Rebound Study/performance monitoring Q#8 groundwater sampling event (DP screen point sampling, install/sample/abandon performance monitoring wells, and MW sampling).

Off-post Direct Push Sampled
NW050R-DP08-20 OS003-DP08-25
NW050R-DP08-35
NW050R-DP08-60

-OU1 sample analysis will be completed in accordance with Addendum 2, and Addendum 3 UFP-QAPPs.
-Containerized IDW purge/decontamination water in a designated labeled 1000-gallon poly tank at GWTF.

Quality Control Activities (including field calibration):

-Completed staking of sample locations using hand-held GPS with predetermined coordinates. Utility locates and notifying property owners of field activities were completed week of 2/14/22 & 2/21/22
-Calibration check of PIDs (serial #'s 110-014926, 110-014888), water level indicators (#'s 1324-T, 1323-T)

Health and Safety and Activities:

Had the initial H&S meeting with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, hazards with direct push rigs, pump and traffic safety, potential exposure to explosives contamination, fire hazards, cold stress, hearing protection, slip-trip-falls, COVID-19, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety. Utility locates were performed (Nebraska811) and utilities were marked.
-Completed Daily Tailgate Meeting Sheet
-Completed Daily Task Hazard Assessment Sheet

Observations/Problems Encountered/Corrective Action Taken:

None.

Office Work Performed:

-Organized paperwork and equipment, scanned SCFSs.
-Completed DQCR.

By Ryan Herold **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date **02/23/22**

Day	S	S	M	T	W	T	F
					X		

On Site Hours	10
Travel Time	0.5
Office Time	0.5

COE Project Manager	Brian Fettin
Project	CHAAP OU1 Rebound Study/ PMs-Q#8
Project No.	60565355
Contract No.	W9128F-18-D-0020

Weather	Bright Sun	Clear	Overcast	Rain	Snow
		X	X		
Temp	To 32	32-50	50-70	70-85	85 up
	X				
Wind	Still	Moderate	High	**Report No.**	
		X			
Humidity	Dry	Moderate	Humid	2	
	X				

Subcontractors on Site:

Plains Environmental Services (PES) (Direct Push Subcontractor) - Jason Auernheimer

Equipment on Site:

One direct push rig (Geoprobe 6620DT), Screen point sampler (SP15), support trucks, hand-held GPS unit, performance monitoring (PM) temporary well materials (1"-OD PVC., 10' screens, filter pack sand, granular bentonite, coated chips, grout mix), peristaltic pump and tubing, laboratory provided sample containers, IDW buckets, decon supplies, AquaTroll 500, LaMotte turbidity meter, Hach Colormeter, water level meters, MiniRAE PID, level D PPE, first-aid/safety supplies, and field/safety paperwork.

Visitors on Site:

None.

AECOM/Brice Personnel on Site:

AECOM - Ryan Herold, Kameron Daehling, Bob Exceen, Brayton Novak

Field Work Performed (including sampling):

-Continued OU1 Rebound Study/performance monitoring Q#8 groundwater sampling event (DP screen point sampling, install/sample/abandon performance monitoring wells, and MW sampling).

Off-post Direct Push Sampled		Performance Monitoring Wells (temporary) Installed
OS003-DP08-35	OS001-DP08-25	EW7-PM25B
OS003-DP08-46	OS001-DP08-35	EW7-PM26B
	OS001-DP08-45	EW7-PM29B

-OU1 sample analysis will be completed in accordance with Addendum 2, and Addendum 3 UFP-QAPPs.
-Containerized IDW purge/decontamination water in a designated labeled 1000-gallon poly tank at GWTF.

Quality Control Activities (including field calibration):

-Completed staking of sample locations using hand-held GPS with predetermined coordinates. Utility locates and notifying property owners of field activities were completed week of 2/14/22 & 2/21/22
-Calibration check of PIDs (serial #'s 110-014926, 110-014888), water level indicators (#'s 1324-T, 1323-T)
-Duplicate OS501-DP08-25 (parent OS001-DP08-25). OS003-DP08-45 MS/MSD

Health and Safety and Activities:

Had the daily H&S meeting with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, hazards with direct push rigs, pump and traffic safety, potential exposure to explosives contamination, fire hazards, cold stress, hearing protection, slip-trip-falls, COVID-19, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety. Utility locates were performed (Nebraska811) and utilities were marked.
-Completed Daily Tailgate Meeting Sheet
-Completed Daily Task Hazard Assessment Sheet

Observations/Problems Encountered/Corrective Action Taken:

None.

Office Work Performed:

-Organized paperwork and equipment, scanned SCFSs.
-Completed DQCR.

By Ryan Herold **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	**02/24/22**

Day	S	S	M	T	W	T	F
						X	

On Site Hours	9.5
Travel Time	0.5
Office Time	0.5

COE Project Manager	Brian Fettin
Project	CHAAP OU1 Rebound Study/ PMs-Q#8
Project No.	60565355
Contract No.	W9128F-18-D-0020

Weather	Bright Sun	Clear	Overcast	Rain	Snow
			X		
Temp	To 32	32-50	50-70	70-85	85 up
	X				
Wind	Still	Moderate	High	**Report No.**	
		X			
Humidity	Dry	Moderate	Humid	3	
	X				

Subcontractors on Site:

Plains Environmental Services (PES) (Direct Push Subcontractor) - Jason Auernheimer

Equipment on Site:

One direct push rig (Geoprobe 6620DT), Screen point sampler (SP15), support trucks, hand-held GPS unit, performance monitoring (PM) temporary well materials (1"-OD PVC., 10' screens, filter pack sand, granular bentonite, coated chips, grout mix), peristaltic pump and tubing, laboratory provided sample containers, IDW buckets, decon supplies, AquaTroll 500, LaMotte turbidity meter, Hach Colormeter, water level meters, MiniRAE PID, level D PPE, first-aid/safety supplies, and field/safety paperwork.

Visitors on Site:

None.

AECOM/Brice Personnel on Site:

AECOM - Ryan Herold, Kameron Daehling, Bob Exceen, Brayton Novak

Field Work Performed (including sampling):

-Continued OU1 Rebound Study/performance monitoring Q#8 groundwater sampling event (DP screen point sampling, install/sample/abandon performance monitoring wells, and MW sampling).

Performance Monitoring Wells (temporary) installed			Performance Monitoring Wells sampled
EW7-PM21A	EW7-PM26A	EW7-PM29A	EW7-PM29B
EW7-PM24A	EW7-PM27B		
EW7-PM25A	EW7-PM28A		

-OU1 sample analysis will be completed in accordance with Addendum 2, and Addendum 3 UFP-QAPPs.
-Containerized IDW purge/decontamination water in a designated labeled 1000-gallon poly tank at GWTF.

Quality Control Activities (including field calibration):

-Completed staking of sample locations using hand-held GPS with predetermined coordinates. Utility locates and notifying property owners of field activities were completed week of 2/14/22 & 2/21/22
-Calibration check of PIDs (serial #'s 110-014926, 110-014888), water level indicators (#'s 1324-T, 1323-T) and Aqua Troll 500 (#'s 637589)

Health and Safety and Activities:

Had the daily H&S meeting with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, hazards with direct push rigs, pump and traffic safety, potential exposure to explosives contamination, fire hazards, cold stress, hearing protection, slip-trip-falls, COVID-19, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety. Utility locates were performed (Nebraska811) and utilities were marked.
-Completed Daily Tailgate Meeting Sheet
-Completed Daily Task Hazard Assessment Sheet

Observations/Problems Encountered/Corrective Action Taken:

None.

Office Work Performed:

-Organized paperwork and equipment, scanned SCFSs.
-Completed DQCR.

By Ryan Herold **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date **02/25/22**

Day	S	S	M	T	W	T	F
							X

On Site Hours	9
Travel Time	0.5
Office Time	0.5

COE Project Manager	Brian Fettin
Project	CHAAP OU1 Rebound Study/ PMs-Q#8
Project No.	60565355
Contract No.	W9128F-18-D-0020

Weather	Bright Sun X	Clear	Overcast	Rain	Snow
Temp	To 32 X	32-50	50-70	70-85	85 up
Wind	Still X	Moderate	High	**Report No.**	
Humidity	Dry X	Moderate	Humid	4	

Subcontractors on Site:

None.

Equipment on Site:

Support trucks, hand-held GPS unit, peristaltic pump and tubing, laboratory provided sample containers, IDW buckets, decon supplies, AquaTroll 500, LaMotte turbidity meter, Hach Colormeter, water level meters, MiniRAE PID, level D PPE, first-aid/safety supplies, and field/safety paperwork.

Visitors on Site:

None.

AECOM/Brice Personnel on Site:

AECOM - Ryan Herold, Kameron Daehling, Bob Exceen, Brayton Novak

Field Work Performed (including sampling):

-Began OU1 Rebound Study/performance monitoring Q#8 groundwater sampling event (DP screen point sampling, install/sample/abandon performance monitoring wells, and MW sampling).

Performance Monitoring Wells Sampled

EW7-PM25A
EW7-PM25B
EW7-PM26A
EW7-PM26B

-OU1 sample analysis will be completed in accordance with Addendum 2, and Addendum 3 UFP-QAPPs.
-Containerized IDW purge/decontamination water in a designated labeled 1000-gallon poly tank at GWTF.

Quality Control Activities (including field calibration):

-Completed staking of sample locations using hand-held GPS with predetermined coordinates. Utility locates and notifying property owners of field activities were completed week of 2/14/22 & 2/21/22

-Calibration check of PIDs (serial #'s 110-014926, 110-014888), water level indicators (#'s 1324-T, 1323-T) and Aqua Troll 500 (#'s 637589)

Health and Safety and Activities:

Had the daily H&S meeting with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, pump and traffic safety, potential exposure to explosives contamination, fire hazards, cold stress, hearing protection, slip-trip-falls, COVID-19, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety. Utility locates were performed (Nebraska811) and utilities were marked.

-Completed Daily Tailgate Meeting Sheet
-Completed Daily Task Hazard Assessment Sheet

Observations/Problems Encountered/Corrective Action Taken:

None.

Office Work Performed:

-Organized paperwork and equipment, scanned SCFSs.
-Completed DQCR.

By Ryan Herold **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date **02/26/22**

Day	S	S	M	T	W	T	F
	X						

On Site Hours	9.5
Travel Time	0.5
Office Time	0.5

COE Project Manager	Brian Fettin
Project	CHAAP OU1 Rebound Study/ PMs-Q#8
Project No.	60565355
Contract No.	W9128F-18-D-0020

Weather	Bright Sun X	Clear	Overcast	Rain	Snow
Temp	To 32	32-50 X	50-70	70-85	85 up
Wind	Still X	Moderate	High	**Report No.**	
Humidity	Dry X	Moderate	Humid	5	

Subcontractors on Site:

None.

Equipment on Site:

Support trucks, hand-held GPS unit, peristaltic pump and tubing, laboratory provided sample containers, IDW buckets, decon supplies, AquaTroll 500, LaMotte turbidity meter, Hach Colormeter, water level meters, MiniRAE PID, level D PPE, first-aid/safety supplies, and field/safety paperwork.

Visitors on Site:

None.

AECOM/Brice Personnel on Site:

AECOM - Ryan Herold, Kameron Daehling, Bob Exceen, Brayton Novak

Field Work Performed (including sampling):

-Began OU1 Rebound Study/performance monitoring Q#8 groundwater sampling event (DP screen point sampling, install/sample/abandon performance monitoring wells, and MW sampling).

Performance Monitoring Wells Sampled

EW7-PM21A
EW7-PM24A
EW7-PM27B
EW7-PM28A
EW7-PM29A

-OU1 sample analysis will be completed in accordance with Addendum 2, and Addendum 3 UFP-QAPPs.
-Containerized IDW purge/decontamination water in a designated labeled 1000-gallon poly tank at GWTF.

Quality Control Activities (including field calibration):

-Completed staking of sample locations using hand-held GPS with predetermined coordinates. Utility locates and notifying property owners of field activities were completed week of 2/14/22 & 2/21/22

-Calibration check of PIDs (serial #'s 110-014926, 110-014888), water level indicators (#'s 1324-T, 1323-T) and Aqua Troll 500 (#'s 637589)

Health and Safety and Activities:

Had the daily H&S meeting with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, pump and traffic safety, potential exposure to explosives contamination, fire hazards, cold stress, hearing protection, slip-trip-falls, COVID-19, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety. Utility locates were performed (Nebraska811) and utilities were marked.

-Completed Daily Tailgate Meeting Sheet
-Completed Daily Task Hazard Assessment Sheet

Observations/Problems Encountered/Corrective Action Taken:

None.

Office Work Performed:

-Organized paperwork and equipment, scanned SCFSs.
-Completed DQCR.

By Ryan Herold **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	**02/27/22**

Day	S	S	M	T	W	T	F
		X					

On Site Hours	10
Travel Time	0.5
Office Time	0.5

COE Project Manager	Brian Fettin
Project	CHAAP OU1 Rebound Study/ PMs-Q#8
Project No.	60565355
Contract No.	W9128F-18-D-0020

Weather	Bright Sun X		Clear	Overcast	Rain	Snow
Temp	To 32		32-50	50-70 X	70-85	85 up
Wind	Still X	Moderate		High	**Report No.**	
Humidity	Dry X	Moderate		Humid	6	

Subcontractors on Site:

None.

Equipment on Site:

Support trucks, hand-held GPS unit, submersible pump and tubing, laboratory provided sample containers, IDW buckets, decon supplies, AquaTroll 500, LaMotte turbidity meter, Hach Colormeter, water level meters, MiniRAE PID, level D PPE, first-aid/safety supplies, and field/safety paperwork.

Visitors on Site:

None.

AECOM/Brice Personnel on Site:

AECOM - Ryan Herold, Kameron Daehling, Bob Exceen,

Field Work Performed (including sampling):

-Began OU1 Rebound Study/performance monitoring Q#8 groundwater sampling event (DP screen point sampling, install/sample/abandon performance monitoring wells, and MW sampling).

Monitoring Wells sampled

NW070-8	NW061-8	G0092-8
NW071-8	NW062-8	
NW060-8	G0091-8	

-OU1 sample analysis will be completed in accordance with Addendum 2, and Addendum 3 UFP-QAPPs.
-Containerized IDW purge/decontamination water in a designated labeled 1000-gallon poly tank at GWTF.

Quality Control Activities (including field calibration):

-Completed staking of sample locations using hand-held GPS with predetermined coordinates. Utility locates and notifying property owners of field activities were completed week of 2/14/22 & 2/21/22
-Calibration check of PIDs (serial #'s 110-014926, 110-014888), water level indicators (#'s 1324-T, 1323-T) and Aqua Troll 500 (#'s 821290)
-NW062-8 (MS/MSD)

Health and Safety and Activities:

Had the daily H&S meeting with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, pump and traffic safety, potential exposure to explosives contamination, fire hazards, cold stress, hearing protection, slip-trip-falls, COVID-19, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety. Utility locates were performed (Nebraska811) and utilities were marked.
-Completed Daily Tailgate Meeting Sheet
-Completed Daily Task Hazard Assessment Sheet

Observations/Problems Encountered/Corrective Action Taken:

None.

Office Work Performed:

-Organized paperwork and equipment, scanned SCFSs.
-Completed DQCR.

By Ryan Herold **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date **02/28/22**

Day	S	S	M	T	W	T	F
			X				

On Site Hours	9.5
Travel Time	0.5
Office Time	0.5

COE Project Manager	Brian Fettin
Project	CHAAP OU1 Rebound Study/ PMs-Q#8
Project No.	60565355
Contract No.	W9128F-18-D-0020

Weather	Bright Sun X	Clear	Overcast	Rain	Snow
Temp	To 32	32-50	50-70 X	70-85	85 up
Wind	Still X	Moderate	High	**Report No.**	
Humidity	Dry X	Moderate	Humid	7	

Subcontractors on Site:

None.

Equipment on Site:

Support trucks, hand-held GPS unit, submersible pump and tubing, laboratory provided sample containers, IDW buckets, decon supplies, AquaTroll 500, LaMotte turbidity meter, Hach Colormeter, water level meters, MiniRAE PID, level D PPE, first-aid/safety supplies, and field/safety paperwork.

Visitors on Site:

None.

AECOM/Brice Personnel on Site:

AECOM - Ryan Herold, Kameron Daehling, Bob Exceen,

Field Work Performed (including sampling):

-Began OU1 Rebound Study/performance monitoring Q#8 groundwater sampling event (DP screen point sampling, install/sample/abandon performance monitoring wells, and MW sampling).

Monitoring Wells sampled

CA210-8	CA213-8	NW022-8
CA211-8	NW020-8	
CA212-8	NW021-8	

-OU1 sample analysis will be completed in accordance with Addendum 2, and Addendum 3 UFP-QAPPs.
-Containerized IDW purge/decontamination water in a designated labeled 1000-gallon poly tank at GWTF.

Quality Control Activities (including field calibration):

-Completed staking of sample locations using hand-held GPS with predetermined coordinates. Utility locates and notifying property owners of field activities were completed week of 2/14/22 & 2/21/22

-Calibration check of PIDs (serial #'s 110-014926, 110-014888), water level indicators (#'s 1324-T, 1323-T) and Aqua Troll 500 (#'s 821290)

Health and Safety and Activities:

Had the daily H&S meeting with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, pump and traffic safety, potential exposure to explosives contamination, fire hazards, cold stress, hearing protection, slip-trip-falls, COVID-19, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety. Utility locates were performed (Nebraska811) and utilities were marked.

-Completed Daily Tailgate Meeting Sheet
-Completed Daily Task Hazard Assessment Sheet

Observations/Problems Encountered/Corrective Action Taken:

Tree roots were encountered at ~ 12 BTOC at CA210. 2 new sections of 1" PVC pipe were used to clear the roots to allow access to the screened interval. A peristaltic pump was then used for purging and sample collection.

Office Work Performed:

-Organized paperwork and equipment, scanned SCFSs.

-Completed DQCR.

By Ryan Herold **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	**03/01/22**

Day	S	S	M	T	W	T	F
				X			

On Site Hours	10.5
Travel Time	0.5
Office Time	0.5

COE Project Manager	Brian Fettin
Project	CHAAP OU1 Rebound Study/ PMs-Q#8
Project No.	60565355
Contract No.	W9128F-18-D-0020

Weather	Bright Sun X	Clear	Overcast	Rain	Snow
Temp	To 32	32-50	50-70 X	70-85	85 up
Wind	Still X	Moderate	High	**Report No.**	
Humidity	Dry X	Moderate	Humid	8	

Subcontractors on Site:

None.

Equipment on Site:

Support trucks, hand-held GPS unit, submersible pump and tubing, laboratory provided sample containers, IDW buckets, decon supplies, AquaTroll 500, LaMotte turbidity meter, Hach Colormeter, water level meters, MiniRAE PID, level D PPE, first-aid/safety supplies, and field/safety paperwork.

Visitors on Site:

None.

AECOM/Brice Personnel on Site:

AECOM - Ryan Herold, Kameron Daehling, Bob Exceen,
Brice - Gary Carson, Anna Paulding

Field Work Performed (including sampling):

-Began OU1 Rebound Study/performance monitoring Q#8 groundwater sampling event (DP screen point sampling, install/sample/abandon performance monitoring wells, and MW sampling).

Monitoring Wells sampled

G0070-8	G0079-8	G0080-8	G0024-8	PZ020-8
G0075-8	G0081-8	G0086-8	G0077-8	
G0076-8	G0082-8	G0087-8	G0078-8	

-OU1 sample analysis will be completed in accordance with Addendum 2, and Addendum 3 UFP-QAPPs.
-Containerized IDW purge/decontamination water in a designated labeled 1000-gallon poly tank at GWTF.

Quality Control Activities (including field calibration):

-Completed staking of sample locations using hand-held GPS with predetermined coordinates. Utility locates and notifying property owners of field activities were completed week of 2/14/22 & 2/21/22
-Calibration check of PIDs (serial #'s 110-014926, 110-014888), water level indicators (#'s 1324-T, 1323-T) and Aqua Troll 500 (#'s 821290, 637718)
-G0070-8 MS/MSD

Health and Safety and Activities:

Had the daily and initial H&S meeting with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, pump and traffic safety, potential exposure to explosives contamination, fire hazards, cold stress, hearing protection, slip-trip-falls, COVID-19, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety. Utility locates were performed (Nebraska811) and utilities were marked.
-Completed Daily Tailgate Meeting Sheet
-Completed Daily Task Hazard Assessment Sheet

Observations/Problems Encountered/Corrective Action Taken:

None.

Office Work Performed:

-Organized paperwork and equipment, scanned SCFSs.

-Completed DQCR.

By Ryan Herold **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	**03/02/22**

Day	S	S	M	T	W	T	F
					X		

On Site Hours	10
Travel Time	0.5
Office Time	0.5

COE Project Manager	Brian Fettin
Project	CHAAP OU1 Rebound Study/ PMs-Q#8
Project No.	60565355
Contract No.	W9128F-18-D-0020

Weather	Bright Sun X	Clear	Overcast	Rain	Snow
Temp	To 32	32-50	50-70	70-85 X	85 up
Wind	Still	Moderate X	High	**Report No.**	
Humidity	Dry X	Moderate	Humid	9	

Subcontractors on Site:

None.

Equipment on Site:

Support trucks, hand-held GPS unit, submersible pump and tubing, laboratory provided sample containers, IDW buckets, decon supplies, AquaTroll 500, LaMotte turbidity meter, Hach Colormeter, water level meters, MiniRAE PID, level D PPE, first-aid/safety supplies, and field/safety paperwork.

Visitors on Site:

None.

AECOM/Brice Personnel on Site:

AECOM - Ryan Herold, Kameron Daehling, Bob Exceen,
Brice - Gary Carson, Anna Paulding

Field Work Performed (including sampling):

-Began OU1 Rebound Study/performance monitoring Q#8 groundwater sampling event (DP screen point sampling, install/sample/abandon performance monitoring wells, and MW sampling).
-Temporary well abandonment

Monitoring Wells sampled	PM Wells sampled		
PZ019-8	G0022-8	G0096-8	G0122-8
PZ018-8	G0102-8	G0111-8	G0123-8
PZ017R-8	G0094-8	G0121-8	

-IDW sampled. ID: Water-WC-Q8-MAR22
-OU1 sample analysis will be completed in accordance with Addendum 2, and Addendum 3 UFP-QAPPs.
-Containerized IDW purge/decontamination water in a designated labeled 1000-gallon poly tank at GWTF.

Quality Control Activities (including field calibration):

-Completed staking of sample locations using hand-held GPS with predetermined coordinates. Utility locates and notifying property owners of field activities were completed week of 2/14/22 & 2/21/22
-Calibration check of PIDs (serial #'s 110-014926, 110-014888), water level indicators (#'s 1324-T, 1323-T) and Aqua Troll 500 (#'s 821290, 637718)
-Duplicate PZ021-8 (parent PZ017R-8), PZ019 MS/MSD, duplicate G0296-8 (parent G0096-8), duplicate G0311-8 (parent G0111-8)

Health and Safety and Activities:

Had the daily H&S meeting with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, pump and traffic safety, potential exposure to explosives contamination, fire hazards, cold stress, hearing protection, slip-trip-falls, COVID-19, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety. Utility locates were performed (Nebraska811) and utilities were marked.
-Completed Daily Tailgate Meeting Sheet
-Completed Daily Task Hazard Assessment Sheet

Observations/Problems Encountered/Corrective Action Taken:

None.

Office Work Performed:

-Organized paperwork and equipment, scanned SCFSs.

-Completed DQCR.

By Ryan Herold **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date **03/03/22**

Day	S	S	M	T	W	T	F
						X	

On Site Hours	2
Travel Time	2.5
Office Time	0.5

COE Project Manager	Brian Fettin
Project	CHAAP OU1 Rebound Study/ PMs-Q#8
Project No.	60565355
Contract No.	W9128F-18-D-0020

Weather	Bright Sun X	Clear	Overcast	Rain	Snow
Temp	To 32	32-50	50-70 X	70-85	85 up
Wind	Still	Moderate X	High	**Report No.**	
Humidity	Dry X	Moderate	Humid	10	

Subcontractors on Site:

None.

Equipment on Site:

Support trucks, hand-held GPS unit, submersible pump and tubing, laboratory provided sample containers, IDW buckets, decon supplies, AquaTroll 500, LaMotte turbidity meter, Hach Colormeter, water level meters, MiniRAE PID, level D PPE, first-aid/safety supplies, and field/safety paperwork.

Visitors on Site:

None.

AECOM/Brice Personnel on Site:

AECOM - Ryan Herold, Kameron Daehling

Field Work Performed (including sampling):

- Packed coolers for sample shipment
- Returned rental equipment
- Cleaned office
- Inventoried supplies for the next event
- Mobilized back to Omaha

-OU1 sample analysis will be completed in accordance with Addendum 2, and Addendum 3 UFP-QAPPs.
-Containerized IDW purge/decontamination water in a designated labeled 1000-gallon poly tank at GWTF.

Quality Control Activities (including field calibration):

-Completed staking of sample locations using hand-held GPS with predetermined coordinates. Utility locates and notifying property owners of field activities were completed week of 2/14/22 & 2/21/22
-Calibration check of PIDs (serial #'s 110-014926, 110-014888), water level indicators (#'s 1324-T, 1323-T) and Aqua Troll 500 (#'s 821290, 637718)

Health and Safety and Activities:

Had the daily H&S meeting with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, pump and traffic safety, potential exposure to explosives contamination, fire hazards, cold stress, hearing protection, slip-trip-falls, COVID-19, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety. Utility locates were performed (Nebraska811) and utilities were marked.
-Completed Daily Tailgate Meeting Sheet
-Completed Daily Task Hazard Assessment Sheet

Observations/Problems Encountered/Corrective Action Taken:

None.

Office Work Performed:

-Organized paperwork and equipment, scanned SCFSs.
-Completed DQCR.

By Ryan Herold **Title** Field Manager

WEEKLY REPORT

COE Project Manager	Brian Fettin	**Report No.**	1
Project	CHAAP - OU1 Rebound Study /	**Date**	2/22/22 to 2/25/22
	Performance Monitoring Quarter #8	**Brice/AECOM On-site Hours**	152
Project No.	60565355	**Subcontractor Hours**	25
Contract No.	Brice W9128F-18-D-0020		
Delivery Order No.	F0041		

AECOM/Brice Personnel on Site:

Ryan Herold, Bob Exceen, Kameron Daehling, Brayton Novak (AECOM)

Subcontractors on Site:

Plains Environmental Services (PES) (Direct Push Subcontractor) - Jason Auernheimer

Visitors on Site:

None.

Summary of Work Performed:

-Contacted private land owners and informed them of the upcoming OU1 Rebound Study/performance monitoring (PM) field activities. Completed utility locates prior to subsurface activities (week of 2/13/22).

-Mobilized to site, conducted initial health and safety meeting, prepped field equipment, and staked all direct push (DP) locations using hand-held GPS including: 3 off-site (screen point) locations - OS001, OS003, and NW050R (adjacent to MW cluster NW050); and 10 temporary PM wells for 2020 subsurface injections.

-Calibration (weekly) and calibration checks (daily) of field PIDs, water level indicators, and Aqua TROLL 500s.

BEGAN QUARTER #8 (Q8) OU1 REBOUND STUDY AND INJECTION PM SAMPLING ACTIVITIES:

-Collected 9 DP groundwater samples (screen point) at depths 25 feet, 35 feet, and 45 feet bgs (at locations OS001, OS003) and 20 feet, 35 feet, and 60 feet bgs (at location NW050R) for explosives+MNX (Method 8330A) analysis only (**OS001-DP08-25, OS001-DP08-35, OS001-DP08-45, OS003-DP08-25, OS003-DP08-35, OS003-DP08-45, NW050R-DP08-20, NW050R-DP08-35, NW050R-DP08-60**).

-Onsite, installed 10 temporary PM wells (1" PVC via DP technology) at 7 locations for 2020 subsurface injection PM. Each location included either a shallow well (A) (10-foot screen, 20 to 30 feet bgs) or a shallow intermediate well (B) (10-foot screen, 30-40 feet bgs), or both dependent upon location accordingly: EW7-PM21A, EW7-PM24A, EW7-PM25A/B, EW7-PM26A/B, EW7-PM27B, EW7-PM28A, and EW7-PM29A/B.

-Collected 5 of the 10 groundwater samples at temporary PM wells (**EW7-PM25A-8-25, EW7-PM25B-8-35, EW7-PM26A-8-25, EW7-PM26B-8-35, EW7-PM29B-8-35**). Each PM temp well was developed prior to sample collection and sampled using low-flow groundwater sampling techniques with collection of field water quality parameters, and will be analyzed for explosives+MNX (Method 8330A) and water quality parameters including: TKN (351.2), NH3 (350.1), NO2/NO3 (353.2), SO4 (9056A), Alkalinity (2320B), Sulfide (9034), DOC (9060A), and Methane (RSK 175). CO2 will be back calculated from 2320B.

-IDW water (purge, develop., and decon.) from all sample locations were containerized in an IDW-labeled poly tank located at GWTF. At the completion of Q8 field activities, the IDW water will be sampled for site waste characterization analysis (Explosives+MNX) prior to disposal or discharge to ground surface.

-All field and sampling activities were completed in accordance with the 2019 Final Addendum 3 UFP-QAPP, the 2018 Final Addendum 2 UFP-QAPP, and recommendations provided in the 2020 Annual Groundwater Monitoring Report and Draft OU1 Rebound Study Letter Report - Quarter 7 Event.

Percentage of Work Completed:

Mobilization, 9 of 9 planned off-site DP (screen point) groundwater samples were collected, 10 of 10 temporary PM wells were installed, 5 of 10 temporary PM wells were developed and sampled, 0 of 10 PM wells (permanent) were sampled, and 0 of 30 OU1 Rebound Study wells were sampled. Approximately 31% of the Q8 OU1 Rebound Study/injection PM sampling field work is now complete.

WEEKLY REPORT

COE Project Manager	Brian Fettin	**Report No.**	1
Project	CHAAP - OU1 Rebound Study / Performance Monitoring Quarter #8	**Date**	2/22/22 to 2/25/22
		Brice/AECOM On-site Hours	152
Project No.	60565355	**Subcontractor Hours**	25
Contract No.	Brice W9128F-18-D-0020		
Delivery Order No.	F0041		

Schedule for Next Week:

Calibration of water quality equipment, complete Q8 PM well sampling (5 temp. wells and 10 permanent wells remain), abandon all temporary PM wells, complete Q8 OU1 Rebound Study groundwater purge and sample collection activities at 30 monitoring wells, and collect IDW water sample.

Health and Safety and Activities:

-Had the initial and daily H&S meetings with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, potential exposure to explosives contamination, weather safety, direct push equipment hazards and safety, slip-trip-falls, traffic hazards, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety.

-Completed equipment and vehicle safety checks.

-Completed Daily Tailgate Meeting Sheets and Daily Task Hazard Assessment Sheets.

Deviations from SOW and/or WP:

None.

Problems Encountered/Corrective Action Taken:

None.

Recommendations:

None.

Communication Notice This Week:

None.

Key Personnel Changes:

Jason Auernheimer (PES) off site 2/24/22.

Direct push off-site DP location OS003 (facing southwest).

Installation of temporary PM well EW7-PM24A (shallow)

By: Ryan Herold **Title: Field Manager**

WEEKLY REPORT

COE Project Manager	Brian Fettin	**Report No.**	2
Project	CHAAP - OU1 Rebound Study /	**Date**	2/26/22 to 3/3/22
	Performance Monitoring Quarter #8	**Brice/AECOM On-site Hours**	263
Project No.	60565355	**Subcontractor Hours**	0
Contract No.	Brice W9128F-18-D-0020		
Delivery Order No.	F0041		

AECOM/Brice Personnel on Site:
Ryan Herold, Bob Exceen, Kameron Daehling, Brayton Novak (AECOM), Gary Carson, Anna Paulding (Brice)

Subcontractors on Site:
None.

Visitors on Site:
None.

Summary of Work Performed:
CONTINUED QUARTER #8 (Q8) OU1 REBOUND STUDY AND INJECTION PM SAMPLING ACTIVITIES:

-Collected 5 of the 10 groundwater samples at temporary PM wells (**EW7-PM21A-8-25, PM24A-8-25, PM27B-8-35, PM28A-8-25, PM29A-8-25**). Each PM temp well was developed prior to sample collection and sampled using low-flow groundwater sampling techniques with collection of field water quality parameters, and will be analyzed for explosives+MNX (Method 8330A) and water quality parameters including: TKN (351.2), NH3 (350.1), NO2/NO3 (353.2), SO4 (9056A), Alkalinity (2320B), Sulfide (9034), DOC (9060A), and Methane (RSK 175). CO2 will be back calculated from 2320B.

-Abandoned all 10 temp. PM wells.

-Collected 10 of the 10 groundwater samples at permanent PM wells (**G0022-8, PZ017R-8, PZ018-8, G0094-8, G0096-8, G0102-8, G0111-8, G0121-8, G0122-8, G0123-8)**. Each PM monitoring well was purged and sampled using low-flow groundwater sampling techniques and will be analyzed for explosives+MNX and water quality parameters (above).

-Collected groundwater samples from 30 out of the 30 OU1 Rebound Study off-post and on-post wells/piezometers (**CA210-8, CA211-8, CA212-8, CA213-8, NW020-8, NW021-8, NW022-8, NW060-8, NW061-8, NW062-8, NW070-8, NW071-8, G0024-8, G0070-8, G0075-8, G0076-8, G0077-8, G0078-8, G0079-8, G0080-8, G0081-8, G0082-8, G0086-8, G0087-8, G0091-8, G0092-8, PZ017R-8, PZ018-8, PZ019-8, PZ020-8**). Each well was purged and sampled using low-flow groundwater sampling techniques and will be analyzed from explosives+MNX and water quality parameters (above).

-IDW water (purge, develop., and decon.) from all sample locations were containerized in an IDW-labeled poly tank located at GWTF. At the completion of Q7 field activities, the IDW water was sampled (**WATER-WC-Q8-MAR22**) for site waste characterization analysis (Explosives+MNX) prior to disposal or discharge to ground surface.

-All field and sampling activities were completed in accordance with the 2019 Final Addendum 3 UFP-QAPP, the 2018 Final Addendum 2 UFP-QAPP, and recommendations provided in the 2020 Annual Groundwater Monitoring Report and Draft OU1 Rebound Study Letter Report - Quarter 7 Event.

Percentage of Work Completed:
Mobilization, 9 of 9 planned off-site DP (screen point) groundwater samples were collected, 10 of 10 temporary PM wells were installed, developed, sampled, and abandoned; 10 of 10 PM wells (permanent) were sampled, 30 of 30 OU1 Rebound Study wells were sampled, collected IDW water waste characterization sample, completed site restoration activities, and demobilized from site. 100% of the Q8 OU1 Rebound Study/injection PM sampling field work is now complete.

Schedule for Next Week:
None.

WEEKLY REPORT

COE Project Manager	Brian Fettin	**Report No.**	2
Project	CHAAP - OU1 Rebound Study / Performance Monitoring Quarter #8	**Date**	2/26/22 to 3/3/22
		Brice/AECOM On-site Hours	263
Project No.	60565355	**Subcontractor Hours**	0
Contract No.	Brice W9128F-18-D-0020		
Delivery Order No.	F0041		

Health and Safety and Activities:

-Had the initial (Brice personnel) and daily H&S meetings with all personnel on site. All persons on site completed required paperwork/checklists and discussed sections of QAPP-APP/SSHP and H&S procedures including: PPE, potential exposure to explosives contamination, weather safety, slip-trip-falls, traffic hazards, and lifting hazards. Discussed route to hospital, severe weather procedures, farming activities, and trains and railroad track safety.

-Completed equipment and vehicle safety checks.

-Completed Daily Tailgate Meeting Sheets and Daily Task Hazard Assessment Sheets.

Deviations from SOW and/or WP:

None.

Problems Encountered/Corrective Action Taken:

Obstruction was identified at off-post monitoring well CA210 (tree roots) and submersible monsoon pump placement couldn't be completed. As alternative, a peristaltic pump was successfully used to purge and low-flow sample.

Recommendations:

None.

Communication Notice This Week:

None.

Key Personnel Changes:

Brayton Novak (AECOM) off site 2/26/22. All AECOM and Brice personnel demobilized from site on 3/3/22.

Development set-up at PM temp. well EW7-PM29A.

Purge and sample collection at on-post piezometer PZ019.

By: Ryan Herold **Title: Field Manager**

Appendix C
Photographic Log

SITE ACTIVITIES PHOTOGRAPHIC LOG

Field Activities: OU1 Rebound Study and Performance Monitoring – Quarter 8 Event Cornhusker Army Ammunition Plant, Nebraska	**USACE – Omaha District**	**Contract No. W9128F-18-D-0020 Delivery Order No. F0041**

Photograph No. 1

Description:

OU1 Rebound Study Q8 Sampling

To establish off-post extent of explosives greater than HALs in groundwater, direct push locations were collected at off-site locations OS001 and OS003 (1000 feet further east). Groundwater samples were collected (via Direct Push technology) at screen point depths 25 feet, 35 feet, and 45 feet bgs and analyzed for explosives + MNX only.

Date: 2/23/2022
Direction: east
Photographer: RH
Location: OS001

Photograph No. 2

Description:

OU1 Rebound Study Q8 Sampling

To supplement for six OU1 Rebound Study wells no longer being accessible (clusters NW050 and NW080), an additional direct push location (NW050R) was collected in ditch adjacent to NW050 well cluster and sampled at equivalent depths. Location NW050R was sampled at depths 20 feet, 35 feet, and 60 feet bgs and analyzed for explosives + MNX only.

Date: 2/22/2022
Direction: northeast
Photographer: RH
Location: NW050R

SITE ACTIVITIES PHOTOGRAPHIC LOG

Field Activities: OU1 Rebound Study and Performance Monitoring – Quarter 8 Event Cornhusker Army Ammunition Plant, Nebraska	**USACE – Omaha District**	**Contract No. W9128F-18-D-0020 Delivery Order No. F0041**

Photograph No. 3

Description:

OU1 Rebound Study Q8 Sampling

Monitoring wells were purged, and groundwater samples were collected using low-flow techniques with submersible pumps. All purging and sample collection were completed in accordance with UFP-QAPP.

Date: 2/27/2022
Direction: west
Photographer: KD
Location: NW060

Photograph No. 4

Description:

OU1 Rebound Study Q8 Sampling

Groundwater samples were collected in laboratory-provided containers and analyzed for explosives + MNX and laboratory MNA parameters by Eurofins - TestAmerica laboratory.

Date: 3/1/2022
Direction: south
Photographer: RE
Location: G0086

SITE ACTIVITIES PHOTOGRAPHIC LOG

Field Activities: OU1 Rebound Study and Performance Monitoring – Quarter 8 Event Cornhusker Army Ammunition Plant, Nebraska	**USACE – Omaha District**	**Contract No. W9128F-18-D-0020 Delivery Order No. F0041**

Photograph No. 5

Description:

OU1 Rebound Study Q8 Sampling

The pump and water level meter were decontaminated after every well.

Date: 3/2/2022
Direction: east
Photographer: KD
Location: G0111

Photograph No. 6

Description:

OU1 Q8 Performance Monitoring

For Q8 subsurface injection performance monitoring (4th event following the 2020 injection event), ten 1" PVC temporary wells were installed (via Direct Push technology). at seven locations between EW6 and EW7. The seven locations included wells either shallow (30-foot deep) wells, shallow-intermediate (40-foot deep) wells, or both.

Date: 2/24/2022
Direction: east
Photographer: RH
Location: EW7-PM24

SITE ACTIVITIES PHOTOGRAPHIC LOG

Field Activities: OU1 Rebound Study and Performance Monitoring – Quarter 8 Event Cornhusker Army Ammunition Plant, Nebraska	**USACE – Omaha District**	**Contract No. W9128F-18-D-0020 Delivery Order No. F0041**

Photograph No. 7

Description:

OU1 Q8 Performance Monitoring

All temporary performance monitoring wells were developed, purged, and sampled for explosives + MNX and laboratory water quality parameters analysis.

Date: 2/26/2022
Direction: west
Photographer: RE
Location: EW7-PM29A

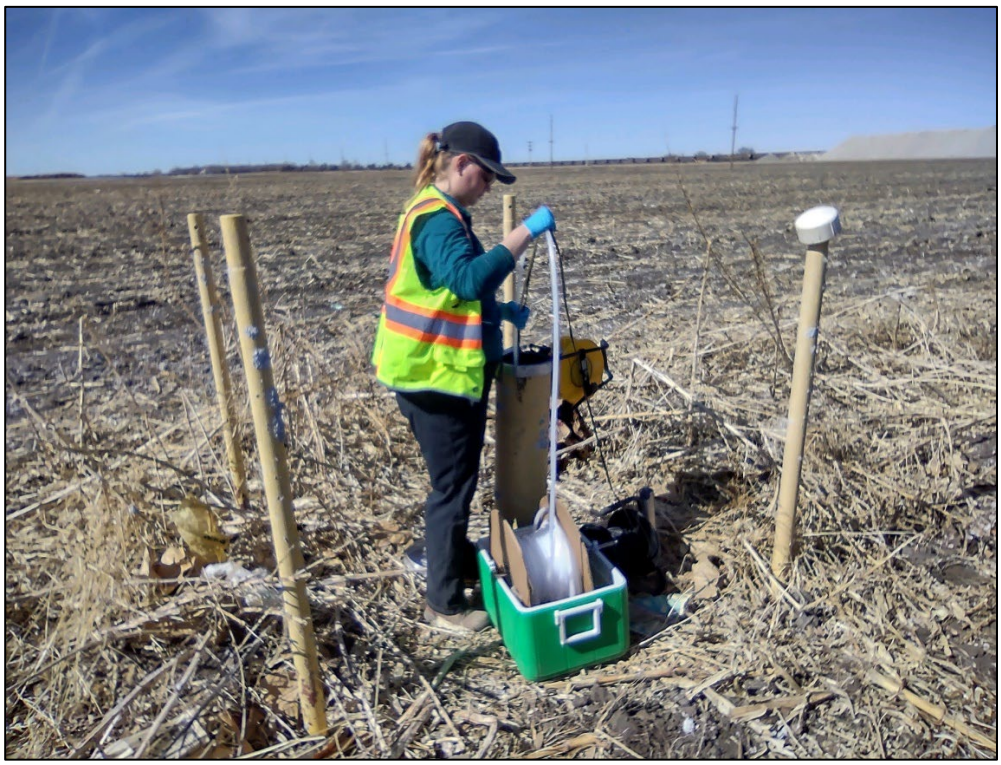
Photograph No. 8

Description:

OU1 Q8 Performance Monitoring

Additionally, for Q8 subsurface injection performance, ten permanent monitoring wells were used at LL1, LL2, the Decant Station, and between EW6 and EW7. Purging and sample collection for explosives + MNX and laboratory water quality parameters analysis were completed in accordance with UFP-QAPP.

Date: 3/2/2022
Direction: northwest
Photographer: RE
Location: PZ017R



SITE ACTIVITIES PHOTOGRAPHIC LOG

Field Activities: OU1 Rebound Study and Performance Monitoring – Quarter 8 Event Cornhusker Army Ammunition Plant, Nebraska	**USACE – Omaha District**	**Contract No. W9128F-18-D-0020 Delivery Order No. F0041**

Photograph No. 9

Description:

OU1 Q8 Rebound Study and Performance Monitoring

All decontamination, development, and purge IDW water from sampling activities were collected in field poly tanks, transferred to an IDW tank at GWTF, and sampled at conclusion of event for explosives + MNX only analysis.

Date: 3/1/2022
Direction: east
Photographer: KD
Location: GWTF

Photograph No. 10

Description:

OU1 Q8 Performance Monitoring

Each temporary well PVC stickup was retracted, and the well was abandoned within 10 days of installation using time-release bentonite pellets and hydrated granular bentonite.

Date: 3/2/2022
Direction: north
Photographer: RH
Location: EW7-PM26

Appendix D
Analytical Data and Validation

Appendix E
OU1 Statistical Trend Data Sheets

MAROS Mann-Kendall Statistics Summary

Project: CHAAP OU1 Rebound Study - Q8 User Name: Dean Converse

Location: Grand Island State: Nebraska

Time Period: 10/22/2019 to 3/2/2022
Consolidation Period: No Time Consolidation
Consolidation Type: Median
Duplicate Consolidation: Average
ND Values: 1/2 Detection Limit
J Flag Values : Actual Value

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
2,4,6-TRINITROTOLUENE								
G0024	T	8	6	0.61	15	95.8%	No	I
G0077	T	8	8	0.17	22	99.8%	No	I
G0078	T	8	0	0.69	-7	76.4%	Yes	ND
G0091	T	8	0	0.70	-12	91.1%	Yes	ND
G0092	T	8	0	0.66	-9	83.2%	Yes	ND
NW020	T	8	7	0.48	24	99.9%	No	I
NW021	T	8	0	0.66	-10	86.2%	Yes	ND
NW022	T	8	0	0.70	-15	95.8%	Yes	ND
PZ017R	S	8	8	0.53	-20	99.3%	No	D
PZ018	T	8	6	0.97	-15	95.8%	No	D
PZ019	T	8	0	0.72	-17	97.7%	Yes	ND
PZ020	T	8	8	0.24	16	96.9%	No	I
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZIN								
G0024	T	8	1	1.80	-12	91.1%	No	PD
G0077	T	8	8	0.66	10	86.2%	No	NT
G0078	T	8	0	0.59	-8	80.1%	Yes	ND
G0091	T	8	8	0.51	-20	99.3%	No	D
G0092	T	8	0	0.69	-10	86.2%	Yes	ND
NW020	T	8	8	0.73	-4	64.0%	No	S
NW021	T	8	3	0.78	7	76.4%	No	NT
NW022	T	8	0	0.60	-14	94.6%	Yes	ND
PZ017R	S	8	7	0.51	3	59.4%	No	NT
PZ018	T	8	2	1.61	-9	83.2%	No	NT
PZ019	T	8	0	0.63	-17	97.7%	Yes	ND
PZ020	T	8	7	0.41	1	50.0%	No	NT

MAROS Mann-Kendall Statistics Summary

Project: CHAAP OU1 Rebound Study - Q8 User Name: Dean Converse

Location: Grand Island State: Nebraska

HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZIN

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A)-Due to insufficient Data (< 4 sampling events); Source/Tail (S/T)

The Number of Samples and Number of Detects shown above are post-consolidation values.

MAROS Mann-Kendall Statistics Summary

Project: OU1 Rebound Study - Q8 User Name: Dean Converse

Location: Grand Island State: Nebraska

Time Period: 10/21/2019 to 3/1/2022
Consolidation Period: No Time Consolidation
Consolidation Type: Median
Duplicate Consolidation: Average
ND Values: 1/2 Detection Limit
J Flag Values : Actual Value

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
2,4,6-TRINITROTOLUENE								
G0070	T	8	0	0.69	-14	94.6%	Yes	ND
G0075	T	8	0	0.69	-13	92.9%	Yes	ND
G0076	T	8	0	0.70	-13	92.9%	Yes	ND
G0079	T	8	0	0.69	-10	86.2%	Yes	ND
G0080	T	8	0	0.69	-6	72.6%	Yes	ND
G0081	S	8	2	1.24	-10	86.2%	No	NT
G0082	T	8	1	1.96	-6	72.6%	No	NT
G0086	T	8	7	0.45	9	83.2%	No	NT
G0087	T	8	0	0.66	-10	86.2%	Yes	ND
HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZIN								
G0070	T	8	0	0.61	-14	94.6%	Yes	ND
G0075	T	8	1	0.97	-5	68.3%	No	S
G0076	T	8	1	1.01	-9	83.2%	No	NT
G0079	T	8	0	0.61	-10	86.2%	Yes	ND
G0080	T	8	0	0.61	-5	68.3%	Yes	ND
G0081	S	8	1	1.29	-5	68.3%	No	NT
G0082	T	8	7	0.39	2	54.8%	No	NT
G0086	T	8	6	0.88	24	99.9%	No	I
G0087	T	8	6	0.37	20	99.3%	No	I

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A)-Due to insufficient Data (< 4 sampling events); Source/Tail (S/T)

The Number of Samples and Number of Detects shown above are post-consolidation values.

TABLE E.1
FORMER FACILITY BOUNDARY WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
G0024	2,067,195	403,887	2,4,6-TRINITROTOLUENE	3/1/2022	0.66	ug/L	0.047	
G0024	2,067,195	403,887	2,4,6-TRINITROTOLUENE	11/4/2021	0.46	ug/L	0.046	
G0024	2,067,195	403,887	2,4,6-TRINITROTOLUENE	5/26/2021	0.44	ug/L	0.044	
G0024	2,067,195	403,887	2,4,6-TRINITROTOLUENE	3/3/2021	0.48	ug/L	0.042	
G0024	2,067,195	403,887	2,4,6-TRINITROTOLUENE	10/4/2020	0.2	ug/L	0.086	
G0024	2,067,195	403,887	2,4,6-TRINITROTOLUENE	6/15/2020	0.63	ug/L	0.048	TR
G0024	2,067,195	403,887	2,4,6-TRINITROTOLUENE	3/4/2020		ug/L	0.16	ND
G0024	2,067,195	403,887	2,4,6-TRINITROTOLUENE	10/23/2019		ug/L	0.16	ND
G0024	2,067,195	403,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022		ug/L	0.053	ND
G0024	2,067,195	403,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/4/2021		ug/L	0.053	ND
G0024	2,067,195	403,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/26/2021		ug/L	0.055	ND
G0024	2,067,195	403,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2021		ug/L	0.048	ND
G0024	2,067,195	403,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/4/2020		ug/L	0.053	ND
G0024	2,067,195	403,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/15/2020	0.59	ug/L	0.055	
G0024	2,067,195	403,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/4/2020		ug/L	0.15	ND
G0024	2,067,195	403,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/23/2019		ug/L	0.15	ND
G0077	2,067,218	403,894	2,4,6-TRINITROTOLUENE	3/1/2022	4.2	ug/L	0.046	
G0077	2,067,218	403,894	2,4,6-TRINITROTOLUENE	11/4/2021	4.5	ug/L	0.045	
G0077	2,067,218	403,894	2,4,6-TRINITROTOLUENE	5/26/2021	4.3	ug/L	0.046	
G0077	2,067,218	403,894	2,4,6-TRINITROTOLUENE	3/3/2021	3.6	ug/L	0.042	
G0077	2,067,218	403,894	2,4,6-TRINITROTOLUENE	10/4/2020	3.4	ug/L	0.046	
G0077	2,067,218	403,894	2,4,6-TRINITROTOLUENE	6/15/2020	3.3	ug/L	0.047	
G0077	2,067,218	403,894	2,4,6-TRINITROTOLUENE	3/4/2020	2.7	ug/L	0.16	
G0077	2,067,218	403,894	2,4,6-TRINITROTOLUENE	10/23/2019	3.2	ug/L	0.16	
G0077	2,067,218	403,894	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022	0.5	ug/L	0.051	TR
G0077	2,067,218	403,894	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/4/2021	1.7	ug/L	0.051	
G0077	2,067,218	403,894	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/26/2021	1.2	ug/L	0.053	TR
G0077	2,067,218	403,894	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2021	0.82	ug/L	0.048	
G0077	2,067,218	403,894	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/4/2020	0.34	ug/L	0.052	
G0077	2,067,218	403,894	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/15/2020	0.46	ug/L	0.054	
G0077	2,067,218	403,894	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/4/2020	0.19	ug/L	0.16	TR
G0077	2,067,218	403,894	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/23/2019	0.91	ug/L	0.15	

TABLE E.1
FORMER FACILITY BOUNDARY WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
G0078	2,067,199	403,930	2,4,6-TRINITROTOLUENE	3/1/2022		ug/L	0.048	ND
G0078	2,067,199	403,930	2,4,6-TRINITROTOLUENE	11/4/2021		ug/L	0.046	ND
G0078	2,067,199	403,930	2,4,6-TRINITROTOLUENE	5/26/2021		ug/L	0.048	ND
G0078	2,067,199	403,930	2,4,6-TRINITROTOLUENE	3/3/2021		ug/L	0.042	ND
G0078	2,067,199	403,930	2,4,6-TRINITROTOLUENE	10/4/2020		ug/L	0.044	ND
G0078	2,067,199	403,930	2,4,6-TRINITROTOLUENE	6/15/2020		ug/L	0.047	ND
G0078	2,067,199	403,930	2,4,6-TRINITROTOLUENE	3/4/2020		ug/L	0.16	ND
G0078	2,067,199	403,930	2,4,6-TRINITROTOLUENE	10/23/2019		ug/L	0.15	ND
G0078	2,067,199	403,930	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022		ug/L	0.055	ND
G0078	2,067,199	403,930	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/4/2021		ug/L	0.053	ND
G0078	2,067,199	403,930	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/26/2021		ug/L	0.055	ND
G0078	2,067,199	403,930	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2021		ug/L	0.048	ND
G0078	2,067,199	403,930	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/4/2020		ug/L	0.05	ND
G0078	2,067,199	403,930	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/15/2020		ug/L	0.054	ND
G0078	2,067,199	403,930	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/4/2020		ug/L	0.15	ND
G0078	2,067,199	403,930	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/23/2019		ug/L	0.15	ND
G0091	2,067,221	405,336	2,4,6-TRINITROTOLUENE	2/27/2022		ug/L	0.048	ND
G0091	2,067,221	405,336	2,4,6-TRINITROTOLUENE	11/3/2021		ug/L	0.044	ND
G0091	2,067,221	405,336	2,4,6-TRINITROTOLUENE	5/24/2021		ug/L	0.044	ND
G0091	2,067,221	405,336	2,4,6-TRINITROTOLUENE	3/2/2021		ug/L	0.043	ND
G0091	2,067,221	405,336	2,4,6-TRINITROTOLUENE	10/3/2020		ug/L	0.045	ND
G0091	2,067,221	405,336	2,4,6-TRINITROTOLUENE	6/16/2020		ug/L	0.048	ND
G0091	2,067,221	405,336	2,4,6-TRINITROTOLUENE	3/2/2020		ug/L	0.16	ND
G0091	2,067,221	405,336	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.15	ND
G0091	2,067,221	405,336	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/27/2022	0.21	ug/L	0.054	TR
G0091	2,067,221	405,336	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/3/2021	0.32	ug/L	0.051	
G0091	2,067,221	405,336	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/24/2021	0.31	ug/L	0.05	
G0091	2,067,221	405,336	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2021	0.27	ug/L	0.049	TR
G0091	2,067,221	405,336	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/3/2020	0.46	ug/L	0.052	
G0091	2,067,221	405,336	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/16/2020	0.59	ug/L	0.055	
G0091	2,067,221	405,336	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2020	0.83	ug/L	0.16	
G0091	2,067,221	405,336	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019	0.81	ug/L	0.15	

TABLE E.1
FORMER FACILITY BOUNDARY WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
G0092	2,067,222	405,350	2,4,6-TRINITROTOLUENE	2/27/2022		ug/L	0.048	ND
G0092	2,067,222	405,350	2,4,6-TRINITROTOLUENE	11/3/2021		ug/L	0.044	ND
G0092	2,067,222	405,350	2,4,6-TRINITROTOLUENE	5/24/2021		ug/L	0.059	ND
G0092	2,067,222	405,350	2,4,6-TRINITROTOLUENE	3/2/2021		ug/L	0.042	ND
G0092	2,067,222	405,350	2,4,6-TRINITROTOLUENE	10/3/2020		ug/L	0.043	ND
G0092	2,067,222	405,350	2,4,6-TRINITROTOLUENE	6/16/2020		ug/L	0.047	ND
G0092	2,067,222	405,350	2,4,6-TRINITROTOLUENE	3/2/2020		ug/L	0.15	ND
G0092	2,067,222	405,350	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.15	ND
G0092	2,067,222	405,350	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/27/2022		ug/L	0.055	ND
G0092	2,067,222	405,350	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/3/2021		ug/L	0.051	ND
G0092	2,067,222	405,350	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/24/2021		ug/L	0.068	ND
G0092	2,067,222	405,350	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2021		ug/L	0.048	ND
G0092	2,067,222	405,350	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/3/2020		ug/L	0.049	ND
G0092	2,067,222	405,350	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/16/2020		ug/L	0.054	ND
G0092	2,067,222	405,350	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2020		ug/L	0.15	ND
G0092	2,067,222	405,350	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.2	ND
NW020	2,067,328	404,441	2,4,6-TRINITROTOLUENE	2/28/2022	1.1	ug/L	0.048	
NW020	2,067,328	404,441	2,4,6-TRINITROTOLUENE	11/3/2021	1.2	ug/L	0.046	
NW020	2,067,328	404,441	2,4,6-TRINITROTOLUENE	5/25/2021	0.93	ug/L	0.046	TR
NW020	2,067,328	404,441	2,4,6-TRINITROTOLUENE	3/3/2021	0.8	ug/L	0.042	
NW020	2,067,328	404,441	2,4,6-TRINITROTOLUENE	10/3/2020	0.62	ug/L	0.045	TR
NW020	2,067,328	404,441	2,4,6-TRINITROTOLUENE	6/15/2020	0.59	ug/L	0.046	
NW020	2,067,328	404,441	2,4,6-TRINITROTOLUENE	3/4/2020	0.6	ug/L	0.16	
NW020	2,067,328	404,441	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.16	ND
NW020	2,067,328	404,441	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/28/2022	0.22	ug/L	0.055	
NW020	2,067,328	404,441	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/3/2021	0.44	ug/L	0.052	
NW020	2,067,328	404,441	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/25/2021	1	ug/L	0.053	
NW020	2,067,328	404,441	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2021	1.2	ug/L	0.048	
NW020	2,067,328	404,441	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/3/2020	2.3	ug/L	0.052	
NW020	2,067,328	404,441	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/15/2020	1.5	ug/L	0.053	
NW020	2,067,328	404,441	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/4/2020	0.94	ug/L	0.15	
NW020	2,067,328	404,441	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019	0.2	ug/L	0.15	TR

TABLE E.1
FORMER FACILITY BOUNDARY WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
NW021	2,067,301	404,393	2,4,6-TRINITROTOLUENE	2/28/2022		ug/L	0.048	ND
NW021	2,067,301	404,393	2,4,6-TRINITROTOLUENE	11/3/2021		ug/L	0.047	ND
NW021	2,067,301	404,393	2,4,6-TRINITROTOLUENE	5/25/2021		ug/L	0.047	ND
NW021	2,067,301	404,393	2,4,6-TRINITROTOLUENE	3/3/2021		ug/L	0.043	ND
NW021	2,067,301	404,393	2,4,6-TRINITROTOLUENE	10/3/2020		ug/L	0.044	ND
NW021	2,067,301	404,393	2,4,6-TRINITROTOLUENE	6/15/2020		ug/L	0.05	ND
NW021	2,067,301	404,393	2,4,6-TRINITROTOLUENE	3/4/2020		ug/L	0.15	ND
NW021	2,067,301	404,393	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.15	ND
NW021	2,067,301	404,393	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/28/2022	0.17	ug/L	0.055	
NW021	2,067,301	404,393	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/3/2021	0.22	ug/L	0.054	
NW021	2,067,301	404,393	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/25/2021	0.13	ug/L	0.053	TR
NW021	2,067,301	404,393	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2021		ug/L	0.049	ND
NW021	2,067,301	404,393	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/3/2020		ug/L	0.05	ND
NW021	2,067,301	404,393	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/15/2020		ug/L	0.058	ND
NW021	2,067,301	404,393	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/4/2020		ug/L	0.15	ND
NW021	2,067,301	404,393	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.15	ND
NW022	2,067,310	404,436	2,4,6-TRINITROTOLUENE	2/28/2022		ug/L	0.046	ND
NW022	2,067,310	404,436	2,4,6-TRINITROTOLUENE	11/3/2021		ug/L	0.045	ND
NW022	2,067,310	404,436	2,4,6-TRINITROTOLUENE	5/25/2021		ug/L	0.046	ND
NW022	2,067,310	404,436	2,4,6-TRINITROTOLUENE	3/3/2021		ug/L	0.042	ND
NW022	2,067,310	404,436	2,4,6-TRINITROTOLUENE	10/3/2020		ug/L	0.046	ND
NW022	2,067,310	404,436	2,4,6-TRINITROTOLUENE	6/15/2020		ug/L	0.047	ND
NW022	2,067,310	404,436	2,4,6-TRINITROTOLUENE	3/4/2020		ug/L	0.16	ND
NW022	2,067,310	404,436	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.15	ND
NW022	2,067,310	404,436	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/28/2022		ug/L	0.053	ND
NW022	2,067,310	404,436	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/3/2021		ug/L	0.051	ND
NW022	2,067,310	404,436	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/25/2021		ug/L	0.052	ND
NW022	2,067,310	404,436	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2021		ug/L	0.049	ND
NW022	2,067,310	404,436	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/3/2020		ug/L	0.052	ND
NW022	2,067,310	404,436	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/15/2020		ug/L	0.054	ND
NW022	2,067,310	404,436	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/4/2020		ug/L	0.15	ND
NW022	2,067,310	404,436	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.15	ND

TABLE E.1
FORMER FACILITY BOUNDARY WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
PZ017R	2,067,255	403,469	2,4,6-TRINITROTOLUENE	3/2/2022	5	ug/L	0.047	
PZ017R	2,067,255	403,469	2,4,6-TRINITROTOLUENE	11/4/2021	0.37	ug/L	0.044	TR
PZ017R	2,067,255	403,469	2,4,6-TRINITROTOLUENE	5/26/2021	10	ug/L	0.047	
PZ017R	2,067,255	403,469	2,4,6-TRINITROTOLUENE	3/3/2021	10	ug/L	0.048	
PZ017R	2,067,255	403,469	2,4,6-TRINITROTOLUENE	10/4/2020	15	ug/L	0.043	
PZ017R	2,067,255	403,469	2,4,6-TRINITROTOLUENE	6/16/2020	11	ug/L	0.048	
PZ017R	2,067,255	403,469	2,4,6-TRINITROTOLUENE	3/4/2020	17	ug/L	0.15	
PZ017R	2,067,255	403,469	2,4,6-TRINITROTOLUENE	10/23/2019	15	ug/L	0.16	
PZ017R	2,067,255	403,469	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2022	1.2	ug/L	0.054	
PZ017R	2,067,255	403,469	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/4/2021		ug/L	0.051	ND
PZ017R	2,067,255	403,469	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/26/2021	2.1	ug/L	0.054	
PZ017R	2,067,255	403,469	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2021	2.2	ug/L	0.055	
PZ017R	2,067,255	403,469	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/4/2020	1.8	ug/L	0.049	TR
PZ017R	2,067,255	403,469	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/16/2020	1.4	ug/L	0.055	
PZ017R	2,067,255	403,469	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/4/2020	1.4	ug/L	0.15	
PZ017R	2,067,255	403,469	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/23/2019	0.87	ug/L	0.16	
PZ018	2,067,257	403,293	2,4,6-TRINITROTOLUENE	3/2/2022		ug/L	0.049	ND
PZ018	2,067,257	403,293	2,4,6-TRINITROTOLUENE	11/4/2021	4	ug/L	0.045	
PZ018	2,067,257	403,293	2,4,6-TRINITROTOLUENE	5/25/2021	4.6	ug/L	0.049	
PZ018	2,067,257	403,293	2,4,6-TRINITROTOLUENE	3/3/2021	6	ug/L	0.047	
PZ018	2,067,257	403,293	2,4,6-TRINITROTOLUENE	10/3/2020	17	ug/L	0.043	
PZ018	2,067,257	403,293	2,4,6-TRINITROTOLUENE	6/16/2020		ug/L	0.049	ND
PZ018	2,067,257	403,293	2,4,6-TRINITROTOLUENE	3/4/2020	19	ug/L	0.16	
PZ018	2,067,257	403,293	2,4,6-TRINITROTOLUENE	10/23/2019	8	ug/L	0.16	TR
PZ018	2,067,257	403,293	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2022		ug/L	0.056	ND
PZ018	2,067,257	403,293	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/4/2021		ug/L	0.052	ND
PZ018	2,067,257	403,293	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/25/2021		ug/L	0.056	ND
PZ018	2,067,257	403,293	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2021		ug/L	0.053	ND
PZ018	2,067,257	403,293	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/3/2020		ug/L	0.049	ND
PZ018	2,067,257	403,293	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/16/2020	1	ug/L	0.056	
PZ018	2,067,257	403,293	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/4/2020		ug/L	0.16	ND
PZ018	2,067,257	403,293	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/23/2019	0.88	ug/L	0.16	TR

TABLE E.1
FORMER FACILITY BOUNDARY WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
PZ019	2,067,268	402,887	2,4,6-TRINITROTOLUENE	3/2/2022		ug/L	0.044	ND
PZ019	2,067,268	402,887	2,4,6-TRINITROTOLUENE	11/3/2021		ug/L	0.045	ND
PZ019	2,067,268	402,887	2,4,6-TRINITROTOLUENE	5/24/2021		ug/L	0.046	ND
PZ019	2,067,268	402,887	2,4,6-TRINITROTOLUENE	3/3/2021		ug/L	0.048	ND
PZ019	2,067,268	402,887	2,4,6-TRINITROTOLUENE	10/3/2020		ug/L	0.043	ND
PZ019	2,067,268	402,887	2,4,6-TRINITROTOLUENE	6/16/2020		ug/L	0.047	ND
PZ019	2,067,268	402,887	2,4,6-TRINITROTOLUENE	3/2/2020		ug/L	0.16	ND
PZ019	2,067,268	402,887	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.16	ND
PZ019	2,067,268	402,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2022		ug/L	0.05	ND
PZ019	2,067,268	402,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/3/2021		ug/L	0.052	ND
PZ019	2,067,268	402,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/24/2021		ug/L	0.053	ND
PZ019	2,067,268	402,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2021		ug/L	0.055	ND
PZ019	2,067,268	402,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/3/2020		ug/L	0.049	ND
PZ019	2,067,268	402,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/16/2020		ug/L	0.054	ND
PZ019	2,067,268	402,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2020		ug/L	0.16	ND
PZ019	2,067,268	402,887	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.16	ND
PZ020	2,067,224	404,088	2,4,6-TRINITROTOLUENE	3/1/2022	4.8	ug/L	0.047	
PZ020	2,067,224	404,088	2,4,6-TRINITROTOLUENE	11/4/2021	5.1	ug/L	0.046	
PZ020	2,067,224	404,088	2,4,6-TRINITROTOLUENE	5/26/2021	3.8	ug/L	0.047	
PZ020	2,067,224	404,088	2,4,6-TRINITROTOLUENE	3/3/2021	3.9	ug/L	0.048	
PZ020	2,067,224	404,088	2,4,6-TRINITROTOLUENE	10/4/2020	3.5	ug/L	0.045	
PZ020	2,067,224	404,088	2,4,6-TRINITROTOLUENE	6/15/2020	2.2	ug/L	0.047	
PZ020	2,067,224	404,088	2,4,6-TRINITROTOLUENE	3/4/2020	3.2	ug/L	0.15	
PZ020	2,067,224	404,088	2,4,6-TRINITROTOLUENE	10/23/2019	3.7	ug/L	0.15	
PZ020	2,067,224	404,088	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022		ug/L	0.054	ND
PZ020	2,067,224	404,088	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/4/2021	0.62	ug/L	0.052	TR
PZ020	2,067,224	404,088	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/26/2021	0.68	ug/L	0.053	TR
PZ020	2,067,224	404,088	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2021	0.57	ug/L	0.054	
PZ020	2,067,224	404,088	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/4/2020	0.67	ug/L	0.051	
PZ020	2,067,224	404,088	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/15/2020	0.58	ug/L	0.054	
PZ020	2,067,224	404,088	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/4/2020	0.62	ug/L	0.15	
PZ020	2,067,224	404,088	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/23/2019	0.42	ug/L	0.15	

TABLE E.2
UPGRADIENT WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
G0070	2,065,484	403,541	2,4,6-TRINITROTOLUENE	3/1/2022		ug/L	0.047	ND
G0070	2,065,484	403,541	2,4,6-TRINITROTOLUENE	11/1/2021		ug/L	0.045	ND
G0070	2,065,484	403,541	2,4,6-TRINITROTOLUENE	5/20/2021		ug/L	0.043	ND
G0070	2,065,484	403,541	2,4,6-TRINITROTOLUENE	3/1/2021		ug/L	0.046	ND
G0070	2,065,484	403,541	2,4,6-TRINITROTOLUENE	9/29/2020		ug/L	0.044	ND
G0070	2,065,484	403,541	2,4,6-TRINITROTOLUENE	6/2/2020		ug/L	0.05	ND
G0070	2,065,484	403,541	2,4,6-TRINITROTOLUENE	3/1/2020		ug/L	0.15	ND
G0070	2,065,484	403,541	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.16	ND
G0070	2,065,484	403,541	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022		ug/L	0.054	ND
G0070	2,065,484	403,541	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/1/2021		ug/L	0.052	ND
G0070	2,065,484	403,541	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/20/2021		ug/L	0.049	ND
G0070	2,065,484	403,541	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2021		ug/L	0.053	ND
G0070	2,065,484	403,541	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/29/2020		ug/L	0.05	ND
G0070	2,065,484	403,541	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/2/2020		ug/L	0.057	ND
G0070	2,065,484	403,541	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2020		ug/L	0.15	ND
G0070	2,065,484	403,541	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.16	ND
G0075	2,065,479	403,559	2,4,6-TRINITROTOLUENE	3/1/2022		ug/L	0.045	ND
G0075	2,065,479	403,559	2,4,6-TRINITROTOLUENE	11/1/2021		ug/L	0.045	ND
G0075	2,065,479	403,559	2,4,6-TRINITROTOLUENE	5/20/2021		ug/L	0.043	ND
G0075	2,065,479	403,559	2,4,6-TRINITROTOLUENE	3/1/2021		ug/L	0.049	ND
G0075	2,065,479	403,559	2,4,6-TRINITROTOLUENE	9/29/2020		ug/L	0.044	ND
G0075	2,065,479	403,559	2,4,6-TRINITROTOLUENE	6/1/2020		ug/L	0.048	ND
G0075	2,065,479	403,559	2,4,6-TRINITROTOLUENE	3/1/2020		ug/L	0.16	ND
G0075	2,065,479	403,559	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.15	ND
G0075	2,065,479	403,559	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022	0.19	ug/L	0.051	
G0075	2,065,479	403,559	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/1/2021		ug/L	0.051	ND
G0075	2,065,479	403,559	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/20/2021		ug/L	0.049	ND
G0075	2,065,479	403,559	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2021		ug/L	0.056	ND
G0075	2,065,479	403,559	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/29/2020		ug/L	0.051	ND
G0075	2,065,479	403,559	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/1/2020		ug/L	0.054	ND
G0075	2,065,479	403,559	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2020		ug/L	0.16	ND
G0075	2,065,479	403,559	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.15	ND

TABLE E.2
UPGRADIENT WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
G0076	2,065,469	403,583	2,4,6-TRINITROTOLUENE	3/1/2022		ug/L	0.045	ND
G0076	2,065,469	403,583	2,4,6-TRINITROTOLUENE	11/1/2021		ug/L	0.045	ND
G0076	2,065,469	403,583	2,4,6-TRINITROTOLUENE	5/20/2021		ug/L	0.044	ND
G0076	2,065,469	403,583	2,4,6-TRINITROTOLUENE	3/1/2021		ug/L	0.047	ND
G0076	2,065,469	403,583	2,4,6-TRINITROTOLUENE	9/29/2020		ug/L	0.043	ND
G0076	2,065,469	403,583	2,4,6-TRINITROTOLUENE	6/1/2020		ug/L	0.049	ND
G0076	2,065,469	403,583	2,4,6-TRINITROTOLUENE	3/1/2020		ug/L	0.16	ND
G0076	2,065,469	403,583	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.15	ND
G0076	2,065,469	403,583	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022		ug/L	0.051	ND
G0076	2,065,469	403,583	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/1/2021		ug/L	0.051	ND
G0076	2,065,469	403,583	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/20/2021		ug/L	0.05	ND
G0076	2,065,469	403,583	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2021		ug/L	0.054	ND
G0076	2,065,469	403,583	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/29/2020		ug/L	0.049	ND
G0076	2,065,469	403,583	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/1/2020	0.2	ug/L	0.056	TR
G0076	2,065,469	403,583	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2020		ug/L	0.16	ND
G0076	2,065,469	403,583	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.15	ND
G0079	2,065,479	403,553	2,4,6-TRINITROTOLUENE	3/1/2022		ug/L	0.049	ND
G0079	2,065,479	403,553	2,4,6-TRINITROTOLUENE	11/1/2021		ug/L	0.046	ND
G0079	2,065,479	403,553	2,4,6-TRINITROTOLUENE	5/20/2021		ug/L	0.042	ND
G0079	2,065,479	403,553	2,4,6-TRINITROTOLUENE	3/1/2021		ug/L	0.047	ND
G0079	2,065,479	403,553	2,4,6-TRINITROTOLUENE	9/29/2020		ug/L	0.044	ND
G0079	2,065,479	403,553	2,4,6-TRINITROTOLUENE	6/1/2020		ug/L	0.048	ND
G0079	2,065,479	403,553	2,4,6-TRINITROTOLUENE	3/1/2020		ug/L	0.16	ND
G0079	2,065,479	403,553	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.15	ND
G0079	2,065,479	403,553	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022		ug/L	0.056	ND
G0079	2,065,479	403,553	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/1/2021		ug/L	0.052	ND
G0079	2,065,479	403,553	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/20/2021		ug/L	0.048	ND
G0079	2,065,479	403,553	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2021		ug/L	0.054	ND
G0079	2,065,479	403,553	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/29/2020		ug/L	0.05	ND
G0079	2,065,479	403,553	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/1/2020		ug/L	0.055	ND
G0079	2,065,479	403,553	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2020		ug/L	0.16	ND
G0079	2,065,479	403,553	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.15	ND

TABLE E.2
UPGRADIENT WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
G0080	2,065,443	404,329	2,4,6-TRINITROTOLUENE	3/1/2022		ug/L	0.048	ND
G0080	2,065,443	404,329	2,4,6-TRINITROTOLUENE	10/31/2021		ug/L	0.046	ND
G0080	2,065,443	404,329	2,4,6-TRINITROTOLUENE	5/20/2021		ug/L	0.046	ND
G0080	2,065,443	404,329	2,4,6-TRINITROTOLUENE	2/28/2021		ug/L	0.044	ND
G0080	2,065,443	404,329	2,4,6-TRINITROTOLUENE	9/29/2020		ug/L	0.044	ND
G0080	2,065,443	404,329	2,4,6-TRINITROTOLUENE	6/11/2020		ug/L	0.047	ND
G0080	2,065,443	404,329	2,4,6-TRINITROTOLUENE	3/2/2020		ug/L	0.16	ND
G0080	2,065,443	404,329	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.15	ND
G0080	2,065,443	404,329	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022		ug/L	0.055	ND
G0080	2,065,443	404,329	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/31/2021		ug/L	0.053	ND
G0080	2,065,443	404,329	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/20/2021		ug/L	0.053	ND
G0080	2,065,443	404,329	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/28/2021		ug/L	0.051	ND
G0080	2,065,443	404,329	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/29/2020		ug/L	0.05	ND
G0080	2,065,443	404,329	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/11/2020		ug/L	0.054	ND
G0080	2,065,443	404,329	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2020		ug/L	0.16	ND
G0080	2,065,443	404,329	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.15	ND
G0081	2,065,490	402,722	2,4,6-TRINITROTOLUENE	3/1/2022	0.11	ug/L	0.047	
G0081	2,065,490	402,722	2,4,6-TRINITROTOLUENE	11/2/2021		ug/L	0.044	ND
G0081	2,065,490	402,722	2,4,6-TRINITROTOLUENE	5/20/2021		ug/L	0.043	ND
G0081	2,065,490	402,722	2,4,6-TRINITROTOLUENE	3/2/2021		ug/L	0.047	ND
G0081	2,065,490	402,722	2,4,6-TRINITROTOLUENE	9/29/2020		ug/L	0.044	ND
G0081	2,065,490	402,722	2,4,6-TRINITROTOLUENE	6/2/2020		ug/L	0.047	ND
G0081	2,065,490	402,722	2,4,6-TRINITROTOLUENE	3/2/2020		ug/L	0.18	ND
G0081	2,065,490	402,722	2,4,6-TRINITROTOLUENE	10/21/2019	0.29	ug/L	0.16	TR
G0081	2,065,490	402,722	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022		ug/L	0.054	ND
G0081	2,065,490	402,722	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/2/2021		ug/L	0.051	ND
G0081	2,065,490	402,722	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/20/2021	0.3	ug/L	0.049	
G0081	2,065,490	402,722	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2021		ug/L	0.054	ND
G0081	2,065,490	402,722	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/29/2020		ug/L	0.044	ND
G0081	2,065,490	402,722	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/2/2020		ug/L	0.054	ND
G0081	2,065,490	402,722	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2020		ug/L	0.17	ND
G0081	2,065,490	402,722	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.15	ND

TABLE E.2
UPGRADIENT WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
G0082	2,065,493	402,207	2,4,6-TRINITROTOLUENE	3/1/2022		ug/L	0.049	ND
G0082	2,065,493	402,207	2,4,6-TRINITROTOLUENE	11/3/2021		ug/L	0.045	ND
G0082	2,065,493	402,207	2,4,6-TRINITROTOLUENE	5/20/2021	0.73	ug/L	0.043	
G0082	2,065,493	402,207	2,4,6-TRINITROTOLUENE	3/2/2021		ug/L	0.047	ND
G0082	2,065,493	402,207	2,4,6-TRINITROTOLUENE	9/30/2020		ug/L	0.043	ND
G0082	2,065,493	402,207	2,4,6-TRINITROTOLUENE	6/2/2020		ug/L	0.052	ND
G0082	2,065,493	402,207	2,4,6-TRINITROTOLUENE	3/2/2020		ug/L	0.16	ND
G0082	2,065,493	402,207	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.15	ND
G0082	2,065,493	402,207	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022	0.59	ug/L	0.056	
G0082	2,065,493	402,207	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/3/2021	0.49	ug/L	0.051	
G0082	2,065,493	402,207	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/20/2021	0.43	ug/L	0.049	TR
G0082	2,065,493	402,207	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2021	0.53	ug/L	0.054	
G0082	2,065,493	402,207	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/30/2020	0.41	ug/L	0.05	
G0082	2,065,493	402,207	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/2/2020	0.68	ug/L	0.059	TR
G0082	2,065,493	402,207	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2020		ug/L	0.16	ND
G0082	2,065,493	402,207	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019	0.63	ug/L	0.15	TR
G0086	2,066,457	403,759	2,4,6-TRINITROTOLUENE	3/1/2022	5.8	ug/L	0.048	
G0086	2,066,457	403,759	2,4,6-TRINITROTOLUENE	11/3/2021	5.5	ug/L	0.045	TR
G0086	2,066,457	403,759	2,4,6-TRINITROTOLUENE	5/26/2021	4.9	ug/L	0.048	TR
G0086	2,066,457	403,759	2,4,6-TRINITROTOLUENE	3/2/2021	4.9	ug/L	0.047	TR
G0086	2,066,457	403,759	2,4,6-TRINITROTOLUENE	10/4/2020		ug/L	0.045	ND
G0086	2,066,457	403,759	2,4,6-TRINITROTOLUENE	6/16/2020	3.6	ug/L	0.047	
G0086	2,066,457	403,759	2,4,6-TRINITROTOLUENE	3/3/2020	5.9	ug/L	0.16	TR
G0086	2,066,457	403,759	2,4,6-TRINITROTOLUENE	10/23/2019	3.8	ug/L	0.16	
G0086	2,066,457	403,759	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022	1.3	ug/L	0.055	
G0086	2,066,457	403,759	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/3/2021	0.95	ug/L	0.051	TR
G0086	2,066,457	403,759	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/26/2021	0.84	ug/L	0.054	TR
G0086	2,066,457	403,759	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2021	0.59	ug/L	0.054	TR
G0086	2,066,457	403,759	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/4/2020	0.17	ug/L	0.052	TR
G0086	2,066,457	403,759	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/16/2020	0.21	ug/L	0.054	TR
G0086	2,066,457	403,759	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.15	ND
G0086	2,066,457	403,759	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/23/2019		ug/L	0.16	ND

TABLE E.2
UPGRADIENT WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
G0087	2,065,944	403,749	2,4,6-TRINITROTOLUENE	3/1/2022		ug/L	0.048	ND
G0087	2,065,944	403,749	2,4,6-TRINITROTOLUENE	11/3/2021		ug/L	0.046	ND
G0087	2,065,944	403,749	2,4,6-TRINITROTOLUENE	5/25/2021		ug/L	0.045	ND
G0087	2,065,944	403,749	2,4,6-TRINITROTOLUENE	3/2/2021		ug/L	0.048	ND
G0087	2,065,944	403,749	2,4,6-TRINITROTOLUENE	10/2/2020		ug/L	0.044	ND
G0087	2,065,944	403,749	2,4,6-TRINITROTOLUENE	6/15/2020		ug/L	0.048	ND
G0087	2,065,944	403,749	2,4,6-TRINITROTOLUENE	3/3/2020		ug/L	0.15	ND
G0087	2,065,944	403,749	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.15	ND
G0087	2,065,944	403,749	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2022	0.19	ug/L	0.055	TR
G0087	2,065,944	403,749	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/3/2021	0.22	ug/L	0.052	
G0087	2,065,944	403,749	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/25/2021	0.23	ug/L	0.052	
G0087	2,065,944	403,749	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2021	0.17	ug/L	0.055	TR
G0087	2,065,944	403,749	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/2/2020	0.15	ug/L	0.051	TR
G0087	2,065,944	403,749	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/15/2020	0.15	ug/L	0.055	TR
G0087	2,065,944	403,749	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.15	ND
G0087	2,065,944	403,749	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.15	ND

TABLE E.3
DOWNGRADIENT WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
CA210	2,072,527	405,191	2,4,6-TRINITROTOLUENE	2/28/2022		ug/L	0.048	ND
CA210	2,072,527	405,191	2,4,6-TRINITROTOLUENE	11/2/2021		ug/L	0.045	ND
CA210	2,072,527	405,191	2,4,6-TRINITROTOLUENE	5/19/2021		ug/L	0.043	ND
CA210	2,072,527	405,191	2,4,6-TRINITROTOLUENE	3/2/2021		ug/L	0.043	ND
CA210	2,072,527	405,191	2,4,6-TRINITROTOLUENE	10/2/2020		ug/L	0.043	ND
CA210	2,072,527	405,191	2,4,6-TRINITROTOLUENE	6/9/2020		ug/L	0.048	ND
CA210	2,072,527	405,191	2,4,6-TRINITROTOLUENE	3/3/2020		ug/L	0.15	ND
CA210	2,072,527	405,191	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.16	ND
CA210	2,072,527	405,191	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/28/2022		ug/L	0.055	ND
CA210	2,072,527	405,191	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/2/2021		ug/L	0.051	ND
CA210	2,072,527	405,191	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/19/2021		ug/L	0.049	ND
CA210	2,072,527	405,191	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2021		ug/L	0.049	ND
CA210	2,072,527	405,191	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/2/2020		ug/L	0.049	ND
CA210	2,072,527	405,191	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/9/2020		ug/L	0.055	ND
CA210	2,072,527	405,191	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.15	ND
CA210	2,072,527	405,191	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.16	ND
CA211	2,072,573	405,210	2,4,6-TRINITROTOLUENE	2/28/2022		ug/L	0.048	ND
CA211	2,072,573	405,210	2,4,6-TRINITROTOLUENE	11/2/2021		ug/L	0.044	ND
CA211	2,072,573	405,210	2,4,6-TRINITROTOLUENE	5/19/2021		ug/L	0.094	ND
CA211	2,072,573	405,210	2,4,6-TRINITROTOLUENE	3/2/2021		ug/L	0.043	ND
CA211	2,072,573	405,210	2,4,6-TRINITROTOLUENE	10/2/2020		ug/L	0.045	ND
CA211	2,072,573	405,210	2,4,6-TRINITROTOLUENE	6/9/2020		ug/L	0.048	ND
CA211	2,072,573	405,210	2,4,6-TRINITROTOLUENE	3/3/2020		ug/L	0.16	ND
CA211	2,072,573	405,210	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.16	ND
CA211	2,072,573	405,210	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/28/2022		ug/L	0.055	ND
CA211	2,072,573	405,210	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/2/2021		ug/L	0.051	ND
CA211	2,072,573	405,210	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/19/2021		ug/L	0.19	ND
CA211	2,072,573	405,210	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2021		ug/L	0.049	ND
CA211	2,072,573	405,210	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/2/2020		ug/L	0.051	ND
CA211	2,072,573	405,210	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/9/2020		ug/L	0.055	ND
CA211	2,072,573	405,210	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.16	ND
CA211	2,072,573	405,210	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.16	ND

TABLE E.3
DOWNGRADIENT WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
CA212	2,072,578	405,192	2,4,6-TRINITROTOLUENE	2/28/2022		ug/L	0.049	ND
CA212	2,072,578	405,192	2,4,6-TRINITROTOLUENE	11/2/2021		ug/L	0.045	ND
CA212	2,072,578	405,192	2,4,6-TRINITROTOLUENE	5/19/2021		ug/L	0.097	ND
CA212	2,072,578	405,192	2,4,6-TRINITROTOLUENE	3/2/2021		ug/L	0.042	ND
CA212	2,072,578	405,192	2,4,6-TRINITROTOLUENE	10/2/2020		ug/L	0.044	ND
CA212	2,072,578	405,192	2,4,6-TRINITROTOLUENE	6/9/2020		ug/L	0.049	ND
CA212	2,072,578	405,192	2,4,6-TRINITROTOLUENE	3/3/2020		ug/L	0.16	ND
CA212	2,072,578	405,192	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.16	ND
CA212	2,072,578	405,192	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/28/2022		ug/L	0.056	ND
CA212	2,072,578	405,192	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/2/2021		ug/L	0.051	ND
CA212	2,072,578	405,192	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/19/2021		ug/L	0.19	ND
CA212	2,072,578	405,192	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2021		ug/L	0.049	ND
CA212	2,072,578	405,192	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/2/2020		ug/L	0.05	ND
CA212	2,072,578	405,192	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/9/2020		ug/L	0.056	ND
CA212	2,072,578	405,192	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.15	ND
CA212	2,072,578	405,192	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.16	ND
CA213	2,072,600	405,217	2,4,6-TRINITROTOLUENE	2/28/2022		ug/L	0.049	ND
CA213	2,072,600	405,217	2,4,6-TRINITROTOLUENE	11/2/2021		ug/L	0.045	ND
CA213	2,072,600	405,217	2,4,6-TRINITROTOLUENE	5/19/2021		ug/L	0.097	ND
CA213	2,072,600	405,217	2,4,6-TRINITROTOLUENE	3/2/2021		ug/L	0.043	ND
CA213	2,072,600	405,217	2,4,6-TRINITROTOLUENE	10/2/2020		ug/L	0.045	ND
CA213	2,072,600	405,217	2,4,6-TRINITROTOLUENE	6/10/2020		ug/L	0.046	ND
CA213	2,072,600	405,217	2,4,6-TRINITROTOLUENE	3/3/2020		ug/L	0.16	ND
CA213	2,072,600	405,217	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.16	ND
CA213	2,072,600	405,217	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/28/2022		ug/L	0.056	ND
CA213	2,072,600	405,217	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/2/2021		ug/L	0.051	ND
CA213	2,072,600	405,217	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/19/2021		ug/L	0.19	ND
CA213	2,072,600	405,217	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2021		ug/L	0.049	ND
CA213	2,072,600	405,217	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/2/2020		ug/L	0.052	ND
CA213	2,072,600	405,217	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/10/2020		ug/L	0.053	ND
CA213	2,072,600	405,217	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.15	ND
CA213	2,072,600	405,217	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.16	ND

TABLE E.3
DOWNGRADIENT WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
NW050	2,072,396	406,567	2,4,6-TRINITROTOLUENE	10/1/2020		ug/L	0.045	ND
NW050	2,072,396	406,567	2,4,6-TRINITROTOLUENE	6/10/2020		ug/L	0.047	ND
NW050	2,072,396	406,567	2,4,6-TRINITROTOLUENE	3/3/2020		ug/L	0.16	ND
NW050	2,072,396	406,567	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.16	ND
NW050	2,072,396	406,567	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/1/2020		ug/L	0.051	ND
NW050	2,072,396	406,567	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/10/2020		ug/L	0.054	ND
NW050	2,072,396	406,567	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.16	ND
NW050	2,072,396	406,567	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.16	ND
NW051	2,072,401	406,543	2,4,6-TRINITROTOLUENE	10/1/2020		ug/L	0.045	ND
NW051	2,072,401	406,543	2,4,6-TRINITROTOLUENE	6/10/2020		ug/L	0.047	ND
NW051	2,072,401	406,543	2,4,6-TRINITROTOLUENE	3/3/2020		ug/L	0.16	ND
NW051	2,072,401	406,543	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.16	ND
NW051	2,072,401	406,543	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/1/2020		ug/L	0.051	ND
NW051	2,072,401	406,543	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/10/2020		ug/L	0.054	ND
NW051	2,072,401	406,543	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.16	ND
NW051	2,072,401	406,543	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.16	ND
NW052	2,072,410	406,561	2,4,6-TRINITROTOLUENE	10/1/2020		ug/L	0.044	ND
NW052	2,072,410	406,561	2,4,6-TRINITROTOLUENE	6/10/2020		ug/L	0.047	ND
NW052	2,072,410	406,561	2,4,6-TRINITROTOLUENE	3/3/2020		ug/L	0.16	ND
NW052	2,072,410	406,561	2,4,6-TRINITROTOLUENE	10/23/2019		ug/L	0.16	ND
NW052	2,072,410	406,561	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/1/2020		ug/L	0.051	ND
NW052	2,072,410	406,561	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/10/2020		ug/L	0.054	ND
NW052	2,072,410	406,561	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.15	ND
NW052	2,072,410	406,561	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/23/2019		ug/L	0.16	ND
NW060	2,072,369	407,799	2,4,6-TRINITROTOLUENE	2/27/2022		ug/L	0.048	ND
NW060	2,072,369	407,799	2,4,6-TRINITROTOLUENE	11/2/2021		ug/L	0.045	ND
NW060	2,072,369	407,799	2,4,6-TRINITROTOLUENE	5/19/2021		ug/L	0.099	ND
NW060	2,072,369	407,799	2,4,6-TRINITROTOLUENE	3/1/2021		ug/L	0.042	ND
NW060	2,072,369	407,799	2,4,6-TRINITROTOLUENE	10/1/2020		ug/L	0.044	ND
NW060	2,072,369	407,799	2,4,6-TRINITROTOLUENE	6/10/2020		ug/L	0.047	ND
NW060	2,072,369	407,799	2,4,6-TRINITROTOLUENE	3/2/2020		ug/L	0.16	ND
NW060	2,072,369	407,799	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.16	ND

TABLE E.3
DOWNGRADIENT WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
NW060	2,072,369	407,799	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/27/2022		ug/L	0.055	ND
NW060	2,072,369	407,799	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/2/2021		ug/L	0.052	ND
NW060	2,072,369	407,799	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/19/2021		ug/L	0.2	ND
NW060	2,072,369	407,799	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2021		ug/L	0.048	ND
NW060	2,072,369	407,799	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/1/2020		ug/L	0.05	ND
NW060	2,072,369	407,799	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/10/2020		ug/L	0.054	ND
NW060	2,072,369	407,799	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2020		ug/L	0.16	ND
NW060	2,072,369	407,799	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.16	ND
NW061	2,072,392	407,806	2,4,6-TRINITROTOLUENE	2/27/2022		ug/L	0.047	ND
NW061	2,072,392	407,806	2,4,6-TRINITROTOLUENE	11/2/2021		ug/L	0.045	ND
NW061	2,072,392	407,806	2,4,6-TRINITROTOLUENE	5/19/2021		ug/L	0.097	ND
NW061	2,072,392	407,806	2,4,6-TRINITROTOLUENE	3/1/2021		ug/L	0.042	ND
NW061	2,072,392	407,806	2,4,6-TRINITROTOLUENE	10/1/2020		ug/L	0.045	ND
NW061	2,072,392	407,806	2,4,6-TRINITROTOLUENE	6/10/2020		ug/L	0.047	ND
NW061	2,072,392	407,806	2,4,6-TRINITROTOLUENE	3/2/2020		ug/L	0.15	ND
NW061	2,072,392	407,806	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.16	ND
NW061	2,072,392	407,806	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/27/2022		ug/L	0.054	ND
NW061	2,072,392	407,806	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/2/2021		ug/L	0.052	ND
NW061	2,072,392	407,806	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/19/2021		ug/L	0.19	ND
NW061	2,072,392	407,806	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2021		ug/L	0.048	ND
NW061	2,072,392	407,806	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/1/2020		ug/L	0.051	ND
NW061	2,072,392	407,806	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/10/2020		ug/L	0.054	ND
NW061	2,072,392	407,806	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2020		ug/L	0.15	ND
NW061	2,072,392	407,806	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.16	ND
NW062	2,072,383	407,787	2,4,6-TRINITROTOLUENE	2/27/2022		ug/L	0.049	ND
NW062	2,072,383	407,787	2,4,6-TRINITROTOLUENE	11/2/2021		ug/L	0.046	ND
NW062	2,072,383	407,787	2,4,6-TRINITROTOLUENE	5/19/2021		ug/L	0.095	ND
NW062	2,072,383	407,787	2,4,6-TRINITROTOLUENE	3/1/2021		ug/L	0.042	ND
NW062	2,072,383	407,787	2,4,6-TRINITROTOLUENE	10/1/2020		ug/L	0.043	ND
NW062	2,072,383	407,787	2,4,6-TRINITROTOLUENE	6/10/2020		ug/L	0.048	ND
NW062	2,072,383	407,787	2,4,6-TRINITROTOLUENE	3/2/2020		ug/L	0.15	ND
NW062	2,072,383	407,787	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.16	ND

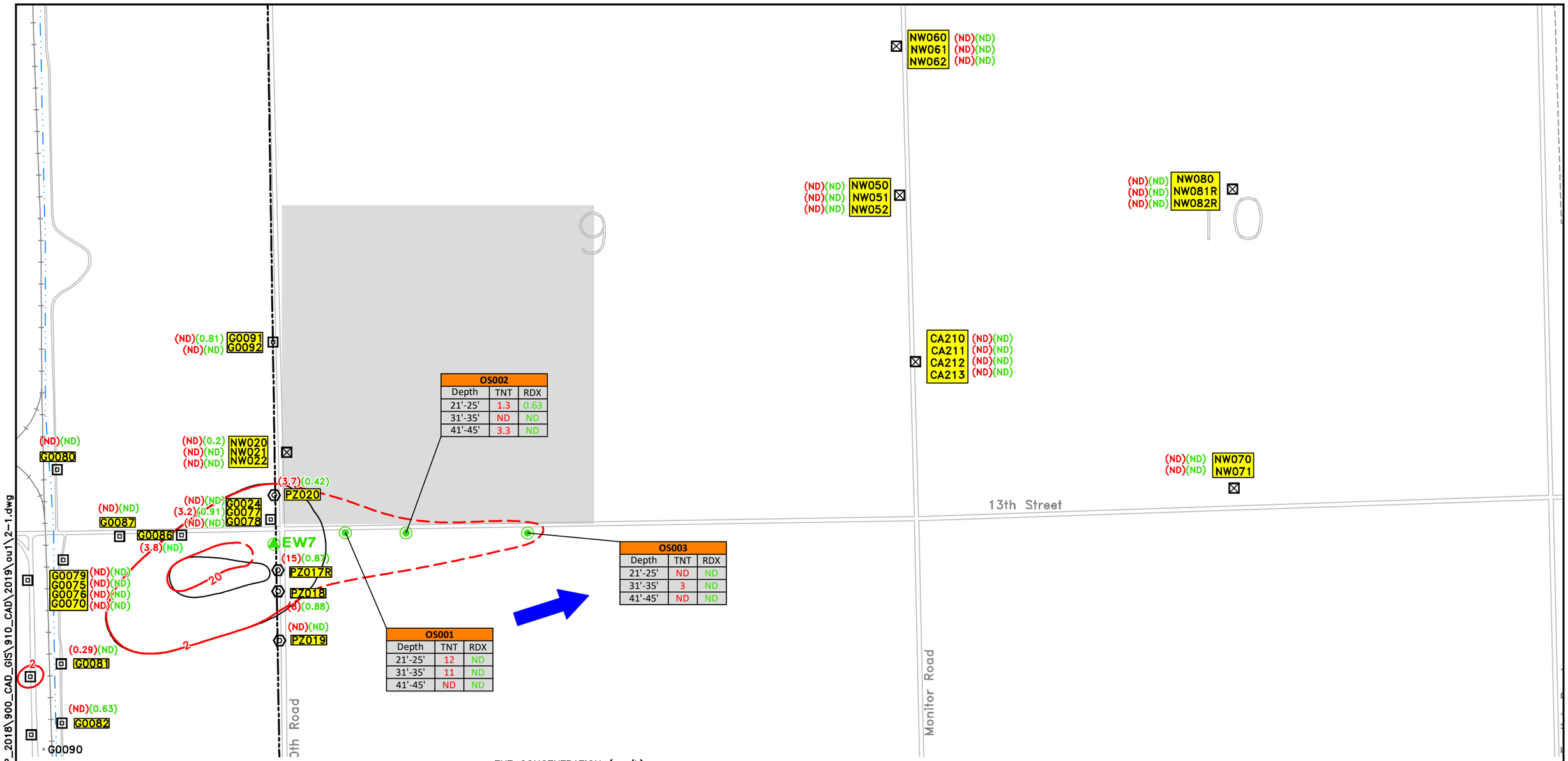
TABLE E.3
DOWNGRADIENT WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
NW062	2,072,383	407,787	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/27/2022		ug/L	0.056	ND
NW062	2,072,383	407,787	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/2/2021		ug/L	0.052	ND
NW062	2,072,383	407,787	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/19/2021		ug/L	0.19	ND
NW062	2,072,383	407,787	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2021		ug/L	0.049	ND
NW062	2,072,383	407,787	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/1/2020		ug/L	0.049	ND
NW062	2,072,383	407,787	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/10/2020		ug/L	0.055	ND
NW062	2,072,383	407,787	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2020		ug/L	0.15	ND
NW062	2,072,383	407,787	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.16	ND
NW070	2,075,161	404,146	2,4,6-TRINITROTOLUENE	2/27/2022		ug/L	0.05	ND
NW070	2,075,161	404,146	2,4,6-TRINITROTOLUENE	11/2/2021		ug/L	0.045	ND
NW070	2,075,161	404,146	2,4,6-TRINITROTOLUENE	5/19/2021		ug/L	0.095	ND
NW070	2,075,161	404,146	2,4,6-TRINITROTOLUENE	3/1/2021		ug/L	0.041	ND
NW070	2,075,161	404,146	2,4,6-TRINITROTOLUENE	9/30/2020		ug/L	0.043	ND
NW070	2,075,161	404,146	2,4,6-TRINITROTOLUENE	6/10/2020		ug/L	0.048	ND
NW070	2,075,161	404,146	2,4,6-TRINITROTOLUENE	3/2/2020		ug/L	0.16	ND
NW070	2,075,161	404,146	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.16	ND
NW070	2,075,161	404,146	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/27/2022		ug/L	0.057	ND
NW070	2,075,161	404,146	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/2/2021		ug/L	0.051	ND
NW070	2,075,161	404,146	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/19/2021		ug/L	0.19	ND
NW070	2,075,161	404,146	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2021		ug/L	0.047	ND
NW070	2,075,161	404,146	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/30/2020		ug/L	0.05	ND
NW070	2,075,161	404,146	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/10/2020		ug/L	0.055	ND
NW070	2,075,161	404,146	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2020		ug/L	0.16	ND
NW070	2,075,161	404,146	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.16	ND
NW071	2,075,166	404,140	2,4,6-TRINITROTOLUENE	2/27/2022		ug/L	0.048	ND
NW071	2,075,166	404,140	2,4,6-TRINITROTOLUENE	11/2/2021		ug/L	0.045	ND
NW071	2,075,166	404,140	2,4,6-TRINITROTOLUENE	5/19/2021		ug/L	0.043	ND
NW071	2,075,166	404,140	2,4,6-TRINITROTOLUENE	3/1/2021		ug/L	0.043	ND
NW071	2,075,166	404,140	2,4,6-TRINITROTOLUENE	9/30/2020		ug/L	0.047	ND
NW071	2,075,166	404,140	2,4,6-TRINITROTOLUENE	6/9/2020		ug/L	0.048	ND
NW071	2,075,166	404,140	2,4,6-TRINITROTOLUENE	3/2/2020		ug/L	0.16	ND
NW071	2,075,166	404,140	2,4,6-TRINITROTOLUENE	10/21/2019		ug/L	0.16	ND

TABLE E.3
DOWNGRADIENT WELLS
CORNHUSKER ARMY AMMUNITION PLANT
MAROS DATA INPUTS

WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags
NW071	2,075,166	404,140	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	2/27/2022		ug/L	0.055	ND
NW071	2,075,166	404,140	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	11/2/2021		ug/L	0.052	ND
NW071	2,075,166	404,140	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	5/19/2021		ug/L	0.049	ND
NW071	2,075,166	404,140	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/1/2021		ug/L	0.049	ND
NW071	2,075,166	404,140	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/30/2020		ug/L	0.053	ND
NW071	2,075,166	404,140	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/9/2020		ug/L	0.055	ND
NW071	2,075,166	404,140	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/2/2020		ug/L	0.16	ND
NW071	2,075,166	404,140	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/21/2019		ug/L	0.16	ND
NW080	2,075,116	406,616	2,4,6-TRINITROTOLUENE	9/30/2020		ug/L	0.048	ND
NW080	2,075,116	406,616	2,4,6-TRINITROTOLUENE	6/8/2020		ug/L	0.047	ND
NW080	2,075,116	406,616	2,4,6-TRINITROTOLUENE	3/3/2020		ug/L	0.17	ND
NW080	2,075,116	406,616	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.16	ND
NW080	2,075,116	406,616	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/30/2020		ug/L	0.054	ND
NW080	2,075,116	406,616	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/8/2020		ug/L	0.054	ND
NW080	2,075,116	406,616	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.17	ND
NW080	2,075,116	406,616	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.16	ND
NW081R	2,075,149	406,617	2,4,6-TRINITROTOLUENE	9/30/2020		ug/L	0.045	ND
NW081R	2,075,149	406,617	2,4,6-TRINITROTOLUENE	6/8/2020		ug/L	0.05	ND
NW081R	2,075,149	406,617	2,4,6-TRINITROTOLUENE	3/3/2020		ug/L	0.16	ND
NW081R	2,075,149	406,617	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.16	ND
NW081R	2,075,149	406,617	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/30/2020		ug/L	0.051	ND
NW081R	2,075,149	406,617	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/8/2020		ug/L	0.057	ND
NW081R	2,075,149	406,617	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.16	ND
NW081R	2,075,149	406,617	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.16	ND
NW082R	2,075,190	406,618	2,4,6-TRINITROTOLUENE	9/30/2020		ug/L	0.047	ND
NW082R	2,075,190	406,618	2,4,6-TRINITROTOLUENE	6/8/2020		ug/L	0.048	ND
NW082R	2,075,190	406,618	2,4,6-TRINITROTOLUENE	3/3/2020		ug/L	0.16	ND
NW082R	2,075,190	406,618	2,4,6-TRINITROTOLUENE	10/22/2019		ug/L	0.16	ND
NW082R	2,075,190	406,618	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	9/30/2020		ug/L	0.054	ND
NW082R	2,075,190	406,618	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	6/8/2020		ug/L	0.055	ND
NW082R	2,075,190	406,618	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	3/3/2020		ug/L	0.16	ND
NW082R	2,075,190	406,618	HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE	10/22/2019		ug/L	0.16	ND

Appendix F
OU1 Rebound Study Historic Figures



LEGEND:

- ON-POST GROUNDWATER MONITORING WELL
- OFF-POST GROUNDWATER MONITORING WELL
- ON-POST PIEZOMETER
- ACTIVE GROUNDWATER EXTRACTION WELL
- G0029 — 2019 GROUNDWATER SAMPLING LOCATIONS – OU1 REBOUND STUDY, BASELINE (OCTOBER 2019)
- OS001 — 2019 OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, BASELINE (OCTOBER 2019)

(ND) TNT CONCENTRATION (µg/L) (OCTOBER 2019)

(ND) RDX CONCENTRATION (µg/L) (OCTOBER 2019)

- GENERAL GROUNDWATER FLOW DIRECTION
- ROADS
- FACILITY BOUNDARY
- GRAND ISLAND CITY LIMITS
- SURFACE DRAINAGE
- (281) STATE ROUTE
- [30] U.S. ROUTE
- FEEDLOT
- 2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) OCTOBER 2019
- 20 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >20µg/L) OCTOBER 2019
- DASHED WHERE INFERRED
- 2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) JUNE 2019
- 20 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >20µg/L) JUNE 2019

N

0 800 1600
SCALE FEET

NOTE: EW7 PUMPING RATE TO BE SET AT 0 GPM DURING PROPOSED REBOUND STUDY AND SUBSURFACE INJECTION EVENTS.

Bruce ENGINEERING AECOM

EXTENT OF OU1 EXPLOSIVES PLUME, OU1 REBOUND STUDY, BASELINE (OCTOBER 2019)
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 12/06/19	PROJECT NO. 60565355	FIG. NO. 2-1
CHK'D. BY: DC	DATE: 12/06/19		

May 01, 2020 3:00:44 p.m.
Drawing: O:\DCS\Projects\ENV\60565355_CHAAP_2018\900_CAD_GIS\910_CAD\2019\ou1\2-1.dwg

N. 60th Road

13th Street

Monitor Road

9

10

(ND)(ND) G0080

(ND)(0.83) G0091
(ND)(ND) G0092

(0.6)(0.94) NW020
(ND)(ND) NW021
(ND)(ND) NW022

(3.2)(0.62) PZ020

(ND)(ND) G0087

(ND)(ND) G0024
(2.7)(0.19) G0077
(ND)(ND) G0078

G0086 (5.9)(ND)

EW7

OS002

OS003

(17)(1.4) PZ017R

G0079 (ND)(ND)
G0075 (ND)(ND)
G0076 (ND)(ND)
G0070 (ND)(ND)

PZ018 (19)(ND)

(ND)(ND) PZ019

(ND)(ND) G0081

(ND)(ND) G0082

G0090

OS001		
Depth	TNT	RDX
21'-25'	9.2	ND
31'-35'	8.2	ND
41'-45'	1.1	ND

(ND)(ND) NW060
(ND)(ND) NW061
(ND)(ND) NW062

(ND)(ND) NW050
(ND)(ND) NW051
(ND)(ND) NW052

(ND)(ND) NW080
(ND)(ND) NW081R
(ND)(ND) NW082R

(ND)(ND) CA210
(ND)(ND) CA211
(ND)(ND) CA212
(ND)(ND) CA213

(ND)(ND) NW070
(ND)(ND) NW071

LEGEND:

- ON-POST GROUNDWATER MONITORING WELL
- OFF-POST GROUNDWATER MONITORING WELL
- ON-POST PIEZOMETER
- INACTIVE GROUNDWATER EXTRACTION WELL
- G0029 — GROUNDWATER SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 2 (FEBRUARY/MARCH 2020)
- OS001 — OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 2 (FEBRUARY/MARCH 2020)
- OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, BASELINE (OCTOBER 2019)

(ND) TNT CONCENTRATION (µg/L) (FEBRUARY/MARCH 2020)

(ND) RDX CONCENTRATION (µg/L) (FEBRUARY/MARCH 2020)

GENERAL GROUNDWATER FLOW DIRECTION

ROADS

FACILITY BOUNDARY

GRAND ISLAND CITY LIMITS

SURFACE DRAINAGE

281 STATE ROUTE

30 U.S. ROUTE

FEEDLOT

2 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) FEBRUARY/MARCH 2020

20 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >20µg/L) FEBRUARY/MARCH 2020

DASHED WHERE INFERRED

2 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >2µg/L) FEBRUARY/MARCH 2020

20 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >20µg/L) FEBRUARY/MARCH 2020

N

0 800 1600
SCALE FEET

NOTE: EW7 PUMPING RATE SET AT 0 GPM DURING OU1 REBOUND STUDY AND SUBSURFACE INJECTION EVENTS.

Bruce ENGINEERING AECOM

EXTENT OF OU1 EXPLOSIVES PLUME, OU1 REBOUND STUDY, QUARTER 2 (FEBRUARY/MARCH 2020)
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 12/06/19	PROJECT NO. 60565355	FIG. NO. 2-1
CHK'D. BY: DC	DATE: 12/06/19		

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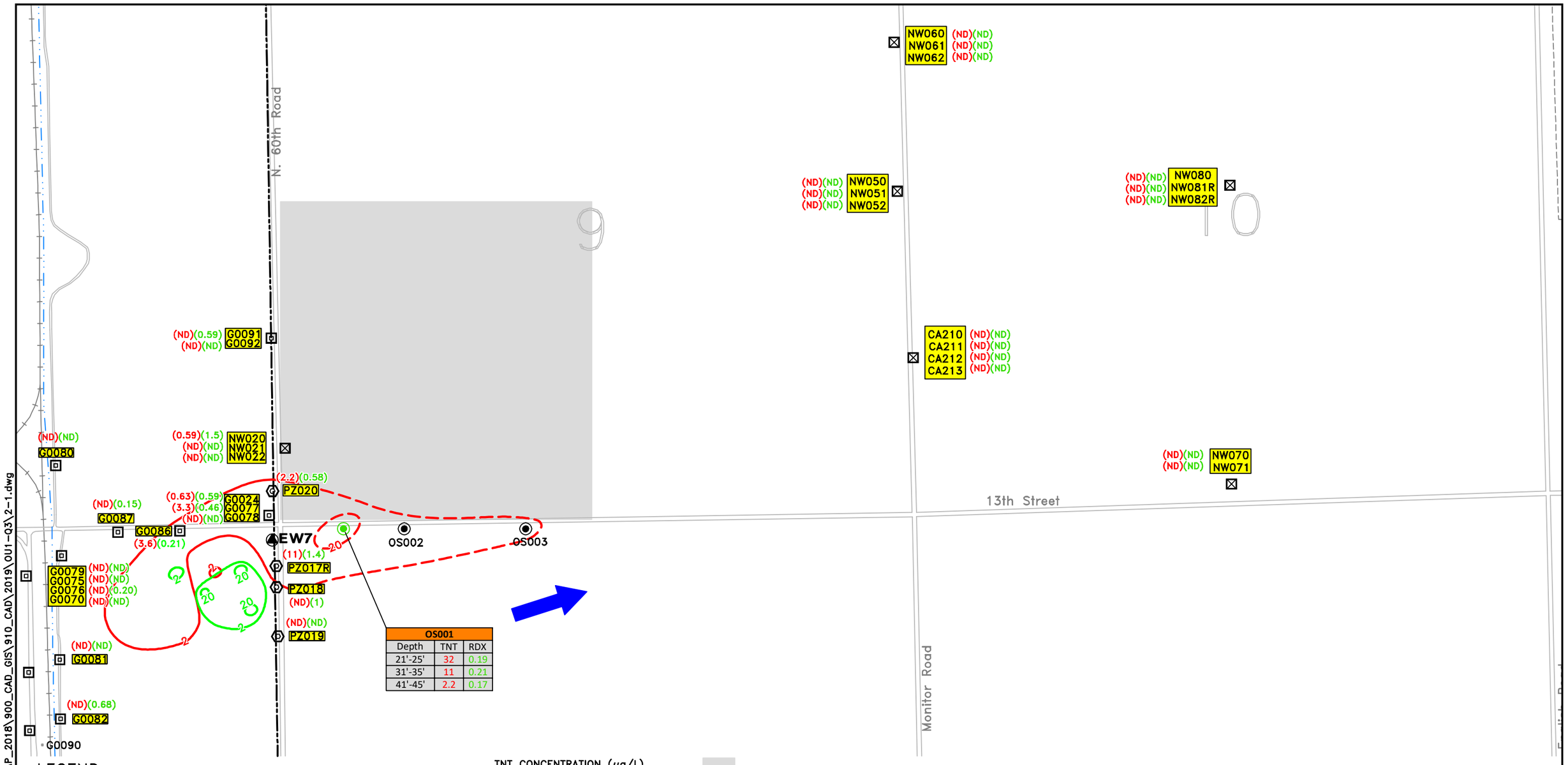

LEGEND:

- ON-POST GROUNDWATER MONITORING WELL
- OFF-POST GROUNDWATER MONITORING WELL
- ON-POST PIEZOMETER
- INACTIVE GROUNDWATER EXTRACTION WELL
- G0029 — GROUNDWATER SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 3 (MAY/JUNE 2020)
- OS001 — OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 3 (MAY/JUNE 2020)
- OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, BASELINE (OCTOBER 2019)
- (ND) — TNT CONCENTRATION (µg/L) (MAY/JUNE 2020)
- (ND) — RDX CONCENTRATION (µg/L) (MAY/JUNE 2020)
- GENERAL GROUNDWATER FLOW DIRECTION
- ROADS
- FACILITY BOUNDARY
- GRAND ISLAND CITY LIMITS
- SURFACE DRAINAGE
- 281 — STATE ROUTE
- 30 — U.S. ROUTE
- FEEDLOT
- 2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) MAY/JUNE 2020
- 20 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >20µg/L) MAY/JUNE 2020
- DASHED WHERE INFERRED
- 2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >2µg/L) MAY/JUNE 2020
- 20 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >20µg/L) MAY/JUNE 2020

N

800 400 0 800
SCALE IN FEET

NOTE: EW7 PUMPING RATE SET AT 0 GPM DURING OU1 REBOUND STUDY AND SUBSURFACE INJECTION EVENTS.

Bruce ENGINEERING AECOM

EXTENT OF OU1 EXPLOSIVES PLUME, OU1 REBOUND STUDY, QUARTER 3 (MAY/JUNE 2020)
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 07/27/20	PROJECT NO. 60565355	FIG. NO. 2-1
CHK'D. BY: DC	DATE: 07/27/20		

September 14, 2020 8:59:06 a.m.
Drawing: O:\DCS\Projects\ENV\60565355_CHAAP_2018\900_CAD_GIS\910_CAD\2019\OU1-03\2-1.dwg

N. 60th Road

13th Street

Monitor Road

9

10

(ND)(ND) G0080

(ND)(0.46) G0091
(ND)(ND) G0092

(0.62)(2.3) NW020
(ND)(ND) NW021
(ND)(ND) NW022

(3.5)(0.67) PZ020

(ND)(0.15) G0087

(0.2)(ND) G0024
(3.4)(0.34) G0077
(ND)(ND) G0078

G0086 (ND)(0.17)

EW7

OS002

(15)(1.8) PZ017R

PZ018 (17)(ND)

(ND)(ND) PZ019

G0079 (ND)(ND)
G0075 (ND)(ND)
G0076 (ND)(ND)
G0070 (ND)(ND)

(ND)(ND) G0081

(ND)(0.41) G0082

G0090

NW060 (ND)(ND)
NW061 (ND)(ND)
NW062 (ND)(ND)

(ND)(ND) NW050
(ND)(ND) NW051
(ND)(ND) NW052

(ND)(ND) NW080
(ND)(ND) NW081R
(ND)(ND) NW082R

CA210 (ND)(ND)
CA211 (ND)(ND)
CA212 (ND)(ND)
CA213 (ND)(ND)

(ND)(ND) NW070
(ND)(ND) NW071

OS003		
Depth	TNT	RDX
21'-25'	ND	ND
31'-35'	ND	ND
41'-45'	ND	ND

OS004		
Depth	TNT	RDX
21'-25'	ND	ND
31'-35'	ND	ND
41'-45'	ND	ND

OS001		
Depth	TNT	RDX
21'-25'	29	ND
31'-35'	15	1.8
41'-45'	ND	ND

LEGEND:

- ON-POST GROUNDWATER MONITORING WELL
- OFF-POST GROUNDWATER MONITORING WELL
- ON-POST PIEZOMETER
- INACTIVE GROUNDWATER EXTRACTION WELL
- G0029 — OU1 GROUNDWATER SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 4 (SEPTEMBER/OCTOBER 2020)
- OS001 — OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 4 (SEPTEMBER/OCTOBER 2020)
- OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, BASELINE (OCTOBER 2019)

(ND) TNT CONCENTRATION (µg/L) SEPTEMBER/OCTOBER 2020

(ND) RDX CONCENTRATION (µg/L) SEPTEMBER/OCTOBER 2020

GENERAL GROUNDWATER FLOW DIRECTION

ROADS

FACILITY BOUNDARY

GRAND ISLAND CITY LIMITS

SURFACE DRAINAGE

281 STATE ROUTE

30 U.S. ROUTE

FEEDLOT

2 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) SEPTEMBER/OCTOBER 2020

20 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >20µg/L) SEPTEMBER/OCTOBER 2020

DASHED WHERE INFERRED

2 INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >2µg/L) SEPTEMBER/OCTOBER 2020

NOTE: EW7 PUMPING RATE SET AT 0 GPM DURING OU1 REBOUND STUDY AND SUBSURFACE INJECTION EVENTS.

N

800 400 0 800

SCALE IN FEET

Bruce ENGINEERING AECOM

EXTENT OF OU1 EXPLOSIVES PLUME, OU1 REBOUND STUDY, QUARTER 4 (SEPTEMBER/OCTOBER 2020)
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 11/25/20	PROJECT NO. 60565355	FIG. NO. 2-1
CHK'D. BY: DC	DATE: 11/25/20		

March 15, 2021 9:01:31 a.m.
Drawing: O:\DCS\Projects\ENV\60565355_CHAAP_2018\900_CAD_GIS\910_CAD\2019\ou1-q4\2-1.dwg

N. 60th Road

13th Street

Monitor Road

9

10

OS003		
Depth	TNT	RDX
21'-25'	0.2	ND
31'-35'	ND	ND
41'-45'	ND	ND

OS001		
Depth	TNT	RDX
21'-25'	20	ND
31'-35'	2	0.82
41'-45'	0.25	ND

NW050R		
Depth	TNT	RDX
16'-20'	ND	ND
31'-35'	ND	ND
56'-60'	ND	ND

(ND)(ND) G0080

(ND)(0.27) G0091
(ND)(ND) G0092

(0.8)(1.2) NW020
(ND)(ND) NW021
(ND)(ND) NW022

(3.9)(0.57) PZ020

(ND)(0.17) G0087

(0.48)(ND) G0024
(3.6)(0.82) G0077
(ND)(ND) G0078

G0086
(4.9)(0.59)

EW7

(10)(2.2) PZ017R

PZ018
(6)(ND)

(ND)(ND) PZ019

G0079 (ND)(ND)
G0075 (ND)(ND)
G0076 (ND)(ND)
G0070 (ND)(ND)

(ND)(ND) G0081

(ND)(0.53) G0082

G0090

OS002

OS004

NW060 (ND)(ND)
NW061 (ND)(ND)
NW062 (ND)(ND)

NW050
NW051
NW052

CA210 (ND)(ND)
CA211 (ND)(ND)
CA212 (ND)(ND)
CA213 (ND)(ND)

NW080
NW081R
NW082R

(ND)(ND) NW070
(ND)(ND) NW071

LEGEND:

- ON-POST GROUNDWATER MONITORING WELL
- OFF-POST GROUNDWATER MONITORING WELL
- ON-POST PIEZOMETER
- INACTIVE GROUNDWATER EXTRACTION WELL
- G0029 — OU1 GROUNDWATER SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 5 (FEBRUARY/MARCH 2021)
- OS001 — OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 5 (FEBRUARY/MARCH 2021)
- OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 4 (SEPTEMBER 2020)
- OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, BASELINE (OCTOBER 2019)

- (ND) — TNT CONCENTRATION (µg/L) FEBRUARY/MARCH 2021
- (ND) — RDX CONCENTRATION (µg/L) FEBRUARY/MARCH 2021
- GENERAL GROUNDWATER FLOW DIRECTION
- ROADS
- FACILITY BOUNDARY
- GRAND ISLAND CITY LIMITS
- SURFACE DRAINAGE
- 281 — STATE ROUTE
- 30 — U.S. ROUTE

- FEEDLOT
- 2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) FEBRUARY/MARCH 2021
- DASHED WHERE INFERRED
- 2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >2µg/L) FEBRUARY/MARCH 2021

NOTE: EW7 PUMPING RATE SET AT 0 GPM DURING OU1 REBOUND STUDY AND SUBSURFACE INJECTION EVENTS.

N

800 400 0 800
SCALE IN FEET

Bruce ENGINEERING AECOM

EXTENT OF OU1 EXPLOSIVES PLUME, OU1 REBOUND STUDY, QUARTER 5 (FEBRUARY/MARCH 2021)
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 04/21/21	PROJECT NO. 60565355	FIG. NO. 2-1
CHK'D. BY: DC	DATE: 04/21/21		

May 03, 2021 2:08:39 p.m.
Drawing: O:\DCS\Projects\ENV\60565355_CHAAP_2018\900_CAD_GIS\910_CAD\2019\ou1-q5\2-1.dwg

N. 60th Road

13th Street

Monitor Road

9

10

NW060 (ND)(ND)
NW061 (ND)(ND)
NW062 (ND)(ND)

NW050
NW051
NW052

NW050R		
Depth	TNT	RDX
16'-20'	ND	ND
31'-35'	ND	ND
56'-60'	ND	ND

NW080
NW081R
NW082R

CA210 (ND)(ND)
CA211 (ND)(ND)
CA212 (ND)(ND)
CA213 (ND)(ND)

(ND)(ND) NW070
(ND)(ND) NW071

(ND)(0.31) G0091
(ND)(ND) G0092

(0.93)(1.0) NW020
(ND)(0.13) NW021
(ND)(ND) NW022

OS003		
Depth	TNT	RDX
21'-25'	ND	ND
31'-35'	ND	ND
41'-45'	ND	ND

(ND)(ND) G0080

(3.8)(0.68) PZ020

(0.44)(ND) G0024
(4.3)(1.2) G0077
(ND)(ND) G0078

(ND)(0.23) G0087

G0086 (4.9)(0.84)

EW7

OS004

OS002

(10)(2.1) PZ017R

PZ018 (4.6)(ND)

(ND)(ND) PZ019

G0079 (ND)(ND)
G0075 (ND)(ND)
G0076 (ND)(ND)
G0070 (ND)(ND)

OS001		
Depth	TNT	RDX
21'-25'	26	0.40
31'-35'	4.9	ND
41'-45'	0.34	ND

(ND)(0.30) G0081

(0.73)(0.43) G0082

G0090

20

2

LEGEND:

- ON-POST GROUNDWATER MONITORING WELL
- OFF-POST GROUNDWATER MONITORING WELL
- ON-POST PIEZOMETER
- INACTIVE GROUNDWATER EXTRACTION WELL
- G0029 — OU1 GROUNDWATER SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 6 (MAY/JUNE 2021)
- OS001 — OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 6 (MAY/JUNE 2021)
- OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 4 (SEPTEMBER 2020)
- OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, BASELINE (OCTOBER 2019)

(ND) TNT CONCENTRATION (µg/L)

(ND) RDX CONCENTRATION (µg/L)

ND NON DETECT

GENERAL GROUNDWATER FLOW DIRECTION

ROADS

FACILITY BOUNDARY

GRAND ISLAND CITY LIMITS

SURFACE DRAINAGE

281 STATE ROUTE

30 U.S. ROUTE

FEEDLOT

2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) MAY/JUNE 2021

20 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >20µg/L) MAY/JUNE 2021

DASHED WHERE INFERRED

2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >2µg/L) MAY/JUNE 2021

NOTE: EW7 PUMPING RATE SET AT 0 GPM DURING OU1 REBOUND STUDY AND SUBSURFACE INJECTION EVENTS.

N

800 400 0 800

SCALE IN FEET

Bryce ENGINEERING AECOM

EXTENT OF OU1 EXPLOSIVES PLUME, OU1 REBOUND STUDY, QUARTER 6 (MAY/JUNE 2021)
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 04/21/21	PROJECT NO. 60565355	FIG. NO. 2-1
CHK'D. BY: DC	DATE: 04/21/21		

July 26, 2021 1:25:31 p.m.
Drawing: O:\DCS\Projects\ENV\60565355_CHAAP_2018\900_CAD_GIS\910_CAD\2019\ou1-q6\2-1.dwg

N. 60th Road

13th Street

Monitor Road

9

10

NW060 (ND)(ND)
NW061 (ND)(ND)
NW062 (ND)(ND)

NW050
NW051
NW052

NW050R		
Depth	TNT	RDX
16'-20'	ND	ND
31'-35'	ND	ND
56'-60'	ND	ND

NW080
NW081R
NW082R

CA210 (ND)(ND)
CA211 (ND)(ND)
CA212 (ND)(ND)
CA213 (ND)(ND)

(ND)(ND) NW070
(ND)(ND) NW071

(ND)(0.32) G0091
(ND)(ND) G0092

(1.2)(0.44) NW020
(ND)(0.22) NW021
(ND)(ND) NW022

OS003		
Depth	TNT	RDX
21'-25'	0.24	ND
31'-35'	0.17	ND
41'-45'	ND	ND

(ND)(ND) G0080

(5.1)(0.62) PZ020

(0.46)(ND) G0024
(4.5)(1.7) G0077
(ND)(ND) G0078

(ND)(0.22) G0087

G0086 (5.5)(0.95)

OS004

OS002

EW7

(0.37)(ND) PZ017R

PZ018 (4)(ND)

(ND)(ND) PZ019

G0079 (ND)(ND)
G0075 (ND)(ND)
G0076 (ND)(ND)
G0070 (ND)(ND)

OS001		
Depth	TNT	RDX
21'-25'	26	0.51
31'-35'	8.7	ND
41'-45'	ND	ND

(ND)(ND) G0081

(ND)(0.49) G0082

G0090

20

2

LEGEND:

- ON-POST GROUNDWATER MONITORING WELL
- OFF-POST GROUNDWATER MONITORING WELL
- ON-POST PIEZOMETER
- INACTIVE GROUNDWATER EXTRACTION WELL
- G0029 — OU1 GROUNDWATER SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 7 (OCTOBER/NOVEMBER 2021)
- OS001 — OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 7 (OCTOBER/NOVEMBER 2021)
- OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, QUARTER 4 (SEPTEMBER 2020)
- OU1 DIRECT PUSH SAMPLING LOCATIONS – OU1 REBOUND STUDY, BASELINE (OCTOBER 2019)

- (ND) TNT CONCENTRATION (µg/L)
- (ND) RDX CONCENTRATION (µg/L)
- ND NON DETECT
- GENERAL GROUNDWATER FLOW DIRECTION
- ROADS
- FACILITY BOUNDARY
- GRAND ISLAND CITY LIMITS
- SURFACE DRAINAGE
- (281) STATE ROUTE
- [30] U.S. ROUTE

- FEEDLOT
- 2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >2µg/L) OCTOBER/NOVEMBER 2021
- 20 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (TNT CONCENTRATIONS >20µg/L) OCTOBER/NOVEMBER 2021
- DASHED WHERE INFERRED
- 2 — INTERPRETED HORIZONTAL EXTENT OF EXPLOSIVES (RDX CONCENTRATIONS >2µg/L) OCTOBER/NOVEMBER 2021

NOTE: EW7 PUMPING RATE SET AT 0 GPM DURING OU1 REBOUND STUDY AND SUBSURFACE INJECTION EVENTS.

N

800 400 0 800

SCALE IN FEET

Bruce ENGINEERING AECOM

EXTENT OF OU1 EXPLOSIVES PLUME, OU1 REBOUND STUDY, QUARTER 7 (OCTOBER/NOVEMBER 2021)
CORNHUSKER ARMY AMMUNITION PLANT

DRN. BY: DPG	DATE: 12/21/21	PROJECT NO. 60565355	FIG. NO. 2-1
CHK'D. BY: DC	DATE: 12/21/21		

December 21, 2021 1:36:18 p.m.
Drawing: O:\DCS\Projects\ENV\60565355_CHAAP_2018\900_CAD_GIS\910_CAD\2019\ou1-q7\2-1.dwg