FINAL ENGINEERING REPORT
OPERABLE UNITS OU1
SARANAC LAKE GAS COMPANY, INC
SITE NUMBER: 516008

(T) SARANAC LAKE (C) ESSEX
REMEDIAL ACTION CONTRACT NUMBER: D009809-06

Prepared For:

New York State Department of Environmental Conservation

Division of Environmental Remediation
Remedial Bureau E, Section A
Albany, New York

Prepared By:

MACTEC Engineering and Geology, PC
Portland, Maine

MACTEC Project Number: 3617207518

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STATE OF NEW YORK
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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

ASTM	American Society for Testing and Material
Aztech	Aztech Environmental Services
bgs	below ground surface
CAMP	Community Air Monitoring Program
CQC	Construction Quality Control
C&D	Construction and Demolition
cy	cubic yard
DAC	D.A. Collins
DUSR	Data Usability Summary Report
EC	Engineering Controls
FER	Final Engineering Report
FO	Field Order
FS	Feasibility Study
GAC	Granular Activated Carbon
Geomatics	Geomatics Land Surveying
GSI	Geo-Solutions Inc
HASP	Health and Safety Plan
HC	Hampton Clark Laboratory
HDPE	high density polyethylene
HSO	Health and Safety Officer
ISS	In-Situ Solidification

lbs	pounds
MACTEC	MACTEC Engineering and Geology, P.C.
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
MGP	Manufactured Gas Plant
NCCC	North Country Community College
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
OU	Operable Unit
pcf	pounds per cubic foot
PDI	Pre-Design Investigation
psi	pounds per square inch
PID	photoionization detector
RA	Remedial Action
RAOs	Remedial Action Objectives
RD	Remedial Design
RFI	Request for Information
RI	Remedial Investigation
ROD	Record of Decision
SCG	Standards, Criteria, and Guidance
SCO	Soil Cleanup Objective
Sf	Square Feet
Site	24 Payeville Lane, Saranac Lake, NY
SPDES	State Pollutant Discharge Elimination System
SVOC	semi volatile organic compound

TDS	total dissolved solids
UCS	unconfined compressive strength
$\mu g/m^3$	microgram(s) per cubic meter
USACOE	United States Army Corps of Engineers
VOC	volatile organic compound
WTP	Water Treatment Plant

1.0 SITE BACKGROUND

MACTEC Engineering and Geology, P.C. (MACTEC), under contract to the New York State Department of Environmental Conservation (NYSDEC), is submitting this Final Engineering Report (FER) to document the remedial action (RA) implemented in 2021 and 2022 at Operable Unit (OU) 01 at the former Saranac Lake Gas Company Site (Site). The Site is located at 24 Payeville Lane in the Village of Saranac Lake, Town of North Elba, Essex County, New York (Figure 1-1). The Site is comprised of three OUs, OU01, OU02 and OU03, which are identified on **Figure 1-1**. This FER is specifically related to the RA at OU01. The RA was conducted in accordance with the OU01 Record of Decision (ROD) (NYSDEC, 2017).

1.1 SITE LOCATION AND HISTORY

The former Saranac Lake Gas Company property, OU01, is approximately 4.5 acres in size and is located east of and adjacent to the former Adirondack Scenic Railroad, which is now part of the Adirondack Rail Trail. Residential properties border OU01 to the north, east, and part of the west side and North Country Community College (NCCC) soccer fields and facilities border OU01 to the south. An access road extends from Payeville Road west to the former gas plant setting. The Site and surrounding area are serviced by public water; therefore, groundwater is not believed to be used as a source of drinking water. Prior to the remedial action, OU01 was a vacant lot with an open, unoccupied one-story brick building.

The Saranac Lake Gas Company manufactured lighting gas (coal gasification) for the Village of Saranac Lake from the late 1800s to approximately the 1940s (NYSDEC, 2013). Historically, operations at the Site included two above ground gas holders, a building housing the purifier and retort operations, as well as additional areas for coal storage and offices. The Site owner is listed on the 1931 Sanborn map as The Mountain Gas Company. The 1937 or 1945 Sanborn map (actual date unknown) documents the Site as vacant and dilapidated, and one of the two gas holders has been removed. On a 1962 Sanborn map the Site owner is listed as the Adirondack Bottled Gas Corp. and shows only the purifier and offices remaining. An aerial photo taken in the early 1970s indicates little change from the 1962 Sanborn map.

Original structures from the former Manufactured Gas Plant (MGP) processes are no longer present on the Site. The concrete storage pads, a metal sided building and a concrete foundation for one of the two gas holders were remaining prior to remedial action (RA) activities and have since been removed.

Between May 2018 and December 2018, Brandy Brook (OU02) and Pontiac Bay (OU03) were remediated in accordance with the RODs dated March 2016 and March 2015 (NYSDEC 2016; NYSDEC 2015), respectively. Remediation of the Site commenced with OU03, which included the removal of contaminated sediments via dredging, solidification/stabilization of contaminated sediments in on-site staging areas, offsite disposal of contaminated sediment at an approved disposal facility, in-situ solidification (ISS) of soil adjacent to Pontiac Bay, and associated restoration activities. Remediation of OU02 was conducted by isolating and dewatering Brandy Brook, excavating contaminated sediment via a long reach excavator, backfilling with certified clean material and associated restoration activities.

1.2 SITE CHARACTERIZATION

Remediation Investigations (RI) were completed at the Site between August 2013 and October 2014 to evaluate the nature and extent of contamination present in the environment related to historical activities at the former MGP (MACTEC, 2015d). These investigations included an evaluation of visual impacts to soil, groundwater, surface water, and sediment, and a comparison to applicable NYS Standards, Criteria, and Guidance (SCGs) values. The RI was implemented predominately based on visual observations to identify MGP-impacted soils and sediment. RI field observations (visual, olfactory and photoionization detector field scan) were supported by a sub-set of analytical sampling results. As discussed in detail in the RI report, where MGP-like product (i.e., coal-tar) or staining was observed, analytical results exceeded SCGs; where no observable impacts of MGP-like wastes were noted, analytical concentrations were generally below applicable SCGs.

Based on site characterization, the primary contaminants of concern at the site are coal-tar and petroleum-related volatile organic compounds (VOCs), specifically benzene, toluene, ethylbenzene and xylenes (BTEX), and semi-volatile organic compounds (SVOCs), specifically polyaromatic hydrocarbons (PAHs) such as naphthalene, pyrene, fluorene and others.

The RI concluded that OU01 soil and groundwater were impacted with MGP waste. VOCs and SVOCs were detected in soils at concentrations exceeding the New York State Part 375 Soil Cleanup

Objectives (SCO) for residential, commercial and industrial use scenarios. Groundwater concentrations within and downgradient from OU01 exceed the NYS Part 703 GA Standards. The volume of MGP-impacted soil was estimated to be approximately 38,500 cubic yards (cy). Following the RI, a feasibility study (FS) was completed in 2016, and a ROD was issued in March 2017 and additional pre-design investigations (PDI) were conducted to bound the limits of soil impacts on-site.

1.3 REMEDIAL ACTION OBJECTIVES

The remedial action objectives (RAOs) presented in the ROD for OU01 are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

1.4 REMEDIAL ACTION PERMITS

Permits obtained for the project are included in **Appendix A** and include:

- Joint Nation-Wide United States Army Corps of Engineers (USACOE) Permit for work in the wetlands.
- NYSDEC 401 Water Quality Certification pursuant Section 401(a)(1) of the Clean Water Act.
- State Pollutant Discharge Elimination System (SPDES) permit equivalent for treatment and discharge of construction water.
- New York State Department of Transportation (NYSDOT) permit for work along the former railroad right-of-way (ROW).

1.5 PROJECT BIDDING INFORMATION AND AWARD

A mandatory pre-bid meeting was held by the NYSDEC and MACTEC at the Site on August 11, 2020, for potential bidders to review the existing site conditions. The pre-bid meeting was conducted to discuss the requirements for bidding the project, technical requirements of the Contract Documents, and administrative protocols to be followed during performance of the work.

Four addenda were issued to the Contract Documents:

1. Addendum No. 1 was issued on August 6, 2020.
2. Addendum No. 2 was issued on August 21, 2020.
3. Addendum No. 3 was issued on August 26, 2020.
4. Addendum No. 4 was issued September 1, 2020.

The Contract Documents, including Remedial Design (RD) drawings and contract addenda, are included in **Appendix B**.

Bids were opened on September 2, 2020. NYSDEC received bids from seven responsive bidders. A summary of the bids is in **Appendix B**. The apparent low bidder was D.A. Collins (DAC) of Wilton, New York with a total bid of $5,903,753.65.00. DAC's Bid Breakdown is included with the contractor submittals discussed in subsection 2.2 of this report.

After bid review, NYSDEC issued the following correspondence (included in **Appendix C**) to DAC:

- Notice of Apparent Low Bidder was issued on September 8, 2020.
- Notice of Intent to Award was issued on October 1, 2020.
- Notice to Proceed letter was issued on March 3, 2021.

2.0 SUMMARY OF PRE-REMEDIAL ACTIVITIES

2.1 GENERAL

This subsection presents a summary of activities that occurred prior to mobilization to the site to conduct the remedial activities.

2.1.2 PROJECT SCHEDULE SUMMARY

An initial preconstruction meeting was held on September 22, 2020, as a conference call via Webex. Preconstruction meetings were held monthly prior to the start of work. The preconstruction meeting minutes are provided in **Appendix D**. The objectives of the meetings were to explain the roles and responsibilities of all parties involved with the project, discuss administrative and technical specifications, and discuss submittals and the project schedule. Representatives from NYSDEC, MACTEC, and DAC attended the meeting. DAC was given Notice to Proceed on March 3, 2021 (see **Appendix C**).

Work progressed continuously from the date of mobilization (April 12, 2021) until the date of Substantial Completion, achieved by DAC on December 17, 2021. A winter shutdown occurred between December 17, 2021, through May 01, 2022 after which final restoration was completed. Inspections of the site were conducted approximately twice per month during winter shutdown and bi-weekly meetings between NYSDEC, MACTEC, and DAC were held to discuss site conditions, outstanding submittals and restoration schedule. Final Completion of site activities was achieved on June 3, 2022. Letters of substantial and final completion are included as **Appendix E**.

2.2 SITE PREPARATION AND PROJECT PLAN SUBMITTALS

In accordance with the contract documents, DAC submitted a Construction Work Plan (Submittal 004), Contractor Quality Control Plan (Submittal 012), Progress Schedule (Submittal 003), Sampling and Analysis Plan with associated Quality Assurance Project Plan (QAPP) (Submittal 056,), Health and Safety Plan (HASP) with associated stormwater pollution plan (SWPPP) (Submittal 001), and

Community Air Monitoring Plan (CAMP) (Submittal 010) for review in response to the notification of apparent low bid requirement in Section III, Article 5 of the Contract Documents. The submittals were reviewed by MACTEC to verify conformance with the Contract Documents. The final submittals were approved by MACTEC for conformance against the RD specifications and are included in **Appendix F**.

2.2.1 CONSTRUCTION WORK PLAN

The Construction Work Plan provided descriptions of methods, procedures, and equipment to be used during completion of the project. The plan described major work items including:

- Preconstruction Activities
- Temporary Facilities & Staging Areas
- Site Preparation & Controls
- Construction Dewatering & Bypass
- Water Treatment
- Excavation & Backfill
- In-Situ Solidification (ISS)
- Shoring Systems
- Restoration

Additional details of specific tasks were provided in subsequent submittals. MACTEC's review comments on DAC's approved Construction Work Plan are provided within its submittal response (Submittal 004 Rev 3) dated April 7, 2021, in **Appendix F**.

2.2.2 CONTRACTOR QUALITY ASSURANCE/QUALITY CONTROL PLAN

DAC designated Mr. Ryan Belden as its Construction Quality Control (CQC) Manager for the duration of the project. Mr. Belden met the general CQC qualifications and performed the duties described in Section 01450, Part 3 of the Contract Documents. MACTEC's review comments on DAC's CQC are provided within the submittal responses dated April 8, 2021, for the Contractor Quality Control/Quality Assurance Project Plan (Submittal 012 Rev 2, **Appendix F**).

2.2.3 PROGRESS SCHEDULE

DAC submitted a Progress Schedule and two-week look-ahead schedules throughout the duration of the project, with estimated durations for significant project items. The schedule followed the requirements of Contract Specification Section 00001. Schedules were generally provided prior to bi-weekly construction meetings and are included with the meeting minutes in **Appendix D**.

2.3 HEALTH AND SAFETY

This subsection describes project activities related to health and safety.

2.3.1 GENERAL HEALTH AND SAFETY

DAC's HASP (Submittal 001 Rev 1 **Appendix F**) was reviewed by MACTEC to confirm that the plan followed the standard of practice within the environmental remediation field of work; the HASP contained specific requirements for personnel working on the Site. DAC was responsible and liable for the health and safety of onsite personnel. MACTEC's review comments are provided within its submittal response dated February 26, 2021.

Three safety zones were designated within the Site: the Exclusion Zone (remedial operations area), the Contamination Reduction Zone (buffer zone located between "clean" areas and the Exclusion Zone), and the Support Zone ("clean" area containing the Site office trailer and equipment storage). All personnel entering the Contamination Reduction Zone and Exclusion Zone were required to provide documentation of successful completion of the 40-hour Hazardous Waste Operations and Emergency Response course.

The Health and Safety Officer (HSO) was designated by DAC to be Mr. Dean Blodgett. Mr. Blodgett conducted daily safety meetings prior to initiating activities. These meetings addressed job specific hazards that would be encountered during tasks conducted that day.

2.3.2 DECONTAMINATION OF EQUIPMENT

DAC constructed the vehicle decontamination pad described in Contract Supplemental Specification Section 025100 – Decontamination Procedures. All equipment that was in contact with contaminated materials was decontaminated following procedures described in Section 025100; decontamination water was collected via sump and transferred to the on-site Water Treatment Plant for treatment and either discharged to Brandy Brook or transport to Schenectady Water Treatment Plant.

2.3.3 Onsite Air Monitoring

DAC prepared a CAMP plan (Submittal 010 Rev 1, **Appendix F**). Particulates and VOCs were continuously monitored at four locations at the perimeter of the site during working hours. Particulates were monitored via total dust aerosol meter as well as visual inspection; VOCs were monitored using a Photoionization Detector (PID). Realtime data were available through telemetry and access to the data was provided to MACTEC, NYSDEC and New York State Department of Health (NYSDOH). Elaboration of sample results is provided in Subsection 5.1 of this report. DAC also conducted odor controls on-site as discussed further in Section 5 and monitored for VOCs for personnel protection inside their heavy equipment.

2.4 PROJECT SUBMITTALS

The Contract Documents provided specifications regarding aspects of materials, equipment, and methods. As such, DAC provided supplemental submittals for specific tasks and aspects of work. Each submittal was reviewed and commented on by MACTEC prior to acceptance. The submittal tracking log and contractor submittals are provided as **Appendix F**.

3.0 SUMMARY OF THE REMEDIAL ACTION ACTIVITIES

RA activities were completed during the time period (April 12, 2021, to June 3, 2022) outlined within the final Progress Schedule submitted by DAC (**Appendix D**). Activities were overseen and inspected by MACTEC's Field Supervisor, Paul Gazzo or Kaitlyn Chick, and daily inspection reports (included in **Appendix G**) were prepared at the end of each day and provided to the NYSDEC via email. Deviations from the Contract Documents or the approved Work Plan are outlined within the summary of activities below.

Progress meetings were attended by DAC, NYSDEC, MACTEC and NYSDOH approximately every two weeks throughout the duration of the project. Progress meeting minutes are included in **Appendix D**.

A summary of waste streams generated for offsite disposal during the remedial action – volume, identification as hazardous or non-hazardous, offsite disposal facility, and dates of disposal – is discussed in Subsection 4.8. Waste manifests and bills of lading generated during the remedial action and discussed in Subsection 4.8 can be found in **Appendix H** and **Appendix I**.

Additional details regarding the information in this section can be found in the daily inspection reports in **Appendix G**.

3.1 PRE-CONSTRUCTION SOLIDIFICATION BENCH TEST

Pre-construction activities consisted of typical tasks including pre-construction submittals, material and subcontractor procurement, and construction activity planning. Under the direction of the RA contractor, DAC, Geo-Solutions Inc (GSI) conducted a mix study similar to the Bench Scale Mix Study previously performed by the Engineer to develop mix design(s) to achieve the required permeability (geometric mean of not greater than 1×10^{-6} cm/sec) and unconfined compressive strength (UCS) (20 psi minimum at each location). At the completion of the RA design mix program, DAC submitted a Work Plan for approval, including their overall project implementation plan, mix design, ISS mixing equipment and approach for a pilot test based on the results of their bench tests.

3.2 SITE PREPARATION AND MOBILIZATION

DAC conducted mobilization activities from April 12, 2021 to April 30, 2021. During this period, site preparation and temporary facilities were constructed. DAC retained subcontractor Veteran Fencing to install temporary construction fence along the perimeter of the site and attached privacy screen where required by the Contract Documents. Gates at both the entrance and exit of the site were secured with locks. DAC retained Zehrs to install silt fencing along the perimeter of the site. Silt fencing was not initially installed along Brandy Brook due to high Spring water levels and that the area would remain undisturbed for several months. DAC retained Aztech Environmental Services (Aztech) to decommission wells that would be in the way of RA activities. DAC retained Geomatics Land Surveying to perform site surveys. A preconstruction survey and photographic documentation of pre-construction conditions is included in **Appendix F**. Materials mobilized to the site included tools/equipment, office trailers, portable toilets, fencing, and materials required to construct an access road, truck scale, batch plant, water treatment plant, decontamination pad, and material staging pad. A NYSDEC-approved project sign was fastened to the fence near the site entrance and remained in place during the RA.

DAC documented the pre-construction and post-construction condition of local roads along the truck haul route via video documentation. A comparison of the pre-construction and the post-construction videos provided by DAC and included in **Appendix F** indicate no apparent damage caused by trucking activities during the RA.

DAC performed various demolition activities during site preparation including demolition of the one-story building, concrete tank saddles, and site fencing. Demolition debris was transported off site for disposal as described further in subsequent sections. Asbestos abatement within the one-story building was performed by Classic Environmental. Existing site fencing was determined to be in poor condition and was removed from the site. The fencing was replaced like-in-kind at the end of construction. Temporary Site electricity was installed by Stilsing Electric. DAC worked with the Saranac Lake Water District to tap a nearby waterline for use during RA activities. The site was grubbed and graded as needed for placement of temporary facilities.

3.3 CONSTRUCTION WATER MANAGEMENT

This subsection describes project activities related to construction water management during the RA.

3.3.1 WATER TREATMENT PLANT

Following mobilization, DAC assembled the construction water treatment plant (WTP). The WTP was used to process and treat groundwater, storm water, and surface water entering excavations or having the potential to have been in contact with contaminated material and decontamination water. The WTP is described in the Construction Water Management Plan (Submittal 011, **Appendix F**) and was comprised of:

- One (1) Influent collection weir tank (18,100-gallon capacity).
- One (1) Influent settling frac tank (21,000-gallon capacity).
- Two (2) Multi-Bag filter housings.
- One (1) 25-micron bag filter housing followed by one (1) 10-micron bag filter housing for supplemental particulate filtration.
- One (1) Yardney 3-Pod Sand Filter
- Two (2) low pressure multi-media vessels each equipped with 2,000 pounds (lbs.) of Hydrosilorganoclay.
- Four (4) low pressure multi-media vessels each equipped with 2,000 lbs. of Granular Activated Carbon (GAC).
- One (1) 1-micron multi bag filter housing for particulate filtration.
- One (1) 21,000-gallon capacity effluent storage tank
- Sampling port(s) for collecting representative samples from the influent, mid-treatment and effluent for laboratory analysis.
- Pumps and controls for all systems.

Water discharge was subject to the requirements of the SPDES permit (**Appendix A**), as the treatment plant discharged to the adjacent surface water body Brandy Brook. Initial effluent samples collected on May 12, 2021, showed exceedance of Total Dissolved Solids (TDS) limit of 200 milligrams per liter (mg/l). The effluent was retested for TDS on May 25, 2021 but was still above the discharge limit. MACTEC and NYSDEC worked with the NYSDEC department of water and

received a corrected TDS effluent limit of 500 mg/l. DAC subsequently treated and discharged water on July 12, 16 and 20, 2022, for a total of 22,794 gallons. On July 21, 2021, cloudiness was noted in the effluent upon start-up of discharging for the day and discharge was immediately stopped. Both the original and corrected SPDES equivalent permits are included in **Appendix A**.

DAC troubleshooted the WTP, recirculated water through bag filters and GAC units and on August 2, 2021, an effluent sample was collected, and several parameters exceeded the discharge criteria. The contractor continued to troubleshoot the treatment system, including replacement of activated carbon and sand filters, and added pH adjustment and flocculants while recirculating water within their treatment system. While troubleshooting the WTP, use of Redux 823 was approved by the Division of Water as part of the SPDES permit on October 19, 2021 (**Appendix A**). However, DAC was unable to treat water to the point where it appeared clear, and the pH of the water was elevated above the discharge criteria. DAC collected additional samples of the treated water to prepare a profile and got approval to send the water offsite to the Schenectady Wastewater Treatment Plant. A total of 322,000 gallons of water was transported to the Schenectady Wastewater Treatment Plan. Construction water analytical results are shown on **Table 3-1**, associated laboratory data in **Appendix J**, and manifests for the transported water can be found in **Appendix H**.

On October 3, 2021, there was a water line break in the water line used in the ISS grout batch plant. As a result, clean water from the line flowed to open excavation areas on-site. This water was collected and transported to the Schenectady Wastewater Treatment Plant and is included in the 322,000 gallons of water identified above.

The WTP was decontaminated and removed from site in December 2021 prior to the winter shutdown, with the exception of the GAC units that were removed in May 2022. The SPDES discharge permit was closed out on August 10, 2023, via email notification (Appendix A).

3.3.2 EROSION CONTROLS

DAC installed and maintained erosion and sediment controls, as shown on Contract Drawing C-103, to prevent the migration of sediment offsite or into Brandy Brook. Silt fence was installed by subcontractor, Zehrs, along the perimeter of the site, and an augmented silt fence with a filter berm was installed along Brandy Brook. Construction entrances were stabilized to prevent erosion or

offsite tracking of material. As described in Section 3.3.3, a coffer dam was installed in the brook to allow for water to bypass the work area and allow for excavation in dry conditions. All stockpiles were covered when not in use to prevent contact with wind or rain. During the RA, DAC and MACTEC performed erosion control inspections at least once per week and after rain events. When necessary, DAC performed maintenance of the erosion controls prior to resuming excavation work. Erosion controls were maintained over the winter shutdown and through restoration activities.

3.3.3 BRANDY BROOK BYPASS SYSTEM

DAC constructed a bypass system as depicted in Submittal 067 in **Appendix F**. The bypass was installed on November 8, 2021, and removal was completed on November 29, 2021. The purpose of the bypass system was to minimize water entering the excavation area adjacent to Brandy Brook. For the bypass, a sandbag dam was installed in Brandy Brook on the northeast corner of the site. Water was pumped through 12-inch high-density polyethylene (HDPE) pipe on the north side of the brook and discharged through a riprap outlet just beyond the work area to minimize turbidity. Once the bypass was installed and functioning, installation of sheet piles for excavation support began adjacent to the dried brook bed to facilitate the planned excavation. After the excavation was completed and backfilled, the sheet piles were removed and flow within Brandy Brook was restored.

3.4 WELL ABANDONMENT

DAC subcontracted Aztech to perform the abandonment of 4 monitoring wells identified in Supplemental Specification Section 33 11 53. Three of the wells, MW-108, TW-702, and MW-109 were successfully abandoned. Well GW-2 could not be located and was likely destroyed previously during soil management for OU02. Aztech abandoned the wells by removing the well screen and riser and grouting the void with Type II cement. Aztech abandoned the wells on April 13, 2021. The well abandonment logs are included in Submittal 075 in **Appendix F**.

3.5 SOIL EXCAVATION

This subsection describes soil excavation and associated remedial activities conducted in onsite and offsite locations. Soil excavation was conducted to the following location-specific depths:

Location	**Approximate Soil Excavation Depth (feet bgs)**
Above ISS	4 feet on average, pending soil impacts
Adjacent to Railroad	19
Adjacent to Brandy Brook	10

A summary of each excavated waste type (described further below), associated weight, and offsite waste disposal facility at which it was disposed is presented in the table below. Each material is summarized in more detail in the following sections.

Waste Description and Type	**Offsite Disposal Quantities**	**Waste Disposal Facility**
Site Debris	2,990 tons	Clinton County Landfill
Impacted Soil	6,350 tons	Franklin County Landfill
Swell (soil mixed with cement)	1,885 tons	Franklin County Landfill
Construction Water	322,000 gallons	Schenectady Wastewater Treatment Plant

3.5.1 EXCAVATION OF SOIL ABOVE ISS ZONE

DAC excavated soil and debris above the ISS zone to within one foot of the groundwater table or top of contamination, whichever was higher. This resulted in an excavation which was, on average, approximately four feet below surrounding grade. Separation from the groundwater table was provided to minimize subgrade disturbance during ISS operations. The intention of this excavation was to provide space for swelling of the solidified soil during mixing. Based on the mix design, swell was estimated to be approximately 25%. Excavation dewatering was performed as necessary to maintain a stable excavation. Approximately 3,300 cy of soil excavated above the ISS zone was stockpiled, sampled, and re-used as cover material above the ISS based on it being visually impact free and having slight exceedances of the SCO standards.

Soil that was visually impacted and debris excavated from above the ISS were transported off-site for disposal. Debris including construction and demolition (C&D) debris, concrete foundations,

woody materials, and piping and metal fragments that were encountered in this area were removed to prevent obstructing the ISS auger.

3.5.2 EXCAVATION OF SOIL ADJACENT TO RAILROAD

DAC installed 40-foot steel (PZC 26) sheet piles along the railroad property in a 3-sided box formation with the fourth wall consisting of soil solidified during the ISS process. Installation of the shoring system was completed after the ISS soils achieved design strengths. Once the sheet piles were installed, excavation proceeded to 10 feet below ground surface (bgs) where a 24-inch steel H-beam whaler was installed. The whaler was installed the length of the excavation (approximately 60 feet). 12-inch steel H-beam struts were then installed to provide lateral support from the whaler across the excavation to the ISS monolith at 12-foot spacing. A formal shoring design is included in Submittal 021 of **Appendix F**. Once the struts and whalers were installed, excavation to the designed depths proceeded.

Due to concerns with dewatering this excavation and keeping the excavation dry while awaiting sampling results, two test pits were excavated to the bottom design elevation, approximately 19 feet bgs, to collect confirmation soil samples on October 21, 2021. On October 25, 2021, after receiving analytical data confirming that the samples collected met the SCOs, summarized in **Table 3-2**, the excavation continued and was completed on October 26, 2021. Excavation dewatering was performed as necessary to maintain a stable excavation. Approximately 800 cy were excavated in this area.

These soils were transported and disposed of at Franklin County Landfill. The bottom six feet of the excavation was backfilled with #2 stone. Imported subgrade fill meeting the SCOs for Unrestricted use was placed above the stone and compacted.

3.5.3 EXCAVATION OF SOIL ADJACENT TO BRANDY BROOK

Excavation adjacent to the Brook was performed to depths ranging from 5 to 10 feet. Once the temporary bypass described in Section 3.3.3 was installed, and the adjacent ISS materials had sufficiently cured, DAC installed the shoring system that consisted of cantilevered 30-foot steel (PZC

26) sheet piles along Brandy Brook. A formal shoring design is presented in Submittal 021 of **Appendix F**. Once installed, excavation proceeded to design depths and contaminated soil was transported offsite for disposal. During the removal of the shoring systems, DAC decontaminated visually impacted shoring materials by removing all visible solids on each component of the system prior to loading them out.

The location of the excavation deviated from the design, extending to the south in lieu of approximately 30 planned ISS column locations, due to the shallow design depths of the columns, resulting in the area to be more efficiently remediated using excavation. This change was in response to Request for Information (RFI) No. 2 and described further in Section 6.2.

Excavation bottom samples were collected upon completion of excavation to design depths. The analytical results from the samples indicated that SCOs were met. Those results are presented in **Table 3-2**.

3.5.4 WASTE DISPOSAL

Waste was disposed of per the Waste Handling and Management Plan (Submittal 074, **Appendix F**) and Transportation and Disposal Plan (Submittal 064, **Appendix F**). Solid waste, soil, and debris disposal was approved for two commercial landfills, Franklin County Landfill and Clinton County Landfill. Clinton County Landfill in Morrisville, New York was approved for the disposal of C&D debris. Franklin County Landfill in Constable, New York was approved for disposal of impacted material and swell, transported under two profiles, #001 and #002, respectively. Solid waste was transported by Cedar Hill Trucking. A summary of total disposal by weight is presented in Section 3.5. All profiles, manifests, and weight slips for the waste can be found in **Appendix I**.

DAC obtained approval to transport construction water offsite to the Schenectady Wastewater Treatment Plant in Schenectady, New York after having difficulty treating water to meet discharge criteria at their on-site WTP. Treated construction water analytical results are shown on **Table 3-1**, laboratory reports are in **Appendix J,** and manifests for the transported water can be found in **Appendix H**. Water was transported by Blue Diamond Septic.

3.5.5 IN-SITU SOLIDIFICATION

Through previous investigations, MGP impacted material was identified throughout a majority of the Site as shown on drawing C-101 of the Contract Drawings (**Appendix B**). ISS of the impacted material was identified as the selected remediation method according to the OU01 ROD (NYSDEC, 2017). The horizontal and vertical extents of the designed ISS area are presented on C-106 of the Contract Drawings. The as-constructed horizontal extents of the ISS area are presented on the As-Built drawings included as **Appendix N** (sealed by surveyor) and **in Appendix F** (unsealed version). DAC subcontracted GSI to perform ISS mixing. The ISS methods are detailed in the ISS Work Plan, Submittal 076 of **Appendix F**. The ISS method consisted of mechanical mixing and grouting of the in-situ soil using a crane fitted with a 10-foot diameter auger and ports for the injections of the Portland cement, bentonite and water grout. This method produces solidified soil columns. The columns are overlapped to form a solidified mass.

Prior to full-scale implementation of the ISS program, an ISS pilot test using the same equipment planned for use during the full-scale operation was conducted from April 29, 2021 through May 5, 2021. The pilot tests consisted of mixing 11 columns, focusing primarily in areas of highest concentrations of contaminants. Columns were mixed with a range of 10-19% by weight of Portland cement and with a range of 0.25% to 1.12% by weight of bentonite. Cores were collected from each column and were tested for UCS (ASTM D 2166) and permeability (ASTM D 5084) at 28-days post coring. Based on the results of the pilot tests, full-scale ISS activities using 12% cement and 0.75% bentonite began on June 14, 2021. Laboratory results for pilot study are included in **Appendix K** and **Table 3-3.**

The revised mix design was negotiated under a change order, which is presented in subsequent sections of this report and is included in **Appendix L**.

During full-scale ISS operations, a minimum required UCS of 30 pounds per square inch (psi) and permeability geometric mean of all of the columns of not greater than 1×10^{-6} cm/sec was required. GSI collected wet samples every 500 cy and performed coring of cured columns every 5,000 square feet of treatment area under the direction of the Engineer's field supervisor. Testing showed that the project's performance criteria were met with an average UCS of 171 psi and a geometric mean for permeability of 9.98×10^{-7} cm/sec as summarized in **Table 3-5**. Results of laboratory testing are

presented in **Appendix K**. The frequency, method and test specifics for quality assurance/quality control are included in Submittal 076 of **Appendix F**.

A total of 1,121 ISS columns were completed, solidifying 39,719 cy of material. Columns generally started at approximately 4-feet bgs and extended between 1 and 25 feet deep depending on the area. GSI provided daily reports summarizing completed columns for each day (**Appendix G**). A summary of each column is included in **Table 3-3**, and the location of each column is included in a drawing in **Appendix K**.

During the course of conducting ISS, 30 columns were unable to reach the final design depths due to auger refusal on obstructions. On average, the columns that did not meet design depth encountered refusal 3 feet above design depth. Upon hitting refusal, a long reach excavator made attempts to remove the obstruction and in a few instances was successful. The columns that hit refusal are depicted in yellow in the drawing in **Appendix K** and are identified in **Table 3-3**. In general, the locations that hit refusal are near the perimeter of the ISS area, where MGP impacts were not as predominant as other locations, and the ISS swell generated while mixing in these areas was not significantly odorous or visually impacted compared to areas towards the center of the ISS area. A total 196 cy of soil, 0.5% of the total ISS design volume, was not solidified compared to the design due to auger refusal on obstructions.

Along the outside perimeter of the ISS Area, documentation soil samples were collected at the top of the ISS columns, approximately 4 feet bgs at an approximate spacing of one every 30 linear feet. A summary of the results of documentation samples are included in **Table 3-4** and are discussed in detail in subsequent sections.

3.5.6 CONSTRUCTION WATER MANAGEMENT

As described in Section 3.3.1, DAC constructed a WTP to treat construction water and discharge it to Brandy Brook. DAC had trouble meeting discharge requirements for TDS established by the SPDES equivalent permit. Only 22,000 gallons of water had been successfully treated and approved for discharge to Brandy Brook. Because of this, DAC opted to ship pre-treated water off-site to Schenectady Wastewater Treatment plant. DAC utilized several frac tanks (21,000 gallons each)

and a weir tank (18,000 gallons) to store pre-treated water until it could be transported offsite by truck.

Excavation above the ISS area was limited to one foot above the groundwater table to limit contact with groundwater. Groundwater encountered in the deeper excavations (adjacent to Brandy Brook and the Railroad) was pumped via submersible pumps to the onsite tanks for storage prior to transport. Perched water and rainwater within open excavations was similarly pumped to the storage tanks as capacity allowed.

Soil and debris piles were double lined with plastic sheeting (below and above) to prevent rainwater from coming in contact with contaminated materials and additional construction water from being generated. Water from decontamination activities was also brought to the storage tanks for offsite transport.

A summary table including water testing analytical data can be found in **Table 3-1**.

3.5.7 CONSTRUCTION OF THE COVER

Since residual contamination remains at the site after completion of the RA, Institutional and Engineering controls (ECs) are required to protect human health and the environment. ECs in the form of a cover system was constructed over the ISS area. Backfill, compaction and grading of approximately 3,300 cy of suitable on-site materials occurred in the area above the ISS zone and in areas outside the ISS but still within the property. Above the ISS zone, reusable fill was used to form part of the lower 3.5 feet of a four-foot-thick soil cover required in the ROD. Once all the on-site reusable fill was placed, imported clean soil was used where needed to complete the cover system.

Backfill, compaction and grading of approximately 12,000 cy of imported materials, meeting SCOs for unrestricted use, occurred on off-site property excavations (rail trail property), excavation areas adjacent to Brandy Brook, and to meet the final grades of the soil cover. An orange demarcation fabric was placed above subgrade fill and below 12-inches of cover materials.

A 6-inch-thick layer of topsoil was placed and graded over the soil cover perimeter slopes and disturbed areas outside the soil cover adjacent to residential properties. At least 12-inches of topsoil was placed as the final surface in the wetland areas adjacent to Brandy Brook.

The completed cover provides a sloped site perimeter and a central area graded at slopes between 2% and 6% to promote run-off while providing an area that can be used for equipment and materials storage by the property owner. Fill was placed in 12-inch lifts and compacted with a vibratory roller. Compaction testing was performed by the Contractor as required in Specification 31 00 00 (**Appendix B**), compaction results are summarized in **Table 3-5** and testing reports included in **Appendix M**. Installation of cover materials on the site began in the Fall of 2021 and was completed in June of 2022. The depths and extents of the cap are presented in the As-Built Drawings included in **Appendix N**.

3.6 SITE RESTORATION

This subsection describes project activities related to site restoration including preparation for winter shutdown, placement of topsoil, seeding, tree planting and placement of erosion control fabric.

3.6.1 TEMPORARY RESTORATION AND WINTERIZATION

Substantial completion was achieved on December 17, 2021, at which time the site was winterized and secured until spring when final punch list activities (see substantial completion letter in Appendix E) took place. DAC followed their Winterization Plan (Submittal 077, **Appendix F**) to maintain and inspect the site until work resumed in May 2022. DAC's winterization procedures included relocating sections of the silt fence to better protect Brandy Brook, repositioning the temporary fence off the rail trail to better secure the site, removal of all equipment from the site, installation of three rows of erosion control blankets along Brandy Brook, and application of a winter seeding mix over the wetlands area where topsoil had already been placed. The site was inspected by DAC every two weeks during the shutdown. DAC were prepared to inspect after rain events of 0.5 inches or greater, although it was not necessary. DAC's inspection reports can be found in **Appendix G**.

3.6.2 FINAL RESTORATION

DAC remobilized to the site on May 02, 2022, to resume restoration activities following the winter shutdown. A stockpile of approximately 900 cy of crushed stone had been onsite through the winter and an addition 500 cy of subgrade fill, and 150 cy of crushed stone were imported in May 2022. Virgin subgrade fill, provided by Upstone Materials (Submittal 032, Appendix F) was used to complete the four-foot cap in the southwest corner of the ISS area and to build the permanent access road. Additional subgrade fill was also used to fill out the side slopes of the cap beneath topsoil placement.

The temporary site fence was removed, and a new site fence was installed on May 26, 2022. The site was graded in accordance with the revised final grading plan (Drawing C-108 in **Appendix N**) including a swale that surrounded the perimeter of the cap and drained on both the east and west toward Brandy Brook. A 12-inch HDPE culvert under the access road allows the swale to drain to Brandy Brook. Once grading was completed, 6 inches of topsoil and hydroseed were applied across the disturbed areas of the site meant to be vegetated, with 12 inches of topsoil in excavated wetland areas, in accordance with the restoration plan included in the USACE permit (Appendix A). All areas with a grade steeper than 10:1 H:V were covered with erosion control matting. The extent of the final soil capped area and the location of the permanent fence are shown on **Figure 3-1** and in the final as-built drawings in **Appendix N**.

Approximately 95 trees and shrubs were planted in the area adjacent to Brandy Brook in accordance with the restoration plan. The restoration plan originally included white birch and Alders which were unavailable at the time and replaced by whitespire birch and gray dogwood. This change was approved on May 17, 2022, and tree planting was completed on May 31, 2022. Other tree species planted include red maple and white pine which were planted in an irregular pattern per the MACTEC restoration expert.

Four monitoring wells and two piezometers were installed by Aztech on May 5, 2022. The four wells were installed to replace wells removed prior to the RA and the two piezometers were installed to supplement long term monitoring of groundwater elevations. The locations of these wells are shown on **Figure 3-1** and installation logs are included in **Appendix O**.

3.7 SURVEYING

Surveying activities were subcontracted by DAC to Geomatics Land Surveying (Geomatics). Features associated with remedial construction activities were periodically surveyed during the RA to establish precise locations as well as to calculate excavation and backfill volumes during remedial activities to support applications for payment. Final as-built site drawings provided by DAC are included in **Appendix N**. Geomatics also provided a metes and bounds (property boundary) survey to support filing a future environmental easement for the property, also included in **Appendix N**.

3.8 CONTRACT COMPLETION

MACTEC conducted a substantial completion inspection on December 17, 2021. Substantial Completion was achieved by DAC on December 17, 2021. MACTEC conducted the final completion inspection on June 02, 2022. Field related final completion activities were achieved on June 03, 2022. The Substantial Completion Certification and the Final Completion Letter are included in **Appendix E**. Also included in **Appendix P** are DAC's Contractor Applications for Payment and certified payrolls generated during the RA.

3.9 DEMOBILIZATION

Following completion of RA activities, DAC removed its tools, supplies, and temporary office equipment (trailer, paperwork, portable toilet) from the site. The majority of equipment was removed from Site in December at the time of substantial completion. The remaining equipment was demobilized by June 03, 2022, after restoration was completed. DAC terminated full time involvement at the Site on June 03, 2022 and continued to monitor the Site relative to its requirements for warranty of the work as referenced in the Final Completion Letter.

4.0 CONTRACTOR WARRANTY PERIOD AND POST REMEDIAL ACTION INSPECTIONS AND FIELD ACTIVITIES

Onsite inspections and other field activities scheduled to occur subsequent to completion of the remedial action are described in this section.

4.1 SITE INSPECTIONS

4.1.1 RA CONTRACTOR INSPECTIONS

DAC conducted periodic inspections throughout its one-year warranty period from June 03, 2022 through June 03, 2023. During this period, survivability of plantings was to be maintained in accordance with the Contract. On April 11, 2023 MACTEC, along with NYSDEC conducted a site visit and identified 11 white pine trees in the restored upland area had died. DAC was notified and replaced the trees with red maple trees. A final walkthrough at the completion of the warrantee period was conducted between MACTEC and DAC on June 6, 2023 and no additional trees were identified that required replacement.

4.1.2 NYSDEC INSPECTIONS

In accordance with Nationwide Permit No. 38 (**Appendix A**), annual monitoring will be conducted by MACTEC during the growing season, consisting of a site visit in the summer/early fall. The interim Site Management Plan (iSMP) from OU02 and OU03 has been updated to a site-wide Site Management Plan (SMP) which includes monitoring of OU01, OU02 and OU03 (MACTEC 2023). Inspections of OU01 will be performed quarterly for the first year following the remedial action, biannually the second year, and annually in all subsequent years in accordance with the SMP. Site-wide inspections may also be performed after severe weather conditions that may affect ECs. Inspections in the event of an emergency such as a natural disaster will be conducted within 5 days of the event to verify the effectiveness of ECs.

5.0 SAMPLING AND ANALYSIS

5.1 AIR MONITORING

As described in Subsection 2.3.3, particulates and VOCs were continuously monitored during RA working hours. Particulates were monitored via total dust aerosol meter as well as visual inspection. VOCs were monitored utilizing a PID. Each piece of monitoring equipment was programmed to alarm during action level exceedances to ensure a safe working environment. In addition, daily electronic logs were reviewed and summarized by the DAC's Health and Safety Officer and kept on site for the duration of the project.

5.1.1 DUST MONITORING RESULTS

As described in DAC's CAMP (Contractor Submittal 010, **Appendix F**), action levels were employed for particulates during remedial construction activities. The action levels not to be exceeded for more than 15 consecutive minutes were particulate matter less than 10 micrometers in diameter maintained below 150 micrograms per cubic meter ($\mu g/m^3$). The action level described above was exceeded periodically during remedial construction activities; however, proper actions were taken to control each respective situation and exceedances did not exist for a prolonged interval. Suppression techniques were applied accordingly, and work was stopped if suppression did not remedy the situation immediately. Daily dust monitoring Summary logs and associated individual readings from the monitoring stations are included in **Appendix Q**. No complaints related to dust were voiced by the surrounding community during the RA.

Exceedance of the stop work level occurred on three separate occasions; however, these were each attributed to construction equipment exhaust and not dust generated during construction activities. On July 21, 2021 dust readings were abnormally high even during nonworking hours and were attributed to climatic conditions resulting from ongoing wildfires on the west coast of the United States. These readings persisted for a few days during which time air quality advisories were announced for several surrounding areas. The results were discussed in a bi-weekly construction meeting with DAC, NYSDEC, MACTEC and NYSDOH, and were found to be attributable to the wildfires and were not site related.

5.1.2 VOC MONITORING RESULTS

As described in the CAMP, an action level of five parts per million within the breathing zone for more than fifteen consecutive minutes was established as the action level to trigger cessation of work activities. This action level was not exceeded within the breathing zone or perimeter monitoring locations during the RA; as such, work was never stopped due to elevated VOC readings. VOC monitoring logs are summarized in **Appendix Q**.

5.1.3 ODOR CONTROL

Odor controls were utilized as needed throughout the project as described in the CAMP and Submittal No. 037 Nuisance Control Plan (**Appendix F**). Odors were managed through the following engineering and institutional controls:

- Sequencing and managing excavation size and location to adjust to site conditions.
- Keeping stockpiled materials covered with tarps or liners when stockpiles were not actively being worked.
- Placing a 6-inch cap of re-use material over top of contaminate soils to assist in covering up nuisance odors.
- Applying Biosolve and/or Rusmar AC-645 foam as necessary during all materials handling where vapors/odors may occur.
- Operation of odor neutralizing misting systems at the perimeter of the site.

During ISS activities, occasional complaints and concerns were received from the community regarding site odors both during and outside of working hours and are documented in **Appendix G**. MACTEC, on behalf of NYSDEC and NYSDOH, immediately fielded complaints and DAC took the appropriate measures to suppress the odor. Two field orders (FO) were issued on June 29, 2021 and July 15, 2021 regarding odors (**Appendix R**). Monthly community newsletters were distributed beginning in July to nearby properties to inform the community of current remedial and monitoring activities at the site. Offsite odors posed no threat to the long-term health of the community.

5.2 COMPACTION TESTING

CQCA Laboratories was subcontracted by DAC to perform compaction testing in accordance with Contract Specification Section 31 00 00 Earthwork. Prior to testing, the maximum dry density and optimum moisture of each material proposed to be used for backfilling was obtained through Proctor Testing via American Society for Testing and Materials (ASTM) D 1557. Maximum dry density of the re-usable soil and imported subgrade fill material ranged from 115.8 to 118.2 pounds per cubic foot (pcf) with an optimal moisture ranging from 6.8 to 9.5%. Areas above the ISS were backfilled in 6-inch lifts, compacted and tested at a frequency of 1,250 square feet with no fewer than two tests per active lift. Compaction tests were conducted in accordance with ASTM D 6938 between 9/20/2021 and 12/10/2021 and consistently met compaction requirements. Compaction test results are included in **Appendix M** and are summarized in **Table 3-5**.

5.3 SOIL CONFIRMATION AND DOCUMENTATION SAMPLING AND ANALYSIS

Confirmation soil samples were collected from the bottoms of the excavation located adjacent to the rail trail and adjacent to Brandy Brook as shown on **Figure 5-1**. Confirmation samples were submitted to Hampton-Clarke (HC) laboratory, located in Fairfield, New Jersey, for analysis of Metals, VOCs, SVOCs and Pesticides. None of the confirmation soil samples exceeded the unrestricted use SCOs. A summary of confirmation soil sampling results can be found in **Table 3-2** and the laboratory reports are contained in the Data Usability Summary Report (DUSR) included in **Appendix S**. Validation and preparation of the DUSR was conducted by Environmental Standards, Inc., of Valley Forge, Pennsylvania.

Documentation sampling was conducted around the perimeter of the ISS area as shown on **Figure 5-1**. Documentation samples were generally collected at a depth of 4 feet bgs, typical of the top of the ISS columns, and every 30 feet along the perimeter of the ISS area. Soil samples were submitted to HC for analysis of Metals, VOCs, Semi-Volatile Organic Compounds (SVOCs) and pesticides. Due primarily to shipping issues, in a couple instances samples were not received by the lab on-time to run analysis for VOCs within the specified hold time, and new samples were collected from the same location for VOC analysis.

Three (3) documentation samples, Confirm1R, Confirm1S and Confirm1T (along with its duplicate), exceeded the commercial SCO for cadmium. Four (4) documentation samples, Confirm1I, Confirm1O, Confirm1P and Confirm1T (along with its duplicate), exceeded the commercial SCO for Benzo(a)Pyrene. The highest cadmium concentration was 290 milligrams per kilogram (mg/kg) compared to the SCO of 9.3 mg/kg, and the highest Benzo(a)Pyrene concentration was 2.8 mg/kg compared to the SCO of 1 mg/kg. Each of the locations with exceedances of either cadmium or Benzo(a)Pyrene are located on the west side of the property adjacent to the Rail Trail. A summary of documentation soil sampling results can be found in **Table 3-4** and the associated laboratory reports are contained in the DUSR in **Appendix S**.

5.4 REUSE SOIL SAMPLING

Soil excavated onsite was stockpiled and sampled in accordance with Specification 31 00 00 Earthwork. Soils were first visually inspected for MGP impacts, segregated, and stockpiled accordingly. Unsuitable soils that were visually impacted or contained C&D debris such as bricks and concrete were disposed of offsite. Composite soil samples were collected on two occasions. The first was on 6/29/2021 and the second on 9/21/2021. Analytical results for the reuse soils were submitted under Submittal 051 (**Appendix F**) and are summarized in **Table 5-1**. Both soil samples showed slight exceedances of commercial use SCOs for select SVOCs but were deemed suitable for re-use so long as the soil was used on portions of the cover that would be covered with at least 12 additional inches of imported clean backfill material.

5.5 DECONTAMINATION WATER

Water generated during equipment decontamination throughout remedial construction activities was collected and pumped to the WTP for treatment. This water was combined with water from excavation dewatering and disposed of offsite as described in Section 3.5.6. Treated water was either discharged to surface water or transported off-site for disposal pending the results of analytical testing as previously described and summarized in **Table 3-1**.

5.6 WET ISS SAMPLES AND CORING

As described in Submittal 076 ISS Work Plan (**Appendix F**), ISS columns were sampled within one hour of completion of mixing at a minimum of one sample for every 500 cy or at least once per day. Sample columns and depths were randomly chosen by MACTEC's field representative and collected by DAC's subcontractor GSI. Samples were collected using a hydraulic discrete sampling tool lowered to the designated depth by an excavator. At the time of collection, each sample was examined by GSI's Project Engineer and presented to the MACTEC's field supervisor to be examined for homogeneity.

Samples were cured on-site in accordance with ASTM D-4832. Once cured sufficiently, they were sent for testing at GSI's lab. Testing for UCS was conducted after 28 days of cure in accordance with ASTM D-2166 and at 28 days of cure for permeability in accordance with ASTM D-5084. Samples on the lower end of the performance criteria were also retested at later dates to show improvement. The overall geometric mean for permeability of samples was 9.98×10^{-7} cm/s and average strength was 171.5 psi, therefore meeting performance criteria. A summary of the sample results is presented in **Table 3-3.**

Following sufficient curing, core samples were gathered using a Geoprobe® for visual inspection. One core sample was collected for every 5,000 square feet of ISS treatment area. Cores were collected in five-foot intervals for the entire depth of the column. If the recovery was less than 60% from any five-foot barrel run, the core location was offset, and an additional core was collected. A total of 31 columns were cored. Based on visual inspections of the retrieved cores, each column was fully homogenized. Photos of cores are presented in **Appendix T**.

6.0 ISSUES AND CHANGES TO THE CONTRACT

6.1 PROJECT SCHEDULE

The baseline project schedule was provided by DAC in March 2021 and was revised periodically during the project to update progress at the Site (**Appendix U**). The original schedule planned for construction to be completed in one construction season, but as work progressed, it was determined that a winter shutdown would be needed after substantial completion, with final completion occurring in the spring of 2022. Delays in work resulting in schedule creep were related to:

- Delayed start of ISS related to review of bench scale and pilot test data and identification of a revised mix design;
- ISS downtime related to key staff contracting Covid-19;
- ISS downtime related to required equipment repair;
- ISS downtime related to delayed delivery of cement and bentonite; and
- Additional time required for transportation and disposal of soil due to availability of trucks.

Substantial completion was achieved on December 17, 2021. A Winterization Plan (submittal 077, **Appendix F**) was submitted and approved and described procedures for biweekly winter inspections and maintenance until work restarted May 2, 2022. Final completion was achieved on June 3, 2022.

6.2 CONSTRUCTION ISSUES

This subsection describes project activities related to Requests for Information (RFIs), FOs, and Proposed Change Orders (PCOs).

6.2.1 REQUESTS FOR INFORMATION

Three RFIs were submitted by DAC during execution of the RA. The RFIs were addressed by the Engineer and did not require subsequent FOs or PCOs. The RFIs and the RFI summary log are

included in **Appendix V**. A summary of each RFI is discussed below. Details are provided within each RFI.

RFI 01 requested approval to change from ISS of the two northern most rows of ISS column to excavation. DAC's reasoning was that the ISS columns would be very shallow once excavated to the working platform and therefore it would be more efficient to excavate the remaining depth as well. This change was approved by NYSDEC and MACTEC resulting in eliminating 39 columns of ISS and increasing excavation by 1,950 square feet.

RFI 02 requested approval to plant new trees along Brandy Brook as opposed to transplanting the existing trees to a temporary nursery until restoration. NYSDEC and MACTEC approved this change due to the difficulty of caring for the trees during the winter shutdown. Replacement trees were required to meet the requirements of Specification 32 93 00 and Drawing C-305, and placement would match the survey conducted by DAC on September 10, 2021.

RFI 03 requested acknowledgement that the completion date for the project be extended by four days due to the COVID outbreak on site. NYSDEC and MACTEC acknowledged the revised schedule.

6.2.2 FIELD ORDERS

Three FOs were issued by MACTEC during execution of the RA. The FOs and the FO summary log are included in **Appendix R**.

FO 001 was issued in response to an odor complaint received from a local resident on June 25, 2021. DAC was directed to review specification regarding odor control and to continuously spray odor suppressants during ISS activities and keep all stockpiles covered with Rusmar foam and plastic sheeting.

FO 002 was issued in response to additional complaints from local residents regarding odors at the site. Requirements to continuously spray Biosolve and Rusmar foam were reiterated, and DAC was reminded of the penalties for failure to control odors.

FO 003 was issued in response to DAC's failure to adequately manage construction waste onsite. DAC was instructed that, due to their inoperable wastewater treatment plant, they will need to make other arrangements to manage construction water at no cost to NYSDEC.

6.2.3 CHANGE ORDERS

One change order was issued by NYSDEC to DAC during the execution of the RA. This change order incorporated nine items from several proposed change orders into one. The change order is included in **Appendix L**. Change Order No.1 resulted in an extension to final completion contract time by 132 days and an additional cost of $1,089,092.57. The items incorporated into this change order are summarized below:

- Item 1: Increased the contract price due to additional demolition of buried structures encountered during site preparation.
- Item 2: Increased the contract duration for Final Completion by 132 days due to moving Site Restoration to the Spring of 2022.
- Item 3: Increased the contract price due to an additional 85 days of site services that was not accounted for in Addendum No. 1 of the contract documents.
- Item 4: Increased the contract price due to an additional 43 days of health and safety services that were not accounted for in Addendum No. 1 of the contract documents.
- Item 5: Increased the contract price due to excavation of additional material.
- Item 6: Increased the contract price due to solidification of additional material.
- Item 7: Increased the contract price due to additional transportation and disposal of C&D debris.
- Item 8: Increased the contract price to account for additional imported fill for backfill.
- Item 9: Increased the contract price due to additional reagents required in the revised solidification mix.

7.0 ENGINEER'S CONSTRUCTION CERTIFICATION

7.1 CONCLUSIONS AND CERTIFICATION

I, Richard Egan, certify that I am currently a New York State licensed professional engineer. I had primary direct responsibility for the implementation of the subject construction program, and I certify that the Remedial Design Plans and Specifications were implemented and that all construction activities were completed in substantial conformance with the DER-approved Remedial Design Plans and Specifications.

I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the Remedial Design and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.

I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by Department.

Signature: Richard S Egan

Richard S. Egan, P.E.
Associate Engineer

Date: 9/8/2023

8.0 REFERENCES

MACTEC Engineering and Consulting P.C. (MACTEC), 2015. Remedial Investigation Report – Saranac Lake Gas Company, Site #516008. Prepared for New York State Department of Environmental Conservation, Albany, New York. January 2015.

MACTEC, 2016. Revised Focused Feasibility Study Report – Saranac Lake Gas Company, Operable Unit No.01, Site #516008. Prepared for New York State Department of Environmental Conservation, Albany, New York. January 2016.

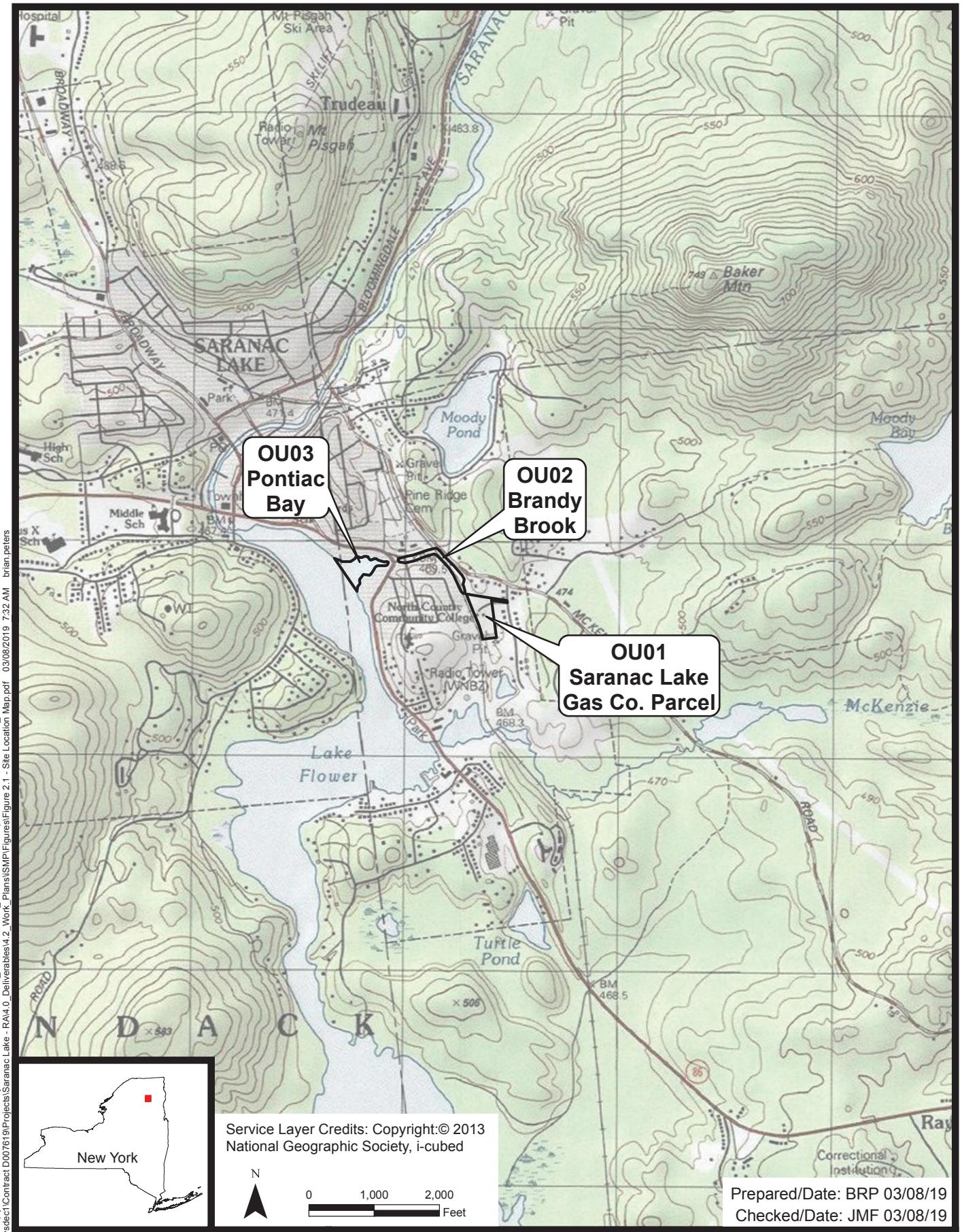
MACTEC, 2020. Pre-design Investigation Report Operable Unit OU01 - Saranac Lake Gas Company, Inc., Site #516008. Prepared for New York State Department of Environmental Conservation, Albany, New York. February 2020.

MACTEC, 2020. Pre-design Investigation Addendum – Field Activities Report, Saranac Lake Gas Company, Inc., Site #516008. Prepared for New York State Department of Environmental Conservation, Albany, New York. October 2020.

MACTEC, 2023. Site Management Plan, OU01, OU02, & OU03 Saranac Lake Gas Company, Inc. Site #516008. Prepared for New York State Department of Environmental Conservation, Albany, New York. June 2023.

New York State Department of Environmental Conservation (NYSDEC), 2017. Record of Decision, Saranac Lake Gas Co., Inc., Operable Unit Number: 01: Former Gas Plant Property, State Superfund Project, Saranac Lake, Essex County, Site No. 516008. March.

FIGURES



Prepared/Date: BRP 03/08/19
Checked/Date: JMF 03/08/19

NYSDEC Site # 516008
Saranac Lake Gas Co., Inc.
Saranac Lake, New York

MACTEC

Site Location Map

Project 3611181219 Figure 1-1

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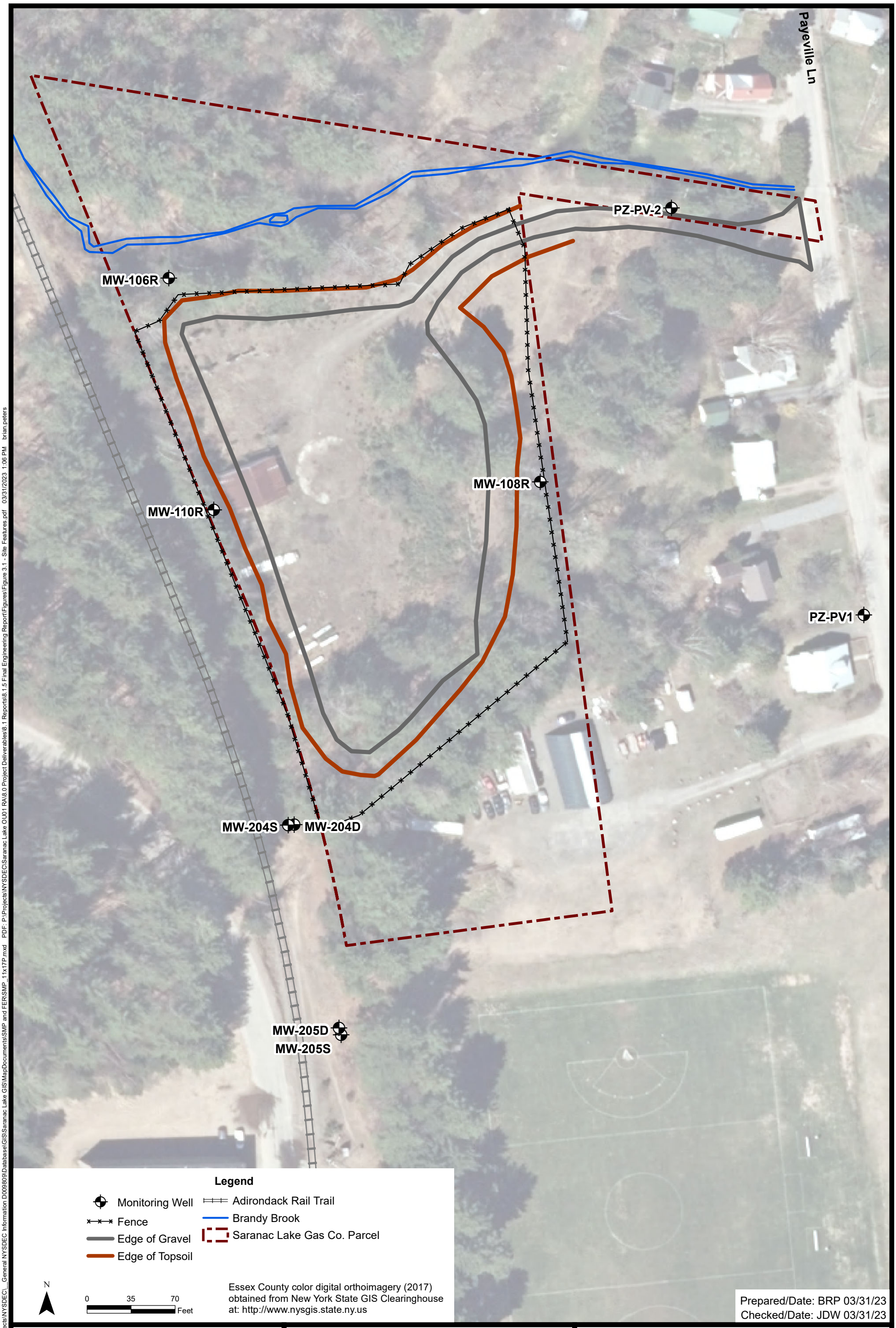

NYSDEC Site # 516008
Saranac Lake Gas Co., Inc.
Saranac Lake, New York

MACTEC

Site Features

Project 3617207518

Figure 3-1

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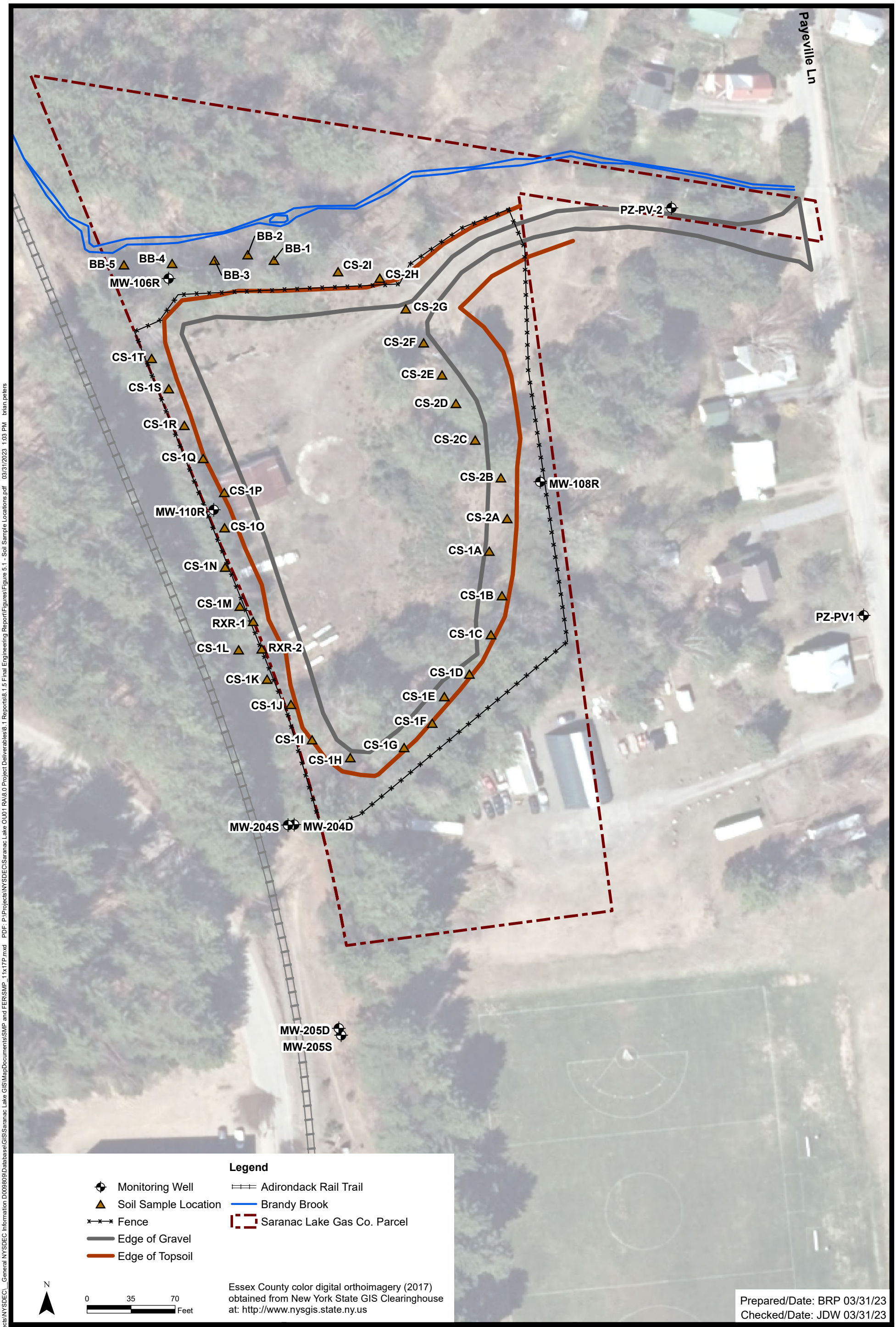

NYSDEC Site # 516008
Saranac Lake Gas Co., Inc.
Saranac Lake, New York

MACTEC

Documentation and Confirmation
Soil Sample Locations
Project 3617207518
Figure 5-1

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TABLES

Table 3-1: Construction Water Analytical Results

Sample Name:			WWTP Discharge #1		WWTP Discharge #3	WWTP Discharge #4
Sample Date:			5/12/2021		8/2/2021	8/12/2021
Quantity of Water Discharged (gallons):			Re-Test for TDS on 5/25/2021		None	None
Comment:			22,794		Shipped off-site for disposal	Shipped off-site for disposal
			Discharged on July 12, 16 and 20, 2022.			
Parameter	SPDES LIMIT		Concentration	lbs/day	Concentration	Concentration
Volatile Organic Compounds						
Benzene	1.00	µg/l	< 0.50	0.00	< 0.50	< 0.50
Toluene	5.00	µg/l	< 1.00	0.00	< 1.00	< 1.00
1,2-Xylene (o-xylene)	5.00	µg/l	< 1.00	0.00	< 1.00	< 1.00
1,3-Xylene (m,p-xylene)	5.00	µg/l	< 1.00	0.00	< 1.00	< 1.00
Semi-Volative Organic Compounds						
Naphthalene	10.00	µg/l	< 0.53	0.00	1.00	< 0.50
Phenanthrene	2.00	µg/l	< 2.10	0.00	< 2.00	< 2.00
Pyrene	1.00	µg/l	< 2.10	0.00	**13.00**	**8.50**
Pesticides						
Heptachlor epoxide	0.20	µg/l	< 0.01	0.00	< 0.01	NT
Metals						
Iron	Monitor	µg/l	< 300.00	0.00	1700.00	NT
Lead	4.00	µg/l	< 3.00	0.00	**8.10**	< 3.00
Zinc	40.00	µg/l	< 50.00	0.00	**55.00**	< **50.00**
Physical Characteristics						
pH	6.5 - 8.5	SU	7.70	NA	7.20	7.90
Oil and Grease	15.00	mg/l	< 5.60	0.00	< 5.60	< 5.50
Solids, Total Suspended	10.00	mg/l	6.80	1.29	**72.00**	**39.00**
Solids, Total Dissolved	500.00	mg/l	210 / 300	39.92 / 57.03	**820.00**	NT

Notes:
SPDES = State Pollutnat Discharge Elimination System
µg/l = micrograms per liter
mg/l = milligrams per liter
NA = Not Applicable
NT = Not Tested
U = Not detected above the laboratory limit shown
Red Font = Exceeds the SPDES Limit

Table 3-2: Confirmation Soil Sample Results

	Media:	Soil	Soil	Soil	Soil	Soil	Soil
	Location:	CONFIRM BB 2	CONFIRM BB 3	CONFIRM BB 4	CONFIRM BB 5	CONFIRM RXR1	CONFIRM RXR2
	Bottom or Sidewall:	Bottom	Bottom	Bottom	Bottom	Bottom	Bottom
	Sample Date:	11/18/2021	11/18/2021	11/18/2021	11/18/2021	10/22/2021	10/22/2021
	Lab ID:	AD27487-002	AD27487-003	AD27487-004	AD27487-005	AD26829-001	AD26829-002
	Description:	Bottom Sample from Excavation Adjacent to Brandy Brook	Bottom Sample from Excavation Adjacent to Brandy Brook	Bottom Sample from Excavation Adjacent to Brandy Brook	Bottom Sample from Excavation Adjacent to Brandy Brook	Bottom Sample from Excavation on Rail Trail	Bottom Sample from Excavation on Rail Trail
Parameter	Unrestricted SCOs						
Metals (mg/kg)							
Aluminum	NA	2,100	1300	1700	1700	1700	2000
Iron	NA	5,700	2500	5300	5400	5900	6900
Magnesium	NA	930	600	760	760	640	800
Manganese	1,600	31	16	19	20	56	68
Zinc	109	13	<12	<12	12	<11	<11
Arsenic	13	0.4	0.29	0.43	0.42	0.5	0.64
Silver	2	<0.24	<0.23	<0.24	<0.24	0.27	<0.22
Vanadium	NA	4.2	2.6	4.3	4.6	3.3	3.7
SemiVolatiles (mg/kg)							
2-Methylnaphthalene	NA	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Acenaphthene	20	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Acenaphthylene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Anthracene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Benzo[a]anthracene	1	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Benzo[a]pyrene	1	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Benzo[b]fluoranthene	1	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Benzo[g,h,i]perylene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Benzo[k]fluoranthene	0.8	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Chrysene	1	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Dibenzo[a,h]anthracene	0.33	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Fluoranthene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Fluorene	30	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Indeno[1,2,3-cd]pyrene	0.5	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Naphthalene	12	<0.012	<0.011	<0.011	<0.012	<0.01	<0.01
Phenanthrene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Phenol	0.33	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Pyrene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Volatiles (mg/kg)							
Benzene	0.06	<0.00055	<0.00035	<0.00049	<0.00034	<0.00043	<0.00045
Chlorobenzene	1.1	<0.0011	<0.00071	0.0014	<0.00067	<0.00086	<0.00091
Ethylbenzene	1	<0.00055	<0.00035	<0.00049	<0.00034	<0.00043	<0.00045
m&p-Xylenes	0.26	<0.00066	<0.00042	<0.00059	<0.0004	<0.00052	<0.00054
Methylene chloride	0.05	0.0015	<0.00071	<0.00098	<0.00067	0.0012	0.0015
Toluene	0.7	<0.00055	<0.00035	<0.00049	<0.00034	<0.00043	<0.00045
Xylenes (Total)	0.26	<0.00055	<0.00035	<0.00049	<0.00034	<0.00043	<0.00045
Wet Chemistry							
% Solids	NA	83	86	84	83	94	93

Results are reported in milligrams per kilogram (mg/kg)
Only site contaminants of concern and parameters detected in at least one sample are show here.
Highlighted values exceed the the Unrestricted SCO.
SCO = Soil Cleanup Objectives.
NA = No limit specified.
NT = Not tested
< = Not detected above the laboratory reporting limit

Prepared by: DG 7/29/22
Checked by: JDW 7/29/22

Table 3-3: Summary of In-Situ Solidification Columns

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
4/29/2021	881	1999465.40	592311.47	15.6	1539.8	1524.2	15.6	0	0.00	78.5	45.44	4,268	4,278	17,707	12.03%	1,472	1.00%	Y	**Pilot Column**	13	2.20E-06	1.80E-06	33.74
4/30/2021	829	1999481.85	592306.00	20.2	1542.2	1522.0	20.2	0	0.00	78.5	58.79	6,082	6,091	28,609	15.02%	1,906	1.00%	Y	**Pilot Column**	5	5.20E-06	3.80E-06	156.55
4/30/2021	855	1999473.63	592308.73	19.0	1542.3	1523.3	19.0	2	9.00	69.5	48.96	4,973	5,577	26,686	16.82%	1,779	1.12%	Y	**Pilot Column**	15	4.30E-06	3.30E-06	142.45
4/30/2021	866	1999470.14	592325.72	13.2	1541.2	1528.0	13.2	0	0.00	78.5	38.46	4,038	4,536	23,791	19.09%	1,402	1.12%	Y	**Pilot Column**	10	1.00E-05	4.90E-06	182.04
5/3/2021	815	1999486.59	592320.25	12.6	1541.1	1528.5	12.6	0	0.00	78.5	36.71	1,855	1,863	11,942	10.04%	298	0.25%	Y	**Pilot Column**	5	2.00E-06	2.20E-07	54.02
5/3/2021	496	1999586.09	592358.38	11.6	1540.4	1528.8	11.6	0	0.00	78.5	33.80	3,138	3,144	16,459	15.03%	1,097	1.00%	Y	**Pilot Column**	8	4.80E-06	-	120.68
5/3/2021	453	1999599.06	592369.90	11.4	1540.4	1529.0	11.4	0	0.00	78.5	33.16	2,473	2,483	12,946	12.05%	1,079	1.00%	Y	**Pilot Column**	7	2.40E-06	1.90E-06	120.96
5/4/2021	475	1999592.58	592364.14	11.5	1540.7	1529.2	11.5	2	9.00	69.5	29.64	1,498	1,505	9,647	10.04%	241	0.25%	Y	**Pilot Column**	10	2.70E-06	-	95.37
5/4/2021	861	1999471.88	592317.23	15.2	1541.4	1526.2	15.2	3	13.50	65.0	36.66	3,404	3,408	17,841	15.02%	1,189	1.00%	Y	**Pilot Column**	13	1.20E-06	-	84.32
5/4/2021	835	1999480.11	592314.49	16.0	1541.6	1525.6	16.0	4	18.00	60.5	35.90	2,580	2,589	14,007	12.04%	875	0.75%	Y	**Pilot Column**	3	5.90E-07	-	133.69
5/4/2021	840	1999478.37	592322.99	12.3	1541.3	1529.0	12.3	4	18.00	60.5	27.62	2,474	2,479	13,455	15.03%	673	0.75%	Y	**Pilot Column**	7	1.40E-06	9.30E-07	168.26
6/14/2021	1143	1999347.24	592298.22	19.2	1541.4	1522.2	19.2	0	0.00	78.5	55.91	4,018	4,687	25,358	14.00%	1,585	0.87%	N	-	-	-	-	-
6/14/2021	1146	1999345.49	592306.72	18.6	1541.1	1522.5	18.6	1	4.50	74.0	51.03	3,667	3,689	19,959	12.07%	1,247	0.75%	N	-	-	-	-	-
6/14/2021	1138	1999352.44	592301.56	19.3	1541.4	1522.0	19.3	5	24.77	53.8	38.48	2,765	2,912	15,755	12.64%	985	0.79%	Y	-	5	1.60E-06	-	179.19
6/14/2021	1147	1999343.75	592315.21	17.2	1541.3	1524.1	17.2	1	4.50	74.0	47.22	3,393	3,413	18,465	12.07%	1,154	0.75%	N	-	-	-	-	-
6/14/2021	1140	1999350.70	592310.05	18.7	1541.2	1522.5	18.7	6	28.52	50.0	34.66	2,491	2,585	13,986	12.45%	874	0.78%	N	-	-	-	-	-
6/14/2021	1141	1999348.96	592318.55	16.3	1541.1	1524.8	16.3	5	24.68	53.9	32.56	2,340	2,445	13,228	12.54%	827	0.78%	N	-	-	-	-	-
6/14/2021	1144	1999347.21	592327.04	12.8	1541.6	1528.8	12.8	1	4.50	74.0	35.13	2,524	2,550	13,796	12.12%	862	0.76%	N	-	-	-	-	-
6/15/2021	1130	1999358.93	592307.32	19.2	1541.2	1522.0	19.2	2	9.00	69.5	49.50	3,557	3,577	19,353	12.07%	1,209	0.75%	N	-	-	-	-	-
6/15/2021	1132	1999357.18	592315.81	18.1	1541.4	1523.3	18.1	3	13.50	65.0	43.62	3,135	3,156	17,075	12.08%	1,067	0.75%	N	-	-	-	-	-
6/15/2021	1145	1999347.19	592334.93	10.5	1541.5	1531.0	10.5	1	8.87	69.7	27.17	1,953	2,115	11,443	13.00%	715	0.81%	N	-	-	-	-	-
6/15/2021	1120	1999365.41	592313.07	19.2	1541.6	1522.4	19.2	2	9.00	69.5	49.53	3,559	3,573	19,331	12.05%	1,208	0.75%	N	-	-	-	-	-
6/15/2021	1134	1999355.44	592324.30	13.7	1541.3	1527.6	13.7	3	13.50	65.0	33.10	2,379	2,403	13,001	12.12%	812	0.76%	Y	-	8	1.10E-06	-	165.75
6/15/2021	1123	1999363.67	592321.57	15.0	1541.5	1526.5	15.0	3	13.50	65.0	36.18	2,600	2,625	14,202	12.11%	888	0.76%	N	-	-	-	-	-
6/15/2021	1110	1999371.90	592318.83	16.9	1541.6	1524.7	16.9	2	9.00	69.5	43.55	3,130	3,147	17,026	12.07%	1,064	0.75%	N	-	-	-	-	-
6/15/2021	1136	1999353.70	592332.80	10.3	1541.4	1531.1	10.3	4	23.88	54.7	20.87	1,500	1,549	8,381	12.39%	524	0.77%	N	-	-	-	-	-
6/15/2021	1139	1999351.95	592341.29	9.2	1541.0	1531.8	9.2	3	12.03	66.5	22.69	1,630	1,727	9,344	12.71%	584	0.79%	N	-	-	-	-	-
6/15/2021	1137	1999353.68	592348.68	9.3	1541.3	1532.0	9.3	2	10.80	67.7	23.38	1,680	1,739	9,409	12.42%	588	0.78%	N	-	-	-	-	-
6/15/2021	1125	1999361.92	592330.06	9.8	1541.4	1531.6	9.8	3	13.50	65.0	23.63	1,698	1,724	9,327	12.18%	583	0.76%	N	-	-	-	-	-
6/15/2021	1127	1999360.18	592338.56	8.2	1541.4	1533.2	8.2	3	13.50	65.0	19.80	1,423	1,432	7,748	12.08%	484	0.75%	N	-	-	-	-	-
6/15/2021	1128	1999360.16	592354.43	11.1	1541.6	1530.4	11.1	1	4.50	74.0	30.47	2,047	2,061	11,924	12.08%	745	0.75%	N	-	-	-	-	-
6/15/2021	1113	1999370.15	592327.33	10.1	1541.4	1531.3	10.1	3	13.50	65.0	24.35	1,637	1,643	9,506	12.05%	594	0.75%	Y	-	4	1.50E-06	-	104.48
6/15/2021	1100	1999378.38	592324.59	12.7	1541.4	1528.7	12.7	2	9.00	69.5	32.76	2,202	2,214	12,809	12.07%	801	0.75%	N	-	-	-	-	-
6/15/2021	1115	1999368.41	592335.82	7.6	1541.3	1533.7	7.6	3	13.50	65.0	18.33	1,232	1,247	7,214	12.15%	451	0.76%	N	-	-	-	-	-
6/15/2021	1117	1999366.67	592344.31	7.7	1541.2	1533.5	7.7	2	9.00	69.5	19.88	1,336	1,346	7,787	12.09%	487	0.76%	N	-	-	-	-	-
6/15/2021	1131	1999358.44	592347.05	9.1	1541.2	1532.1	9.1	6	49.54	29.0	9.81	659	1,185	6,856	21.57%	428	1.35%	N	-	-	-	-	-
6/16/2021	1103	1999376.64	592333.08	9.8	1541.6	1531.7	9.8	3	13.50	65.0	23.63	1,588	1,600	9,257	12.09%	579	0.76%	N	-	-	-	-	-
6/16/2021	1121	1999364.92	592352.81	11.0	1542.0	1531.0	11.0	6	36.82	41.7	17.03	1,144	1,424	8,238	14.93%	515	0.93%	N	-	-	-	-	-
6/16/2021	1118	1999366.64	592360.19	12.5	1541.6	1529.0	12.6	2	12.71	65.8	30.74	2,066	2,208	12,774	12.82%	798	0.80%	N	-	-	-	-	-
6/16/2021	1105	1999374.89	592341.58	8.3	1541.5	1533.2	8.3	3	13.50	65.0	20.02	1,345	1,363	7,886	12.16%	493	0.76%	N	-	-	-	-	-
6/16/2021	1089	1999384.86	592330.35	13.9	1541.5	1527.5	13.9	2	9.00	69.5	35.85	2,409	2,432	14,070	12.11%	879	0.76%	N	-	-	-	-	-
6/16/2021	1108	1999373.15	592350.07	9.3	1541.6	1532.2	9.3	3	13.50	65.0	22.50	1,512	1,524	8,817	12.10%	551	0.76%	N	-	-	-	-	-
6/16/2021	1092	1999383.12	592338.84	12.5	1541.5	1529.0	12.5	3	13.50	65.0	30.14	2,025	2,040	11,802	12.09%	738	0.76%	N	-	-	-	-	-
6/16/2021	1111	1999371.41	592358.57	12.1	1541.5	1529.4	12.1	6	36.85	41.7	18.71	1,258	1,583	9,158	15.10%	572	0.94%	N	-	-	-	-	-
6/16/2021	1077	1999391.35	592336.10	15.4	1541.6	1526.1	15.4	2	9.00	69.5	39.74	2,671	2,685	15,534	12.06%	971	0.75%	Y	-	13	1.40E-06	-	117.03
6/16/2021	1095	1999381.38	592347.33	11.0	1541.5	1530.5	11.0	3	13.50	65.0	26.52	1,782	1,794	10,379	12.08%	649	0.75%	N	-	-	-	-	-
6/16/2021	1101	1999377.89	592364.32	13.0	1541.5	1528.4	13.1	1	4.50	74.0	35.81	2,407	2,416	13,978	12.05%	874	0.75%	N	-	-	-	-	-
6/16/2021	1098	1999379.63	592355.83	12.0	1541.7	1529.7	12.0	4	18.00	60.5	26.93	1,810	1,830	10,587	12.13%	662	0.76%	N	-	-	-	-	-
6/16/2021	1081	1999389.61	592344.60	15.0	1541.8	1526.8	15.0	3	13.50	65.0	36.21	2,433	2,447	14,157	12.07%	885	0.75%	N	-	-	-	-	-
6/16/2021	1064	1999397.83	592341.86	15.5	1541.5	1526.0	15.5	2	9.00	69.5	40.00	2,688	2,709	15,673	12.09%	980	0.76%	N	-	-	-	-	-
6/16/2021	1084	1999387.86	592353.09	13.1	1541.1	1528.0	13.1	3	13.50	65.0	31.58	2,122	2,137	12,364	12.08%	773	0.76%	N	-	-	-	-	-
6/16/2021	1087	1999386.12	592361.59	13.0	1541.4	1528.4	13.0	3	13.50	65.0	31.34	2,106	2,142	12,392	12.20%	775	0.76%	N	-	-	-	-	-
6/16/2021	1090	1999384.38	592370.08	13.0	1541.3	1528.3	13.0	2	9.00	69.5	33.51	2,252	2,282	13,202	12.16%	825	0.76%	N	-	-	-	-	-
6/16/2021	1068	1999396.09	592350.36	15.3	1541.6	1526.3	15.3	3	13.50	65.0	36.88	2,478	2,497	14,446	12.09%	903	0.76%	Y	-	10	8.10E-08	-	188.58
6/17/2021	1050	1999404.32	592347.62	16.1	1541.4	1525.3	16.1	2	9.00	69.5	41.52	2,790	2,838	16,419	12.21%	1,026	0.76%	N	-	-	-	-	-
6/17/2021	1071	1999394.35	592358.85	15.0	1541.8	1526.8	15.0	3	13.50	65.0	36.16	2,430	2,503	14,481	12.36%	905	0.77%	N	-	-	-	-	-
6/17/2021	1075	1999392.60	592367.34	14.2	1541.4	1527.2	14.2	3	13.50	65.0	34.23	2,300	2,320	13,422	12.10%	839	0.76%	N	-	-	-	-	-
6/17/2021	1078	1999390.86	592375.84	13.5	1541.3	1527.8	13.5	2	9.00	69.5	34.82	2,340	2,361	13,659	12.11%	854	0.76%	N	-	-	-	-	-
6/17/2021	1054	1999402.57	592356.11	16.9	1541.6	1524.7	16.9	3	13.50	65.0	40.76	2,739	2,752	15,922	12.06%	995	0.75%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
6/17/2021	1057	1999400.83	592364.61	16.4	1541.4	1525.0	16.4	3	13.50	65.0	39.58	2,660	2,676	15,482	12.07%	968	0.75%	N	-	-	-	-	-
6/17/2021	1061	1999399.09	592373.10	15.4	1541.3	1525.9	15.5	3	13.50	65.0	37.29	2,506	2,544	14,718	12.18%	920	0.76%	Y	-	15	9.00E-07	-	160.64
6/17/2021	1065	1999397.34	592381.60	13.1	1541.0	1527.9	13.1	2	9.00	69.5	33.82	2,273	2,283	13,208	12.05%	826	0.75%	N	-	-	-	-	-
6/17/2021	1035	1999410.80	592353.38	19.5	1541.4	1521.8	19.5	2	9.00	69.5	50.33	3,382	3,404	19,694	12.08%	1,231	0.75%	N	-	-	-	-	-
6/17/2021	1039	1999409.06	592361.87	19.5	1541.3	1521.8	19.5	3	13.50	65.0	47.02	3,160	3,169	18,334	12.03%	1,146	0.75%	N	-	-	-	-	-
6/17/2021	1043	1999407.31	592370.36	18.5	1541.3	1522.8	18.5	3	13.50	65.0	44.61	2,998	3,010	17,414	12.05%	1,088	0.75%	N	-	-	-	-	-
6/17/2021	1018	1999417.29	592359.13	22.7	1541.2	1518.5	22.7	2	9.00	69.5	58.52	3,932	3,961	22,916	12.09%	1,432	0.76%	Y	-	6	8.50E-07	-	204.04
6/17/2021	1047	1999405.57	592378.86	16.0	1541.5	1525.5	16.0	3	13.50	65.0	38.61	2,595	2,604	15,065	12.04%	942	0.75%	N	-	-	-	-	-
6/17/2021	1051	1999403.83	592387.35	11.9	1541.1	1529.2	11.9	2	9.00	69.5	30.70	2,063	2,104	12,173	12.24%	761	0.76%	N	-	-	-	-	-
6/17/2021	1023	1999415.54	592367.63	22.1	1541.2	1519.1	22.1	3	13.50	65.0	53.28	3,581	3,731	21,586	12.50%	1,349	0.78%	N	-	-	-	-	-
6/18/2021	1027	1999413.80	592376.12	19.9	1541.4	1521.5	19.9	3	13.50	65.0	47.98	3,225	3,243	18,762	12.07%	1,173	0.75%	N	-	-	-	-	-
6/18/2021	1031	1999412.06	592384.62	14.0	1541.3	1527.3	14.0	3	13.50	65.0	33.75	2,268	2,279	13,185	12.06%	824	0.75%	N	-	-	-	-	-
6/18/2021	1036	1999410.31	592393.11	9.8	1541.6	1531.7	9.9	2	9.00	69.5	25.37	1,705	1,743	10,084	12.27%	630	0.77%	N	-	-	-	-	-
6/18/2021	1001	1999423.77	592364.89	23.9	1541.3	1517.4	23.9	2	9.00	69.5	61.63	4,142	4,183	24,201	12.12%	1,513	0.76%	N	-	-	-	-	-
6/18/2021	1006	1999422.03	592373.39	23.2	1541.3	1518.0	23.3	3	13.50	65.0	56.01	3,764	3,806	22,019	12.13%	1,376	0.76%	N	-	-	-	-	-
6/18/2021	1010	1999420.28	592381.88	19.0	1541.5	1522.5	19.0	3	13.50	65.0	45.82	3,079	3,090	17,877	12.04%	1,117	0.75%	Y	-	3	5.60E-07	-	191.55
6/18/2021	1015	1999418.54	592390.37	9.9	1541.3	1531.4	9.9	3	13.50	65.0	23.87	1,604	1,612	9,326	12.06%	583	0.75%	N	-	-	-	-	-
6/18/2021	1020	1999416.80	592398.87	6.9	1541.1	1534.2	6.9	2	9.00	69.5	17.80	1,196	1,207	6,983	12.11%	436	0.76%	N	-	-	-	-	-
6/18/2021	983	1999430.25	592370.65	24.1	1541.3	1517.2	24.1	2	9.00	69.5	62.10	4,173	4,209	24,351	12.10%	1,522	0.76%	N	-	-	-	-	-
6/18/2021	947	1999443.22	592382.16	21.9	1541.3	1519.4	21.9	0	0.00	78.5	63.73	4,283	4,328	25,039	12.13%	1,565	0.76%	N	-	-	-	-	-
6/18/2021	970	1999435.00	592384.90	19.7	1541.1	1521.4	19.8	1	4.50	74.0	54.19	3,641	3,655	21,146	12.04%	1,322	0.75%	N	-	-	-	-	-
6/18/2021	975	1999433.25	592393.40	11.0	1541.0	1529.9	11.0	1	4.50	74.0	30.22	2,031	2,052	11,872	12.13%	742	0.76%	Y	-	9	8.50E-07	-	175.90
6/18/2021	998	1999425.02	592396.13	7.4	1541.1	1533.6	7.4	3	13.50	65.0	17.87	1,201	1,237	7,157	12.36%	447	0.77%	N	-	-	-	-	-
6/21/2021	830	1999481.66	592414.34	**13.1**	1541.0	1529.0	**11.9**	0	0.00	78.5	34.70	2,332	2,345	13,567	12.07%	848	0.75%	Y	**Refusal**	6	3.20E-07	-	231.67
6/21/2021	875	1999467.42	592413.69	13.1	1541.1	1528.0	13.1	0	0.00	78.5	38.14	2,563	2,580	14,926	12.08%	933	0.76%	N	-	-	-	-	-
6/21/2021	900	1999459.19	592416.43	12.8	1541.0	1528.2	12.8	1	4.50	74.0	35.18	2,364	2,378	13,758	12.07%	860	0.75%	N	-	-	-	-	-
6/21/2021	869	1999469.16	592405.19	13.0	1541.0	1527.9	13.1	1	4.50	74.0	35.90	2,412	2,426	14,036	12.07%	877	0.75%	N	-	-	-	-	-
6/21/2021	943	1999444.48	592413.40	9.9	1541.1	1531.2	9.9	0	0.00	78.5	28.86	1,939	1,960	11,340	12.13%	709	0.76%	N	-	-	-	-	-
6/21/2021	985	1999429.77	592410.38	5.0	1539.6	1534.5	5.0	0	0.00	78.5	14.63	983	995	5,757	12.14%	360	0.76%	N	-	-	-	-	-
6/21/2021	1003	1999423.28	592404.63	6.2	1541.2	1534.9	6.2	3	13.50	65.0	14.96	1,005	1,018	5,890	12.15%	368	0.76%	N	-	-	-	-	-
6/21/2021	914	1999454.45	592402.17	13.1	1541.1	1527.9	13.2	0	0.00	78.5	38.25	2,571	2,576	14,903	12.03%	931	0.75%	N	-	-	-	-	-
6/21/2021	938	1999446.22	592404.91	11.2	1541.0	1529.8	11.2	2	9.00	69.5	28.85	1,939	1,962	11,351	12.15%	709	0.76%	N	-	-	-	-	-
6/21/2021	909	1999456.19	592393.68	14.6	1541.2	1526.6	14.6	1	4.50	74.0	40.06	2,692	2,707	15,661	12.07%	979	0.75%	N	-	-	-	-	-
6/21/2021	980	1999431.51	592401.89	6.8	1540.9	1534.1	6.8	4	18.00	60.5	15.29	1,028	1,038	6,005	12.12%	375	0.76%	N	-	-	-	-	-
6/21/2021	952	1999441.48	592390.66	15.6	1541.0	1525.4	15.6	3	13.50	65.0	37.65	2,530	2,553	14,770	12.11%	923	0.76%	N	-	-	-	-	-
6/22/2021	856	1999473.43	592417.08	**13.4**	1541.3	1530.2	**11.1**	4	19.96	58.6	24.17	1,624	1,691	9,783	12.49%	611	0.78%	N	**Refusal**	-	-	-	-
6/22/2021	848	1999475.65	592410.95	13.4	1541.3	1527.9	13.4	6	38.66	39.9	19.81	1,331	1,781	10,304	16.06%	644	1.00%	N	-	-	-	-	-
6/22/2021	919	1999452.71	592410.67	12.8	1541.4	1528.5	12.8	4	18.00	60.5	28.79	1,935	1,951	11,287	12.10%	705	0.76%	N	-	-	-	-	-
6/22/2021	894	1999460.93	592407.93	13.4	1541.4	1528.0	13.4	5	22.50	56.0	27.85	1,872	1,886	10,911	12.09%	682	0.76%	Y	-	4	1.30E-06	-	172.79
6/22/2021	889	1999462.68	592399.44	13.6	1541.3	1527.6	13.7	4	18.00	60.5	30.76	2,067	2,098	12,138	12.18%	759	0.76%	N	-	-	-	-	-
6/22/2021	962	1999437.99	592407.65	8.0	1541.3	1533.3	8.0	4	18.00	60.5	17.98	1,208	1,230	7,116	12.21%	445	0.76%	N	-	-	-	-	-
6/22/2021	933	1999447.96	592396.42	13.8	1541.3	1527.5	13.8	4	18.00	60.5	30.99	2,082	2,113	12,225	12.18%	764	0.76%	N	-	-	-	-	-
6/22/2021	957	1999439.74	592399.15	10.5	1541.2	1530.7	10.5	6	27.00	51.5	20.08	1,350	1,374	7,949	12.22%	497	0.76%	N	-	-	-	-	-
6/22/2021	928	1999449.71	592387.92	18.1	1541.6	1523.5	18.1	4	18.00	60.5	40.58	2,727	2,757	15,951	12.13%	997	0.76%	N	-	-	-	-	-
6/22/2021	993	1999426.77	592387.64	15.2	1541.5	1526.3	15.2	5	22.50	56.0	31.57	2,122	2,142	12,392	12.12%	775	0.76%	N	-	-	-	-	-
6/22/2021	965	1999436.74	592376.41	23.8	1541.3	1517.5	23.8	3	13.50	65.0	57.38	3,856	3,873	22,407	12.05%	1,400	0.75%	N	-	-	-	-	-
6/22/2021	988	1999428.51	592379.14	22.8	1541.3	1518.5	22.8	6	27.00	51.5	43.56	2,927	3,001	17,362	12.30%	1,085	0.77%	N	-	-	-	-	-
6/23/2021	1142	1999348.62	592290.16	18.7	1540.8	1522.1	18.7	1	7.13	71.4	49.46	3,324	3,476	20,110	12.55%	1,257	0.78%	N	-	-	-	-	-
6/23/2021	1129	1999359.74	592277.96	19.8	1541.5	1521.7	19.8	0	0.00	78.5	57.65	3,875	3,891	22,511	12.05%	1,407	0.75%	N	-	-	-	-	-
6/23/2021	1133	1999355.93	592284.57	19.1	1541.1	1521.9	19.1	2	12.58	66.0	46.71	3,139	3,244	18,768	12.40%	1,173	0.78%	N	-	-	-	-	-
6/23/2021	1106	1999374.13	592270.60	20.4	1541.3	1520.9	20.4	0	0.00	78.5	59.37	3,990	4,005	23,171	12.05%	1,448	0.75%	N	-	-	-	-	-
6/23/2021	1119	1999365.90	592273.34	20.1	1541.2	1521.0	20.2	3	14.50	64.0	47.84	3,215	3,278	18,965	12.23%	1,185	0.76%	N	-	-	-	-	-
6/23/2021	1126	1999360.67	592298.82	19.7	1541.7	1522.0	19.7	2	9.00	69.5	50.79	3,413	3,437	19,885	12.08%	1,243	0.76%	N	-	-	-	-	-
6/23/2021	1112	1999370.64	592287.59	19.7	1541.7	1522.0	19.7	0	0.00	78.5	57.33	3,853	3,883	22,465	12.09%	1,404	0.76%	Y	-	17	4.80E-06	3.80E-06	138.28
6/23/2021	1114	1999368.90	592296.08	19.9	1541.9	1522.0	19.9	2	9.00	69.5	51.30	3,448	3,469	20,070	12.07%	1,254	0.75%	N	-	-	-	-	-
6/23/2021	1099	1999378.87	592284.85	19.5	1541.6	1522.1	19.5	1	4.50	74.0	53.50	3,595	3,620	20,943	12.08%	1,309	0.76%	N	-	-	-	-	-
6/23/2021	1085	1999387.10	592282.12	19.3	1541.5	1522.2	19.3	1	4.50	74.0	52.95	3,559	3,585	20,741	12.09%	1,296	0.76%	Y	-	16	3.30E-06	-	196.37
6/23/2021	1107	1999373.64	592310.34	19.3	1541.5	1522.2	19.3	2	9.00	69.5	49.73	3,342	3,365	19,468	12.08%	1,217	0.76%	N	-	-	-	-	-
6/23/2021	1094	1999381.87	592307.60	19.3	1541.7	1522.4	19.3	1	4.50	74.0	52.98	3,560	3,579	20,706	12.06%	1,294	0.75%	N	-	-	-	-	-
6/23/2021	1091	1999383.61	592299.10	19.1	1541.4	1522.3	19.1	1	4.50	74.0	52.40	3,522	3,562	20,608	12.14%	1,288	0.76%	N	-	-	-	-	-
6/24/2021	1135	1999354.19	592293.06	19.9	1541.9	1522.0	19.9	6	36.07	42.5	31.32	2,105	2,575	14,898	14.68%	931	0.92%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
6/24/2021	1122	1999364.16	592281.83	19.7	1541.6	1521.8	19.7	6	33.11	45.4	33.18	2,230	2,555	14,782	13.75%	924	0.86%	N	-	-	-	-	-
6/24/2021	1124	1999362.41	592290.33	19.4	1541.4	1521.8	19.6	6	27.00	51.5	37.34	2,509	2,523	14,597	12.07%	912	0.75%	N	-	-	-	-	-
6/24/2021	1096	1999380.61	592276.36	19.9	1541.5	1521.6	19.9	3	13.50	65.0	47.98	3,225	3,243	18,762	12.07%	1,173	0.75%	N	-	-	-	-	-
6/24/2021	1109	1999372.38	592279.09	19.9	1541.6	1521.7	19.9	6	27.00	51.5	38.02	2,555	2,571	14,874	12.07%	930	0.75%	N	-	-	-	-	-
6/24/2021	1116	1999367.15	592304.58	19.8	1541.8	1522.0	19.8	5	22.50	56.0	41.16	2,766	2,791	16,147	12.11%	1,009	0.76%	N	-	-	-	-	-
6/24/2021	1104	1999375.38	592301.84	19.7	1541.7	1522.0	19.7	5	22.50	56.0	40.93	2,751	2,808	16,246	12.25%	1,015	0.77%	Y	-	7	5.10E-07	-	156.52
6/24/2021	1088	1999385.35	592290.61	19.4	1541.8	1522.4	19.4	3	13.50	65.0	46.76	3,142	3,174	18,363	12.12%	1,148	0.76%	N	-	-	-	-	-
6/24/2021	1102	1999377.13	592293.35	19.5	1541.5	1521.9	19.7	6	27.00	51.5	37.51	2,521	2,628	15,204	12.51%	950	0.78%	N	-	-	-	-	-
6/24/2021	1073	1999393.58	592287.87	18.6	1541.5	1522.9	18.6	2	9.00	69.5	47.93	3,221	3,235	18,716	12.05%	1,170	0.75%	N	-	-	-	-	-
6/24/2021	1097	1999380.12	592316.09	17.6	1541.9	1524.3	17.7	4	18.00	60.5	39.62	2,663	2,718	15,725	12.25%	983	0.77%	N	-	-	-	-	-
6/24/2021	1080	1999390.09	592304.86	18.3	1541.6	1523.2	18.3	2	9.00	69.5	47.18	3,171	3,185	18,427	12.05%	1,152	0.75%	N	-	-	-	-	-
6/25/2021	1076	1999391.84	592296.37	18.7	1541.7	1523.0	18.7	4	18.00	60.5	41.95	2,819	2,839	16,425	12.08%	1,027	0.76%	N	-	-	-	-	-
6/25/2021	1059	1999400.06	592293.63	18.0	1541.7	1523.7	18.0	2	9.00	69.5	46.44	3,121	3,148	18,213	12.10%	1,138	0.76%	N	-	-	-	-	-
6/25/2021	1063	1999398.32	592302.12	17.7	1541.8	1524.1	17.7	3	13.50	65.0	42.66	2,867	2,883	16,679	12.07%	1,042	0.75%	N	-	-	-	-	-
6/25/2021	1083	1999388.35	592313.36	17.0	1541.6	1524.5	17.0	3	13.50	65.0	41.02	2,757	2,775	16,055	12.08%	1,003	0.75%	N	-	-	-	-	-
6/25/2021	1074	1999393.09	592327.61	15.6	1541.6	1526.0	15.6	2	9.00	69.5	40.23	2,704	2,729	15,789	12.11%	987	0.76%	N	-	-	-	-	-
6/25/2021	1053	1999403.06	592316.38	16.4	1541.9	1525.5	16.4	0	0.00	78.5	47.76	3,210	3,224	18,652	12.05%	1,166	0.75%	Y	-	7	2.10E-06	-	141.04
6/25/2021	1029	1999413.03	592305.15	17.4	1541.9	1524.3	17.7	0	0.00	78.5	51.34	3,450	3,529	20,417	12.27%	1,276	0.77%	N	-	-	-	-	-
6/25/2021	1033	1999411.29	592313.64	17.3	1542.0	1524.7	17.3	2	9.00	69.5	44.58	2,996	3,030	17,530	12.14%	1,096	0.76%	N	-	-	-	-	-
6/25/2021	1056	1999401.32	592324.87	15.9	1541.8	1525.9	16.0	2	9.00	69.5	41.11	2,762	2,815	16,286	12.23%	1,018	0.76%	N	-	-	-	-	-
6/25/2021	1046	1999406.06	592339.12	15.9	1541.7	1525.8	16.0	2	9.00	69.5	41.08	2,761	2,781	16,089	12.09%	1,006	0.76%	N	-	-	-	-	-
6/25/2021	995	1999426.00	592316.66	17.7	1541.8	1524.1	17.8	0	0.00	78.5	51.63	3,470	3,488	20,180	12.06%	1,261	0.75%	Y	-	11	8.20E-06	5.80E-06	196.76
6/25/2021	1022	1999416.03	592327.89	16.9	1541.8	1524.9	16.9	0	0.00	78.5	49.25	3,310	3,325	19,237	12.06%	1,202	0.75%	N	-	-	-	-	-
6/25/2021	1000	1999424.26	592325.16	17.8	1541.9	1524.1	17.8	2	9.00	69.5	45.90	3,084	3,108	17,981	12.09%	1,124	0.76%	N	-	-	-	-	-
6/25/2021	1026	1999414.29	592336.39	16.5	1541.5	1524.9	16.5	2	9.00	69.5	42.55	2,859	2,897	16,760	12.16%	1,048	0.76%	N	-	-	-	-	-
6/25/2021	959	1999438.97	592328.18	18.1	1541.6	1523.5	18.1	0	0.00	78.5	52.77	3,546	3,572	20,666	12.09%	1,292	0.76%	N	-	-	-	-	-
6/25/2021	987	1999429.00	592339.41	21.7	1541.9	1520.1	21.7	0	0.00	78.5	63.15	4,244	4,280	24,762	12.10%	1,548	0.76%	N	-	-	-	-	-
6/28/2021	1045	1999406.55	592299.39	17.0	1541.5	1524.5	17.0	3	13.50	65.0	41.00	2,755	2,770	16,026	12.06%	1,002	0.75%	N	-	-	-	-	-
6/28/2021	1067	1999396.58	592310.62	16.9	1541.9	1525.0	16.9	4	18.00	60.5	37.94	2,550	2,635	15,245	12.40%	953	0.78%	N	-	-	-	-	-
6/28/2021	1086	1999386.61	592321.85	15.2	1541.9	1526.7	15.2	5	22.50	56.0	31.57	2,122	2,133	12,340	12.06%	771	0.75%	N	-	-	-	-	-
6/28/2021	1070	1999394.83	592319.11	15.9	1542.0	1526.1	15.9	6	27.00	51.5	30.39	2,042	2,052	11,872	12.06%	742	0.75%	N	-	-	-	-	-
6/28/2021	1049	1999404.81	592307.88	16.9	1541.9	1525.0	16.9	6	27.00	51.5	32.34	2,173	2,183	12,630	12.05%	789	0.75%	N	-	-	-	-	-
6/28/2021	1012	1999419.52	592310.90	17.6	1541.8	1524.2	17.6	3	13.50	65.0	42.42	2,851	2,899	16,772	12.20%	1,048	0.76%	N	-	-	-	-	-
6/28/2021	1038	1999409.55	592322.13	16.4	1541.8	1525.4	16.4	4	18.00	60.5	36.79	2,473	2,491	14,412	12.09%	901	0.76%	N	-	-	-	-	-
6/28/2021	1060	1999399.58	592333.37	16.3	1542.3	1525.4	16.9	5	22.50	56.0	34.97	2,350	2,393	13,845	12.22%	865	0.76%	N	-	-	-	-	-
6/28/2021	1042	1999407.80	592330.63	16.1	1542.0	1525.8	16.1	6	27.00	51.5	30.81	2,070	2,078	12,022	12.04%	751	0.75%	Y	-	14	2.00E-06	-	87.19
6/28/2021	1017	1999417.77	592319.40	17.6	1541.9	1524.0	17.9	6	27.00	51.5	34.19	2,298	2,375	13,740	12.40%	859	0.78%	N	-	-	-	-	-
6/28/2021	977	1999432.49	592322.42	17.6	1541.6	1524.0	17.6	3	13.50	65.0	42.44	2,852	2,883	16,679	12.13%	1,042	0.76%	N	-	-	-	-	-
6/28/2021	1005	1999422.52	592333.65	18.4	1541.9	1523.4	18.4	4	18.00	60.5	41.30	2,776	2,814	16,280	12.17%	1,018	0.76%	N	-	-	-	-	-
6/28/2021	1030	1999412.54	592344.88	18.1	1541.7	1523.6	18.1	4	18.00	60.5	40.63	2,730	2,764	15,991	12.15%	999	0.76%	N	-	-	-	-	-
6/29/2021	1014	1999419.03	592350.64	22.7	1541.8	1519.1	22.7	3	13.50	65.0	54.68	3,675	3,703	21,424	12.09%	1,339	0.76%	N	-	-	-	-	-
6/29/2021	1009	1999420.77	592342.14	20.7	1541.8	1521.1	20.7	5	22.50	56.0	42.98	2,889	2,898	16,766	12.04%	1,048	0.75%	N	-	-	-	-	-
6/29/2021	982	1999430.74	592330.91	18.4	1541.5	1522.9	18.6	5	22.50	56.0	38.65	2,597	2,645	15,303	12.22%	956	0.76%	N	-	-	-	-	-
6/29/2021	724	1999516.78	592397.27	**15.4**	1541.2	1527.5	**13.7**	0	0.00	78.5	39.88	2,680	2,695	15,592	12.07%	974	0.75%	Y	**Refusal**	8	1.30E-06	-	114.13
6/29/2021	755	1999506.34	592406.13	**14.2**	1541.1	1530.1	**11.0**	0	0.00	78.5	32.11	2,158	2,251	13,023	12.52%	814	0.78%	N	**Refusal**	-	-	-	-
6/29/2021	805	1999489.88	592411.61	**14.3**	1542.1	1532.5	**9.5**	1	4.50	74.0	26.08	1,753	1,819	10,524	12.46%	658	0.78%	N	**Refusal**	-	-	-	-
6/29/2021	780	1999498.11	592408.87	**14.3**	1541.7	1529.6	**12.0**	2	9.00	69.5	30.98	2,082	2,105	12,178	12.13%	761	0.76%	N	**Refusal**	-	-	-	-
6/29/2021	749	1999508.56	592400.00	**15.0**	1541.2	1530.1	**11.1**	5	22.82	55.7	22.91	1,540	1,585	9,170	12.35%	573	0.77%	N	**Refusal**	-	-	-	-
6/29/2021	763	1999503.82	592385.75	16.3	1541.0	1524.7	16.3	0	0.00	78.5	47.50	3,192	3,243	18,762	12.19%	1,173	0.76%	N	-	-	-	-	-
6/29/2021	793	1999493.84	592396.98	14.7	1541.4	1526.7	14.7	0	0.00	78.5	42.82	2,878	2,902	16,789	12.10%	1,049	0.76%	N	-	-	-	-	-
6/29/2021	843	1999477.39	592402.46	13.9	1541.9	1528.0	13.9	2	9.00	69.5	35.85	2,409	2,443	14,134	12.17%	883	0.76%	N	-	-	-	-	-
6/29/2021	818	1999485.62	592399.72	13.7	1541.4	1527.6	13.7	2	9.00	69.5	35.36	2,376	2,411	13,949	12.17%	872	0.76%	N	-	-	-	-	-
6/30/2021	773	1999500.33	592402.74	**15.2**	1541.9	1529.6	**12.3**	6	38.66	39.9	18.20	1,223	1,619	9,367	15.89%	585	0.99%	N	**Refusal**	-	-	-	-
6/30/2021	823	1999483.87	592408.21	**14.1**	1542.0	1530.9	**11.0**	6	43.13	35.4	14.44	970	1,453	8,406	17.97%	525	1.12%	N	**Refusal**	-	-	-	-
6/30/2021	798	1999492.10	592405.48	**14.4**	1541.9	1530.1	**11.8**	6	45.56	33.0	14.43	970	1,537	8,892	19.02%	556	1.19%	N	**Refusal**	-	-	-	-
6/30/2021	743	1999510.30	592391.51	16.8	1541.8	1525.0	16.8	3	13.50	65.0	40.54	2,725	2,801	16,205	12.34%	1,013	0.77%	N	-	-	-	-	-
6/30/2021	768	1999502.07	592394.25	**16.2**	1541.9	1526.5	**15.4**	5	22.50	56.0	32.00	2,151	2,176	12,589	12.14%	787	0.76%	N	**Refusal**	-	-	-	-
6/30/2021	783	1999497.33	592379.99	18.0	1541.9	1523.9	18.0	1	4.50	74.0	49.44	3,323	3,342	19,335	12.07%	1,208	0.75%	Y	-	11	1.00E-06	-	145.98
6/30/2021	813	1999487.36	592391.23	15.5	1542.0	1526.5	15.5	2	9.00	69.5	39.92	2,683	2,708	15,667	12.11%	979	0.76%	N	-	-	-	-	-
6/30/2021	864	1999470.90	592396.70	14.0	1541.8	1527.8	14.0	3	13.50	65.0	33.75	2,268	2,290	13,249	12.12%	828	0.76%	N	-	-	-	-	-
6/30/2021	838	1999479.13	592393.96	**14.2**	1541.9	1529.3	**12.6**	4	18.00	60.5	28.30	1,902	1,920	11,108	12.12%	694	0.76%	N	**Refusal**	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
6/30/2021	808	1999489.10	592382.73	17.7	1541.9	1524.2	17.7	2	9.00	69.5	45.66	3,069	3,107	17,975	12.15%	1,123	0.76%	N	-	-	-	-	-
6/30/2021	853	1999474.39	592379.71	17.2	1541.7	1524.4	17.2	0	0.00	78.5	50.09	3,366	3,386	19,590	12.07%	1,224	0.75%	N	-	-	-	-	-
6/30/2021	821	1999484.36	592368.48	18.4	1541.9	1523.4	18.5	0	0.00	78.5	53.73	3,611	3,615	20,914	12.01%	1,307	0.75%	N	-	-	-	-	-
7/1/2021	788	1999495.59	592388.49	16.3	1541.6	1525.3	16.3	6	27.00	51.5	31.11	2,091	2,105	12,178	12.08%	761	0.76%	N	-	-	-	-	-
7/1/2021	884	1999464.42	592390.94	14.5	1541.1	1526.6	14.5	3	13.50	65.0	34.95	2,349	2,372	13,723	12.12%	858	0.76%	N	-	-	-	-	-
7/1/2021	879	1999466.16	592382.45	16.5	1541.2	1524.7	16.5	2	9.00	69.5	42.52	2,858	2,883	16,679	12.11%	1,042	0.76%	N	-	-	-	-	-
7/1/2021	846	1999476.13	592371.22	18.3	1541.9	1523.6	18.3	2	9.00	69.5	47.18	3,171	3,197	18,496	12.10%	1,156	0.76%	N	-	-	-	-	-
7/1/2021	923	1999451.45	592379.43	22.0	1541.1	1519.1	22.1	2	9.00	69.5	56.79	3,817	4,237	24,513	13.32%	1,532	0.83%	Y	-	22	6.30E-07	-	163.11
7/1/2021	892	1999461.42	592368.20	21.7	1541.5	1519.8	21.7	0	0.00	78.5	63.15	4,244	4,265	24,675	12.06%	1,542	0.75%	N	-	-	-	-	-
7/1/2021	917	1999453.19	592370.93	23.7	1541.6	1517.9	23.7	2	9.00	69.5	61.09	4,106	4,132	23,906	12.08%	1,494	0.75%	N	-	-	-	-	-
7/1/2021	862	1999471.39	592356.96	18.0	1541.9	1523.9	18.0	0	0.00	78.5	52.39	3,521	3,542	20,492	12.07%	1,281	0.75%	N	-	-	-	-	-
7/1/2021	887	1999463.17	592359.70	20.9	1541.7	1520.7	20.9	2	9.00	69.5	53.93	3,624	3,656	21,152	12.10%	1,322	0.76%	N	-	-	-	-	-
7/1/2021	931	1999448.45	592356.68	24.2	1541.6	1517.4	24.2	0	0.00	78.5	70.42	4,733	4,760	27,539	12.07%	1,721	0.75%	Y	-	17	5.20E-07	-	203.92
7/1/2021	902	1999458.42	592345.45	20.7	1541.9	1521.2	20.7	0	0.00	78.5	60.27	4,050	4,065	23,518	12.04%	1,470	0.75%	N	-	-	-	-	-
7/2/2021	960	1999438.48	592367.91	24.4	1541.6	1517.2	24.4	2	9.00	69.5	62.87	4,225	4,255	24,617	12.09%	1,539	0.76%	N	-	-	-	-	-
7/2/2021	955	1999440.23	592359.42	24.7	1541.9	1517.2	24.7	2	9.00	69.5	63.67	4,279	4,309	24,930	12.09%	1,558	0.76%	N	-	-	-	-	-
7/2/2021	926	1999450.20	592348.19	23.7	1541.9	1518.2	23.7	2	9.00	69.5	61.09	4,106	4,133	23,911	12.08%	1,494	0.76%	N	-	-	-	-	-
7/2/2021	996	1999425.51	592356.40	24.3	1541.7	1517.4	24.3	3	13.50	65.0	58.58	3,937	3,958	22,899	12.06%	1,431	0.75%	N	-	-	-	-	-
7/2/2021	968	1999435.48	592345.16	23.9	1541.9	1518.0	23.9	1	4.50	74.0	65.54	4,404	4,429	25,624	12.07%	1,601	0.75%	N	-	-	-	-	-
7/2/2021	940	1999445.46	592333.93	19.6	1541.7	1522.1	19.6	1	4.50	74.0	53.80	3,616	3,636	21,036	12.07%	1,315	0.75%	Y	-	3	6.00E-06	3.70E-06	222.52
7/2/2021	964	1999437.23	592336.67	21.0	1541.9	1520.9	21.1	5	22.50	56.0	43.71	2,938	2,963	17,142	12.10%	1,071	0.76%	N	-	-	-	-	-
7/2/2021	992	1999427.26	592347.90	23.9	1541.8	1517.9	23.9	5	22.50	56.0	49.67	3,338	3,380	19,555	12.15%	1,222	0.76%	N	-	-	-	-	-
7/6/2021	802	1999490.85	592374.24	18.0	1541.5	1523.5	18.0	3	13.50	65.0	43.41	2,917	2,931	16,957	12.06%	1,060	0.75%	N	-	-	-	-	-
7/6/2021	833	1999480.88	592385.47	15.9	1541.4	1525.3	16.1	4	18.00	60.5	36.19	2,432	2,475	14,319	12.21%	895	0.76%	N	-	-	-	-	-
7/6/2021	859	1999472.65	592388.20	14.4	1541.3	1526.8	14.4	6	27.00	51.5	27.51	1,849	1,866	10,796	12.11%	675	0.76%	N	-	-	-	-	-
7/6/2021	827	1999482.62	592376.97	18.0	1541.6	1523.6	18.0	6	27.00	51.5	34.38	2,310	2,338	13,526	12.14%	845	0.76%	N	-	-	-	-	-
7/6/2021	904	1999457.94	592385.18	17.7	1541.0	1523.3	17.7	5	22.50	56.0	36.80	2,473	2,515	14,550	12.20%	909	0.76%	N	-	-	-	-	-
7/6/2021	873	1999467.91	592373.95	18.4	1541.8	1523.3	18.4	4	18.00	60.5	41.32	2,777	2,803	16,217	12.11%	1,014	0.76%	Y	-	15	5.30E-07	-	147.23
7/6/2021	841	1999477.88	592362.72	18.4	1541.9	1523.5	18.4	3	13.50	65.0	44.35	2,980	3,000	17,356	12.08%	1,085	0.75%	N	-	-	-	-	-
7/6/2021	867	1999469.65	592365.46	18.5	1542.0	1523.5	18.5	6	27.00	51.5	35.37	2,377	2,469	14,284	12.46%	893	0.78%	N	-	-	-	-	-
7/6/2021	898	1999459.68	592376.69	21.0	1541.8	1520.8	21.0	6	27.00	51.5	40.14	2,698	2,718	15,725	12.09%	983	0.76%	N	-	-	-	-	-
7/6/2021	941	1999444.97	592373.67	23.5	1540.9	1517.3	23.5	5	22.50	56.0	48.86	3,283	3,308	19,138	12.09%	1,196	0.76%	N	-	-	-	-	-
7/6/2021	882	1999464.91	592351.21	19.0	1541.8	1522.7	19.1	3	13.50	65.0	45.89	3,084	3,109	17,987	12.10%	1,124	0.76%	N	-	-	-	-	-
7/7/2021	912	1999454.94	592362.44	23.7	1541.7	1518.0	23.7	4	18.00	60.5	53.21	3,576	3,613	20,903	12.13%	1,306	0.76%	N	-	-	-	-	-
7/7/2021	907	1999456.68	592353.94	23.8	1542.7	1518.9	23.8	6	27.00	51.5	45.47	3,056	3,150	18,224	12.37%	1,139	0.77%	N	-	-	-	-	-
7/7/2021	936	1999446.71	592365.17	22.8	1540.0	1517.2	22.8	6	27.00	51.5	43.56	2,927	2,966	17,160	12.16%	1,072	0.76%	N	-	-	-	-	-
7/7/2021	978	1999432.00	592362.15	24.6	1541.8	1517.2	24.6	5	22.50	56.0	51.12	3,435	3,456	19,995	12.07%	1,250	0.75%	N	-	-	-	-	-
7/7/2021	950	1999441.97	592350.92	24.3	1541.7	1517.3	24.4	4	18.00	60.5	54.73	3,678	3,737	21,620	12.19%	1,351	0.76%	N	-	-	-	-	-
7/7/2021	921	1999451.94	592339.69	21.5	1542.2	1520.7	21.5	3	13.50	65.0	51.82	3,482	3,522	20,376	12.14%	1,274	0.76%	N	-	-	-	-	-
7/7/2021	973	1999433.74	592353.66	24.6	1541.8	1517.2	24.7	6	27.00	51.5	47.05	3,162	3,203	18,531	12.15%	1,158	0.76%	Y	-	21	1.70E-07	-	187.05
7/8/2021	945	1999443.71	592342.43	23.1	1542.0	1518.9	23.1	6	27.00	51.5	44.13	2,966	3,050	17,646	12.34%	1,103	0.77%	N	-	-	-	-	-
7/8/2021	1093	1999382.35	592267.86	20.5	1541.9	1521.4	20.5	2	9.00	69.5	52.88	3,553	3,581	20,718	12.09%	1,295	0.76%	N	-	-	-	-	-
7/8/2021	1072	1999393.92	592259.43	19.3	1541.3	1522.0	19.3	0	0.00	78.5	56.20	3,777	3,796	21,962	12.06%	1,373	0.75%	N	-	-	-	-	-
7/8/2021	1040	1999408.78	592251.16	19.3	1541.3	1522.0	19.4	0	0.00	78.5	56.29	3,783	3,808	22,031	12.08%	1,377	0.76%	Y	-	10	1.50E-07	-	230.01
7/8/2021	1069	1999395.32	592279.38	18.8	1541.3	1522.5	18.8	2	9.00	69.5	48.45	3,256	3,288	19,023	12.12%	1,189	0.76%	N	-	-	-	-	-
7/8/2021	1013	1999419.07	592240.94	17.3	1541.5	1524.1	17.3	0	0.00	78.5	50.38	3,386	3,407	19,711	12.08%	1,232	0.75%	N	-	-	-	-	-
7/8/2021	1041	1999408.29	592290.89	17.6	1541.6	1524.0	17.6	2	9.00	69.5	45.38	3,050	3,072	17,773	12.09%	1,111	0.76%	N	-	-	-	-	-
7/8/2021	1008	1999421.26	592302.41	17.4	1541.6	1524.2	17.4	2	9.00	69.5	44.92	3,019	3,047	17,628	12.11%	1,102	0.76%	N	-	-	-	-	-
7/8/2021	896	1999460.17	592336.95	24.3	1548.0	1523.6	24.3	2	9.00	69.5	62.66	4,211	4,242	24,542	12.09%	1,534	0.76%	Y	-	15	5.00E-07	-	170.01
7/8/2021	935	1999447.20	592325.44	18.0	1541.8	1523.8	18.0	2	9.00	69.5	46.41	3,119	3,140	18,166	12.08%	1,135	0.76%	N	-	-	-	-	-
7/8/2021	972	1999434.23	592313.92	17.5	1541.6	1524.1	17.5	2	9.00	69.5	45.12	3,032	3,059	17,698	12.11%	1,106	0.76%	N	-	-	-	-	-
7/8/2021	1058	1999400.55	592253.89	19.2	1541.2	1522.0	19.2	2	9.00	69.5	49.48	3,325	3,359	19,433	12.12%	1,215	0.76%	N	-	-	-	-	-
7/8/2021	1034	1999410.84	592243.68	19.2	1541.3	1522.1	19.2	3	14.17	64.4	45.82	3,080	3,147	18,207	12.26%	1,138	0.77%	N	-	-	-	-	-
7/8/2021	1079	1999390.58	592265.13	20.0	1541.9	1521.9	20.0	4	22.15	56.4	41.79	2,809	3,047	17,628	13.02%	1,102	0.81%	N	-	-	-	-	-
7/9/2021	1082	1999388.84	592273.62	20.2	1542.1	1521.9	20.2	5	22.50	56.0	41.95	2,819	2,846	16,465	12.12%	1,029	0.76%	N	-	-	-	-	-
7/9/2021	1062	1999398.81	592262.39	19.9	1541.9	1522.0	19.9	6	29.61	48.9	36.12	2,427	2,579	14,921	12.75%	933	0.80%	N	-	-	-	-	-
7/9/2021	997	1999425.24	592245.68	14.8	1541.9	1526.3	15.6	2	9.53	69.0	39.92	2,683	2,727	15,777	12.20%	986	0.76%	N	-	-	-	-	-
7/9/2021	1024	1999415.27	592256.92	19.2	1541.7	1522.5	19.2	1	4.50	74.0	52.71	3,542	3,569	20,648	12.09%	1,291	0.76%	N	-	-	-	-	-
7/9/2021	1055	1999401.81	592285.14	18.7	1541.9	1523.2	18.7	4	18.00	60.5	41.97	2,821	2,841	16,437	12.09%	1,027	0.76%	N	-	-	-	-	-
7/9/2021	1025	1999414.78	592296.65	16.5	1541.0	1524.5	16.5	4	18.00	60.5	37.04	2,489	2,515	14,550	12.12%	909	0.76%	Y	-	7	1.60E-06	-	100.30
7/9/2021	990	1999427.75	592308.17	17.8	1541.9	1524.1	17.8	4	18.00	60.5	39.98	2,687	2,701	15,627	12.06%	977	0.75%	N	-	-	-	-	-
7/9/2021	877	1999466.65	592342.71	16.7	1541.8	1525.1	16.7	3	13.50	65.0	40.30	2,708	2,799	16,194	12.40%	1,012	0.78%	N	-	-	-	-	-
7/9/2021	954	1999440.71	592319.68	17.6	1541.7	1524.1	17.6	4	18.00	60.5	39.49	2,654	2,682	15,517	12.13%	970	0.76%	N	-	-	-	-	-
7/9/2021	916	1999453.68	592331.20	18.5	1541.8	1523.3	18.5	4	18.00	60.5	41.55	2,792	2,816	16,292	12.10%	1,018	0.76%	N	-	-	-	-	-
7/9/2021	1066	1999397.07	592270.88	19.6	1541.7	1522.1	19.6	4	18.00	60.5	43.99	2,956	2,994	17,322	12.15%	1,083	0.76%	N	-	-	-	-	-
7/9/2021	1044	1999407.04	592259.65	19.4	1541.4	1522.0	19.4	4	18.00	60.5	43.52	2,925	2,965	17,154	12.17%	1,072	0.76%	N	-	-	-	-	-
7/9/2021	1019	1999417.01	592248.42	19.2	1541.8	1522.6	19.2	6	31.10	47.4	33.79	2,271	2,490	14,406	13.16%	900	0.82%	N	-	-	-	-	-
7/13/2021	969	1999435.21	592234.45	15.3	1541.7	1526.4	15.4	0	0.00	78.5	44.65	3,001	3,020	17,472	12.08%	1,092	0.75%	N	-	-	-	-	-
7/13/2021	956	1999439.95	592248.70	13.9	1542.3	1528.4	13.9	0	0.00	78.5	40.46	2,719	2,736	15,829	12.07%	989	0.75%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
7/13/2021	1002	1999423.49	592254.18	17.0	1541.9	1524.9	17.0	3	13.50	65.0	41.05	2,759	2,790	16,141	12.14%	1,009	0.76%	N	-	-	-	-	-
7/13/2021	1048	1999405.29	592268.15	19.9	1542.0	1522.1	19.9	3	13.50	65.0	47.98	3,225	3,252	18,814	12.10%	1,176	0.76%	N	-	-	-	-	-
7/13/2021	942	1999444.69	592262.96	13.3	1541.3	1528.0	13.3	0	0.00	78.5	38.72	2,602	2,631	15,222	12.13%	951	0.76%	N	-	-	-	-	-
7/13/2021	989	1999428.23	592268.43	15.1	1541.8	1526.6	15.2	0	0.00	78.5	44.16	2,967	2,976	17,218	12.03%	1,076	0.75%	N	-	-	-	-	-
7/13/2021	1016	1999418.26	592279.66	17.1	1541.5	1524.3	17.1	0	0.00	78.5	49.83	3,349	3,381	19,561	12.12%	1,223	0.76%	Y	-	8	1.30E-06	-	258.39
7/13/2021	929	1999449.43	592277.21	14.4	1541.3	1526.8	14.4	0	0.00	78.5	41.98	2,821	2,833	16,390	12.05%	1,024	0.75%	N	-	-	-	-	-
7/13/2021	976	1999432.98	592282.68	15.9	1541.6	1525.7	15.9	0	0.00	78.5	46.28	3,110	3,126	18,085	12.06%	1,130	0.75%	N	-	-	-	-	-
7/13/2021	1004	1999423.00	592293.91	17.1	1541.5	1524.4	17.1	2	9.00	69.5	44.07	2,961	2,995	17,327	12.14%	1,083	0.76%	N	-	-	-	-	-
7/14/2021	991	1999427.30	592238.21	14.2	1541.7	1527.5	14.2	3	17.70	60.8	32.04	2,154	2,328	13,469	12.97%	842	0.81%	N	-	-	-	-	-
7/14/2021	951	1999441.69	592240.21	16.1	1541.8	1525.7	16.1	2	9.00	69.5	41.47	2,787	2,814	16,280	12.12%	1,018	0.76%	N	-	-	-	-	-
7/14/2021	979	1999431.72	592251.44	13.6	1541.8	1528.2	13.6	3	13.50	65.0	32.76	2,202	2,239	12,954	12.20%	810	0.76%	N	-	-	-	-	-
7/14/2021	937	1999446.43	592254.46	13.7	1541.7	1528.0	13.7	2	9.00	69.5	35.34	2,375	2,394	13,850	12.10%	866	0.76%	N	-	-	-	-	-
7/14/2021	1028	1999413.52	592265.41	19.3	1541.7	1522.4	19.3	3	13.50	65.0	46.56	3,129	3,149	18,218	12.08%	1,139	0.75%	N	-	-	-	-	-
7/14/2021	1052	1999403.55	592276.64	19.3	1541.8	1522.5	19.3	4	18.00	60.5	43.30	2,910	2,932	16,963	12.09%	1,060	0.76%	Y	-	18	1.00E-06	-	120.64
7/14/2021	924	1999451.17	592268.71	14.0	1541.7	1527.7	14.0	2	9.00	69.5	36.06	2,423	2,449	14,169	12.13%	886	0.76%	N	-	-	-	-	-
7/14/2021	966	1999436.46	592265.69	13.7	1541.5	1527.8	13.7	2	9.00	69.5	35.36	2,376	2,405	13,914	12.14%	870	0.76%	N	-	-	-	-	-
7/14/2021	994	1999426.49	592276.92	15.7	1541.6	1525.9	15.7	3	13.50	65.0	37.87	2,545	2,563	14,828	12.09%	927	0.76%	N	-	-	-	-	-
7/14/2021	1021	1999416.52	592288.16	17.4	1541.9	1524.4	17.4	4	18.00	60.5	39.06	2,625	2,672	15,459	12.22%	966	0.76%	N	-	-	-	-	-
7/14/2021	910	1999455.92	592282.97	17.1	1541.5	1524.3	17.1	1	4.50	74.0	47.00	3,159	3,182	18,409	12.09%	1,151	0.76%	N	-	-	-	-	-
7/14/2021	953	1999441.20	592279.95	14.7	1541.7	1526.9	14.8	2	9.00	69.5	37.99	2,553	2,567	14,851	12.07%	928	0.75%	N	-	-	-	-	-
7/14/2021	870	1999468.88	592294.48	20.3	1541.2	1520.9	20.3	0	0.00	78.5	59.08	3,970	3,991	23,090	12.06%	1,443	0.75%	N	-	-	-	-	-
7/14/2021	981	1999431.23	592291.18	16.8	1541.4	1524.5	16.9	2	9.00	69.5	43.50	2,923	2,938	16,998	12.06%	1,062	0.75%	Y	-	3	2.20E-06	-	147.67
7/14/2021	939	1999445.94	592294.20	16.9	1541.3	1524.3	16.9	0	0.00	78.5	49.22	3,308	3,380	19,555	12.26%	1,222	0.77%	N	-	-	-	-	-
7/14/2021	967	1999435.97	592305.43	17.2	1541.3	1524.1	17.3	2	9.00	69.5	44.43	2,986	3,005	17,385	12.08%	1,087	0.75%	N	-	-	-	-	-
7/14/2021	901	1999458.91	592305.71	18.2	1541.4	1523.2	18.2	1	4.50	74.0	49.94	3,356	3,379	19,549	12.08%	1,222	0.76%	N	-	-	-	-	-
7/15/2021	974	1999433.46	592242.95	13.9	1541.9	1528.0	13.9	6	27.00	51.5	26.57	1,786	1,798	10,402	12.08%	650	0.76%	N	-	-	-	-	-
7/15/2021	961	1999438.21	592257.20	13.5	1541.5	1528.0	13.5	5	22.50	56.0	28.04	1,884	1,898	10,981	12.09%	686	0.76%	N	-	-	-	-	-
7/15/2021	1007	1999421.75	592262.67	17.6	1541.9	1524.3	17.6	4	18.00	60.5	39.49	2,654	2,686	15,540	12.15%	971	0.76%	N	-	-	-	-	-
7/15/2021	1032	1999411.78	592273.90	18.9	1541.5	1522.6	18.9	4	18.00	60.5	42.40	2,849	2,892	16,732	12.18%	1,046	0.76%	N	-	-	-	-	-
7/15/2021	948	1999442.95	592271.45	13.8	1541.6	1527.5	14.2	5	22.50	56.0	29.41	1,976	2,022	11,698	12.28%	731	0.77%	N	-	-	-	-	-
7/15/2021	999	1999424.75	592285.42	16.3	1541.4	1525.0	16.3	6	27.00	51.5	31.17	2,095	2,225	12,873	12.75%	805	0.80%	N	-	-	-	-	-
7/15/2021	890	1999462.40	592288.72	19.4	1541.5	1522.0	19.4	2	9.00	69.5	50.04	3,363	3,398	19,659	12.12%	1,229	0.76%	Y	-	11	2.20E-06	-	96.57
7/15/2021	934	1999447.69	592285.70	15.9	1541.4	1525.5	16.0	4	18.00	60.5	35.79	2,405	2,421	14,007	12.08%	875	0.76%	N	-	-	-	-	-
7/15/2021	963	1999437.72	592296.93	17.4	1541.6	1523.9	17.8	3	13.50	65.0	42.76	2,873	2,951	17,073	12.32%	1,067	0.77%	N	-	-	-	-	-
7/15/2021	876	1999467.14	592302.98	20.2	1541.7	1521.5	20.2	4	18.00	60.5	45.34	3,047	3,070	17,761	12.09%	1,110	0.76%	N	-	-	-	-	-
7/15/2021	920	1999452.43	592299.96	17.3	1541.3	1524.0	17.3	2	9.00	69.5	44.61	2,998	3,054	17,669	12.22%	1,104	0.76%	N	-	-	-	-	-
7/15/2021	949	1999442.46	592311.19	17.4	1541.5	1524.0	17.5	3	13.50	65.0	42.18	2,835	2,886	16,697	12.22%	1,044	0.76%	N	-	-	-	-	-
7/15/2021	906	1999457.17	592314.21	17.5	1541.6	1522.8	18.8	2	9.00	69.5	48.32	3,247	3,308	19,138	12.23%	1,196	0.76%	N	-	-	-	-	-
7/16/2021	984	1999429.98	592259.94	14.5	1541.7	1527.2	14.5	6	27.00	51.5	27.72	1,863	1,883	10,894	12.13%	681	0.76%	N	-	-	-	-	-
7/16/2021	1011	1999420.01	592271.17	17.4	1541.7	1524.3	17.4	6	27.00	51.5	33.25	2,235	2,286	13,226	12.28%	827	0.77%	N	-	-	-	-	-
7/16/2021	1037	1999410.04	592282.40	18.4	1541.8	1523.4	18.4	6	27.00	51.5	35.16	2,363	2,502	14,475	12.71%	905	0.79%	N	-	-	-	-	-
7/16/2021	971	1999434.72	592274.19	14.5	1541.7	1527.1	14.6	6	27.00	51.5	27.81	1,869	1,894	10,958	12.16%	685	0.76%	Y	-	13	1.70E-06	-	76.19
7/16/2021	958	1999439.46	592288.44	16.6	1541.6	1525.0	16.7	6	27.00	51.5	31.80	2,137	2,151	12,445	12.08%	778	0.75%	N	-	-	-	-	-
7/16/2021	986	1999429.49	592299.67	17.2	1541.4	1524.0	17.4	6	27.00	51.5	33.12	2,226	2,260	13,075	12.18%	817	0.76%	N	-	-	-	-	-
7/16/2021	915	1999454.17	592291.46	17.2	1541.1	1523.8	17.2	5	22.50	56.0	35.74	2,402	2,442	14,128	12.20%	883	0.76%	N	-	-	-	-	-
7/16/2021	944	1999444.20	592302.69	17.3	1541.4	1524.1	17.3	5	22.50	56.0	35.95	2,416	2,441	14,122	12.12%	883	0.76%	N	-	-	-	-	-
7/16/2021	930	1999448.94	592316.94	17.4	1541.5	1524.1	17.4	4	18.00	60.5	39.06	2,625	2,654	15,355	12.13%	960	0.76%	N	-	-	-	-	-
7/16/2021	886	1999463.65	592319.96	16.7	1541.2	1524.5	16.7	4	18.00	60.5	37.49	2,519	2,641	15,279	12.58%	955	0.79%	N	-	-	-	-	-
7/19/2021	895	1999460.66	592297.22	19.0	1541.5	1522.4	19.0	6	27.00	51.5	36.31	2,440	2,467	14,273	12.13%	892	0.76%	N	-	-	-	-	-
7/19/2021	925	1999450.69	592308.45	17.5	1541.6	1524.0	17.5	6	27.00	51.5	33.44	2,248	2,264	13,098	12.09%	819	0.76%	N	-	-	-	-	-
7/19/2021	911	1999455.43	592322.70	17.6	1541.7	1524.1	17.6	5	22.50	56.0	36.57	2,458	2,478	14,336	12.10%	896	0.76%	N	-	-	-	-	-
7/19/2021	891	1999461.91	592328.46	16.6	1541.4	1524.8	16.6	5	22.50	56.0	34.47	2,317	2,359	13,648	12.22%	853	0.76%	Y	-	4	1.50E-06	-	109.71
7/20/2021	946	1999443.44	592231.72	16.0	1541.9	1525.9	16.0	2	9.00	69.5	41.23	2,771	2,797	16,182	12.11%	1,011	0.76%	N	-	-	-	-	-
7/20/2021	897	1999459.89	592226.24	11.0	1538.5	1527.5	11.0	0	0.00	78.5	32.08	2,156	2,172	12,566	12.09%	785	0.76%	N	-	-	-	-	-
7/20/2021	801	1999491.06	592223.79	6.6	1538.5	1531.9	6.6	0	0.00	78.5	19.23	1,292	1,312	7,591	12.18%	474	0.76%	N	-	-	-	-	-
7/20/2021	850	1999475.33	592223.56	8.2	1538.5	1530.3	8.2	0	0.00	78.5	23.91	1,607	1,632	9,442	12.19%	590	0.76%	N	-	-	-	-	-
7/20/2021	932	1999448.18	592245.97	15.2	1541.9	1526.7	15.2	3	13.50	65.0	36.64	2,462	2,482	14,360	12.10%	897	0.76%	Y	-	14	8.80E-07	-	116.11
7/20/2021	918	1999452.92	592260.22	13.4	1541.2	1527.8	13.4	3	13.50	65.0	32.33	2,172	2,186	12,647	12.07%	790	0.75%	N	-	-	-	-	-
7/20/2021	883	1999464.63	592240.49	11.1	1538.5	1527.4	11.1	0	0.00	78.5	32.35	2,174	2,191	12,676	12.09%	792	0.76%	N	-	-	-	-	-
7/20/2021	832	1999481.09	592235.02	13.4	1538.5	1525.1	13.4	0	0.00	78.5	39.01	2,621	2,637	15,256	12.07%	954	0.75%	N	-	-	-	-	-
7/20/2021	787	1999495.80	592238.04	13.1	1538.5	1525.4	13.1	0	0.00	78.5	38.16	2,565	2,581	14,932	12.08%	933	0.75%	N	-	-	-	-	-
7/20/2021	905	1999457.66	592274.47	15.7	1541.4	1525.7	15.7	3	13.50	65.0	37.84	2,543	2,561	14,817	12.08%	926	0.76%	N	-	-	-	-	-
7/20/2021	868	1999469.37	592254.75	12.6	1538.5	1525.9	12.6	0	0.00	78.5	36.68	2,465	2,483	14,365	12.09%	898	0.76%	N	-	-	-	-	-
7/20/2021	817	1999485.83	592249.27	13.3	1538.5	1525.2	13.3	0	0.00	78.5	38.78	2,606	2,622	15,169	12.07%	948	0.75%	N	-	-	-	-	-
7/20/2021	772	1999500.54	592252.29	13.0	1538.5	1525.5	13.0	0	0.00	78.5	37.90	2,547	2,566	14,845	12.09%	928	0.76%	N	-	-	-	-	-
7/20/2021	854	1999474.11	592269.00	17.0	1538.6	1521.6	17.0	0	0.00	78.5	49.54	3,329	3,341	19,329	12.04%	1,208	0.75%	N	-	-	-	-	-
7/20/2021	803	1999490.57	592263.52	15.9	1538.8	1522.7	16.1	0	0.00	78.5	46.83	3,147	3,223	18,647	12.29%	1,165	0.77%	N	-	-	-	-	-
7/20/2021	759	1999505.28	592266.54	15.5	1538.6	1523.0	15.5	0	0.00	78.5	45.12	3,032	3,048	17,634	12.06%	1,102	0.75%	N	-	-	-	-	-
7/20/2021	865	1999470.63	592285.99	17.8	1538.6	1520.7	17.9	2	9.00	69.5	45.97	3,090	3,108	17,981	12.07%	1,124	0.75%	Y	-	5	2.60E-06	-	101.72
7/20/2021	814	1999487.08	592280.51	18.1	1538.5	1520.4	18.1	0	0.00	78.5	52.71	3,542	3,576	20,689	12.11%	1,293	0.76%	N	-	-	-	-	-
7/21/2021	922	1999451.66	592228.98	12.5	1538.5	1525.9	12.5	2	9.00	69.5	32.27	2,169	2,192	12,682	12.13%	793	0.76%	N	-	-	-	-	-
7/21/2021	872	1999468.12	592223.50	8.8	1538.6	1529.8	8.8	3	17.80	60.7	19.87	1,335	1,450	8,389	13.03%	524	0.81%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
7/21/2021	826	1999482.83	592226.52	8.2	1538.5	1530.3	8.2	3	16.71	61.8	18.80	1,263	1,347	7,793	12.79%	487	0.80%	N	-	-	-	-	-
7/21/2021	908	1999456.40	592243.23	12.0	1538.6	1526.6	12.0	2	9.00	69.5	30.96	2,080	2,102	12,161	12.12%	760	0.76%	N	-	-	-	-	-
7/21/2021	807	1999489.32	592232.28	12.8	1538.5	1525.7	12.8	4	18.00	60.5	28.79	1,935	1,973	11,415	12.24%	713	0.76%	Y	-	6	7.10E-07	-	129.73
7/21/2021	858	1999472.86	592237.76	12.3	1538.5	1526.2	12.3	2	9.00	69.5	31.71	2,131	2,162	12,508	12.18%	782	0.76%	N	-	-	-	-	-
7/21/2021	893	1999461.15	592257.48	11.8	1538.6	1526.7	11.8	2	9.00	69.5	30.47	2,048	2,069	11,970	12.13%	748	0.76%	N	-	-	-	-	-
7/21/2021	792	1999494.06	592246.53	13.2	1538.5	1525.2	13.3	3	13.50	65.0	32.06	2,155	2,163	12,514	12.05%	782	0.75%	N	-	-	-	-	-
7/21/2021	842	1999477.60	592252.01	13.2	1538.7	1525.5	13.2	2	9.00	69.5	34.05	2,288	2,308	13,353	12.10%	835	0.76%	N	-	-	-	-	-
7/21/2021	880	1999465.89	592271.73	15.7	1538.8	1523.1	15.7	2	9.00	69.5	40.51	2,723	2,748	15,898	12.11%	994	0.76%	N	-	-	-	-	-
7/21/2021	778	1999498.80	592260.79	14.5	1538.5	1524.0	14.5	3	13.50	65.0	34.98	2,351	2,412	13,955	12.31%	872	0.77%	N	-	-	-	-	-
7/21/2021	828	1999482.34	592266.26	16.6	1538.6	1522.0	16.6	2	9.00	69.5	42.78	2,875	2,911	16,841	12.15%	1,053	0.76%	N	-	-	-	-	-
7/21/2021	839	1999478.86	592283.25	18.3	1538.7	1520.1	18.6	2	9.00	69.5	47.83	3,214	3,265	18,890	12.19%	1,181	0.76%	N	-	-	-	-	-
7/21/2021	789	1999495.31	592277.78	18.2	1538.7	1520.3	18.4	1	4.50	74.0	50.54	3,396	3,492	20,203	12.34%	1,263	0.77%	N	-	-	-	-	-
7/22/2021	927	1999449.92	592237.47	12.8	1538.7	1525.9	12.8	5	22.50	56.0	26.61	1,788	1,802	10,425	12.09%	652	0.76%	N	-	-	-	-	-
7/22/2021	878	1999466.38	592232.00	10.3	1538.6	1528.2	10.4	4	18.00	60.5	23.39	1,572	1,590	9,199	12.14%	575	0.76%	N	-	-	-	-	-
7/22/2021	913	1999454.66	592251.72	11.0	1538.5	1527.5	11.0	5	22.50	56.0	22.85	1,536	1,602	9,268	12.52%	579	0.78%	N	-	-	-	-	-
7/22/2021	812	1999487.57	592240.78	13.5	1538.5	1525.0	13.5	5	22.50	56.0	28.06	1,886	1,931	11,172	12.29%	698	0.77%	N	-	-	-	-	-
7/22/2021	863	1999471.12	592246.25	12.5	1538.5	1526.0	12.5	4	18.00	60.5	28.12	1,890	1,928	11,154	12.24%	697	0.77%	N	-	-	-	-	-
7/22/2021	899	1999459.40	592265.98	12.1	1538.6	1526.4	12.2	5	22.50	56.0	25.34	1,703	1,715	9,922	12.08%	620	0.76%	N	-	-	-	-	-
7/22/2021	797	1999492.31	592255.03	13.5	1538.7	1525.1	13.5	5	22.50	56.0	28.06	1,886	1,926	11,143	12.26%	696	0.77%	Y	-	9	2.00E-06	-	96.86
7/22/2021	847	1999475.86	592260.50	14.3	1538.5	1524.1	14.4	4	18.00	60.5	32.31	2,171	2,192	12,682	12.11%	793	0.76%	N	-	-	-	-	-
7/23/2021	903	1999458.15	592234.74	11.9	1538.5	1526.5	11.9	6	27.00	51.5	22.79	1,532	1,549	8,962	12.14%	560	0.76%	N	-	-	-	-	-
7/23/2021	852	1999474.60	592229.26	10.2	1538.5	1528.3	10.2	6	42.87	35.7	13.51	908	1,335	7,724	17.64%	483	1.10%	N	-	-	-	-	-
7/23/2021	888	1999462.89	592248.99	11.4	1538.5	1527.1	11.4	6	27.00	51.5	21.78	1,464	1,486	8,597	12.18%	537	0.76%	N	-	-	-	-	-
7/23/2021	837	1999479.34	592243.51	13.7	1538.8	1525.1	13.7	6	27.00	51.5	26.17	1,759	1,784	10,321	12.17%	645	0.76%	N	-	-	-	-	-
7/23/2021	874	1999467.63	592263.24	14.3	1538.5	1524.2	14.3	6	27.00	51.5	27.34	1,837	1,864	10,784	12.18%	674	0.76%	Y	-	3	9.30E-07	5.60E-07	79.66
7/23/2021	822	1999484.09	592257.77	13.9	1538.6	1524.7	13.9	6	27.00	51.5	26.61	1,788	1,803	10,431	12.10%	652	0.76%	N	-	-	-	-	-
7/23/2021	885	1999464.14	592280.23	16.3	1538.5	1522.2	16.3	5	22.50	56.0	33.89	2,278	2,301	13,312	12.12%	832	0.76%	N	-	-	-	-	-
7/23/2021	784	1999497.05	592269.28	17.2	1538.6	1521.4	17.2	4	18.00	60.5	38.61	2,595	2,618	15,146	12.11%	947	0.76%	N	-	-	-	-	-
7/23/2021	834	1999480.60	592274.75	18.0	1538.6	1520.5	18.0	4	18.00	60.5	40.45	2,718	2,741	15,858	12.10%	991	0.76%	N	-	-	-	-	-
7/23/2021	844	1999477.11	592291.74	18.0	1538.4	1520.4	18.1	3	13.50	65.0	43.55	2,927	2,934	16,975	12.03%	1,061	0.75%	N	-	-	-	-	-
7/23/2021	744	1999510.02	592280.80	15.2	1538.5	1523.3	15.2	0	0.00	78.5	44.27	2,975	2,999	17,351	12.10%	1,084	0.76%	N	-	-	-	-	-
7/23/2021	794	1999493.57	592286.27	18.3	1538.7	1520.4	18.3	2	9.00	69.5	47.21	3,173	3,200	18,513	12.10%	1,157	0.76%	N	-	-	-	-	-
7/23/2021	804	1999490.08	592303.26	18.0	1538.6	1520.6	18.1	1	4.50	74.0	49.50	3,326	3,361	19,445	12.13%	1,215	0.76%	N	-	-	-	-	-
7/23/2021	754	1999506.54	592297.79	16.8	1538.5	1521.7	16.8	0	0.00	78.5	48.93	3,288	3,325	19,237	12.13%	1,202	0.76%	N	-	-	-	-	-
7/23/2021	740	1999511.28	592312.04	15.2	1538.6	1523.3	15.2	0	0.00	78.5	44.33	2,979	3,004	17,380	12.10%	1,086	0.76%	N	-	-	-	-	-
7/26/2021	860	1999472.37	592277.49	17.9	1538.7	1520.7	17.9	6	27.00	51.5	34.21	2,299	2,323	13,440	12.13%	840	0.76%	N	-	-	-	-	-
7/26/2021	809	1999488.83	592272.02	17.7	1538.6	1520.9	17.7	6	27.00	51.5	33.81	2,272	2,362	13,665	12.48%	854	0.78%	N	-	-	-	-	-
7/26/2021	764	1999503.54	592275.04	17.1	1538.6	1521.4	17.1	4	18.00	60.5	38.39	2,580	2,603	15,060	12.11%	941	0.76%	N	-	-	-	-	-
7/26/2021	849	1999475.37	592300.24	20.3	1540.9	1520.6	20.4	5	22.50	56.0	42.24	2,838	2,855	16,517	12.07%	1,032	0.75%	N	-	-	-	-	-
7/26/2021	750	1999508.28	592289.29	16.0	1538.5	1522.4	16.0	2	9.00	69.5	41.26	2,773	2,794	16,165	12.09%	1,010	0.76%	N	-	-	-	-	-
7/26/2021	799	1999491.82	592294.76	18.1	1538.5	1520.4	18.1	2	9.00	69.5	46.64	3,135	3,163	18,299	12.11%	1,144	0.76%	Y	-	16	9.10E-07	-	127.24
7/26/2021	735	1999513.02	592303.54	14.5	1538.5	1524.0	14.5	2	9.00	69.5	37.37	2,511	2,546	14,730	12.17%	921	0.76%	N	-	-	-	-	-
7/26/2021	785	1999496.57	592309.02	16.8	1538.5	1521.7	16.8	1	4.50	74.0	46.12	3,100	3,124	18,074	12.09%	1,130	0.76%	N	-	-	-	-	-
7/26/2021	820	1999484.85	592328.74	9.2	1538.8	1529.5	9.2	2	9.00	69.5	23.80	1,599	1,614	9,338	12.11%	584	0.76%	N	-	-	-	-	-
7/26/2021	721	1999517.76	592317.79	16.7	1538.6	1521.8	16.8	1	4.50	74.0	46.18	3,103	3,155	18,253	12.20%	1,141	0.76%	N	-	-	-	-	-
7/26/2021	770	1999501.31	592323.27	12.7	1538.5	1525.6	12.9	0	0.00	78.5	37.44	2,516	2,606	15,077	12.43%	942	0.78%	N	-	-	-	-	-
7/26/2021	816	1999486.11	592359.98	15.0	1538.5	1523.5	15.0	2	9.00	69.5	38.66	2,598	2,619	15,152	12.10%	947	0.76%	N	-	-	-	-	-
7/26/2021	806	1999489.59	592342.99	9.5	1538.5	1529.0	9.5	0	0.00	78.5	27.69	1,861	1,892	10,946	12.20%	684	0.76%	N	-	-	-	-	-
7/26/2021	706	1999522.50	592332.05	16.8	1538.7	1521.8	16.8	0	0.00	78.5	48.90	3,286	3,301	19,098	12.05%	1,194	0.75%	N	-	-	-	-	-
7/26/2021	756	1999506.05	592337.52	12.1	1538.6	1526.5	12.1	0	0.00	78.5	35.26	2,369	2,386	13,804	12.08%	863	0.76%	N	-	-	-	-	-
7/27/2021	769	1999501.79	592283.53	17.8	1538.5	1520.7	17.8	5	22.50	56.0	36.99	2,486	2,508	14,510	12.11%	907	0.76%	N	-	-	-	-	-
7/27/2021	819	1999485.34	592289.01	18.3	1538.7	1520.4	18.3	5	22.50	56.0	38.04	2,557	2,622	15,169	12.31%	948	0.77%	N	-	-	-	-	-
7/27/2021	779	1999498.31	592300.52	17.8	1538.5	1520.6	17.8	4	18.00	60.5	39.98	2,687	2,706	15,655	12.09%	978	0.76%	N	-	-	-	-	-
7/27/2021	730	1999514.76	592295.05	14.0	1538.6	1524.6	14.0	3	13.50	65.0	33.80	2,271	2,292	13,260	12.11%	829	0.76%	N	-	-	-	-	-
7/27/2021	716	1999519.50	592309.30	16.7	1538.6	1521.8	16.7	3	13.50	65.0	40.32	2,710	2,726	15,771	12.07%	986	0.75%	N	-	-	-	-	-
7/27/2021	765	1999503.05	592314.77	14.4	1538.5	1524.0	14.4	3	13.50	65.0	34.74	2,334	2,350	13,596	12.08%	850	0.76%	N	-	-	-	-	-
7/27/2021	800	1999491.34	592334.50	8.5	1538.4	1529.8	8.7	2	9.00	69.5	22.28	1,497	1,498	8,667	12.01%	542	0.75%	Y	-	4	4.40E-06	4.00E-06	98.48
7/27/2021	701	1999524.25	592323.55	17.2	1538.5	1521.3	17.3	2	9.00	69.5	44.45	2,987	3,018	17,461	12.12%	1,091	0.76%	N	-	-	-	-	-
7/27/2021	751	1999507.79	592329.03	13.6	1538.5	1524.9	13.6	2	9.00	69.5	35.13	2,361	2,394	13,850	12.17%	866	0.76%	N	-	-	-	-	-
7/27/2021	686	1999528.99	592337.80	16.6	1538.6	1522.0	16.6	1	4.50	74.0	45.55	3,061	3,085	17,848	12.09%	1,116	0.76%	N	-	-	-	-	-
7/27/2021	736	1999512.53	592343.28	15.1	1538.5	1523.3	15.1	1	4.50	74.0	41.52	2,790	2,807	16,240	12.07%	1,015	0.75%	N	-	-	-	-	-
7/29/2021	775	1999500.05	592292.03	17.9	1538.5	1520.6	17.9	6	27.00	51.5	34.23	2,300	2,335	13,509	12.18%	844	0.76%	N	-	-	-	-	-
7/29/2021	824	1999483.60	592297.50	18.1	1538.5	1520.4	18.1	6	27.00	51.5	34.63	2,327	2,365	13,683	12.20%	855	0.76%	N	-	-	-	-	-
7/29/2021	810	1999488.34	592311.75	16.3	1538.7	1522.4	16.3	5	22.50	56.0	33.85	2,275	2,300	13,307	12.13%	832	0.76%	N	-	-	-	-	-
7/29/2021	760	1999504.79	592306.28	16.3	1538.5	1522.2	16.3	6	27.00	51.5	31.15	2,094	2,167	12,537	12.42%	784	0.78%	N	-	-	-	-	-
7/29/2021	795	1999493.08	592326.01	10.3	1538.6	1528.3	10.3	4	18.00	60.5	23.14	1,555	1,567	9,066	12.09%	567	0.76%	N	-	-	-	-	-
7/29/2021	745	1999509.53	592320.53	15.1	1538.7	1523.6	15.1	5	22.50	56.0	31.40	2,110	2,126	12,300	12.09%	769	0.76%	N	-	-	-	-	-
7/29/2021	731	1999514.27	592334.78	15.0	1538.6	1523.5	15.1	4	18.00	60.5	33.81	2,272	2,284	13,214	12.06%	826	0.75%	Y	-	12	1.80E-06	-	95.37
7/29/2021	781	1999497.82	592340.26	10.0	1538.5	1528.2	10.3	3	13.50	65.0	24.84	1,669	1,708	9,882	12.28%	618	0.77%	N	-	-	-	-	-
7/29/2021	766	1999502.56	592354.51	14.3	1538.5	1524.2	14.3	0	0.00	78.5	41.63	2,797	2,809	16,251	12.05%	1,016	0.75%	N	-	-	-	-	-
7/29/2021	717	1999519.02	592349.04	17.7	1538.3	1520.6	17.8	1	4.50	74.0	48.78	3,278	3,325	19,237	12.17%	1,202	0.76%	N	-	-	-	-	-
7/29/2021	752	1999507.30	592368.76	16.7	1539.1	1522.3	16.8	0	0.00	78.5	48.81	3,280	3,290	19,034	12.04%	1,190	0.75%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
7/30/2021	616	1999550.95	592417.56	15.8	1538.6	1522.8	15.8	0	0.00	78.5	45.99	3,091	3,115	18,022	12.09%	1,126	0.76%	N	-	-	-	-	-
7/30/2021	631	1999546.21	592403.31	13.4	1538.5	1525.1	13.4	0	0.00	78.5	39.10	2,627	2,644	15,297	12.08%	956	0.75%	N	-	-	-	-	-
7/30/2021	684	1999529.75	592408.78	11.4	1538.8	1527.4	11.4	0	0.00	78.5	33.25	2,234	2,255	13,046	12.11%	815	0.76%	N	-	-	-	-	-
7/30/2021	647	1999541.47	592389.06	14.1	1538.4	1524.2	14.1	0	0.00	78.5	41.13	2,764	2,778	16,072	12.06%	1,005	0.75%	N	-	-	-	-	-
7/30/2021	699	1999525.01	592394.53	13.3	1538.6	1525.3	13.3	1	4.50	74.0	36.53	2,455	2,472	14,302	12.08%	894	0.76%	Y	-	4	2.50E-06	-	272.10
7/30/2021	662	1999536.73	592374.80	18.8	1538.5	1519.6	18.9	0	0.00	78.5	54.83	3,685	3,694	21,372	12.03%	1,336	0.75%	N	-	-	-	-	-
7/30/2021	714	1999520.27	592380.28	17.6	1538.7	1521.0	17.7	0	0.00	78.5	51.55	3,464	3,465	20,047	12.00%	1,253	0.75%	N	-	-	-	-	-
7/30/2021	676	1999531.98	592360.55	18.8	1538.3	1519.5	18.8	0	0.00	78.5	54.77	3,681	3,712	21,476	12.10%	1,342	0.76%	Y	-	16	4.40E-06	2.90E-06	230.77
7/30/2021	727	1999515.53	592366.03	18.0	1538.4	1520.4	18.0	1	4.50	74.0	49.44	3,323	3,346	19,358	12.08%	1,210	0.76%	N	-	-	-	-	-
7/30/2021	692	1999527.24	592346.30	18.2	1538.5	1520.3	18.2	2	9.00	69.5	46.90	3,152	3,179	18,392	12.10%	1,149	0.76%	N	-	-	-	-	-
7/30/2021	741	1999510.79	592351.77	16.0	1538.6	1522.3	16.3	3	13.50	65.0	39.17	2,632	2,635	15,245	12.01%	953	0.75%	N	-	-	-	-	-
7/30/2021	726	1999516.02	592326.29	16.1	1538.6	1522.4	16.2	6	27.00	51.5	30.87	2,074	2,107	12,190	12.19%	762	0.76%	N	-	-	-	-	-
7/30/2021	776	1999499.56	592331.76	10.5	1538.5	1528.0	10.5	6	27.00	51.5	20.10	1,351	1,375	7,955	12.21%	497	0.76%	N	-	-	-	-	-
7/30/2021	790	1999494.82	592317.51	13.4	1538.4	1525.0	13.5	6	27.00	51.5	25.69	1,727	1,797	10,396	12.49%	650	0.78%	N	-	-	-	-	-
8/2/2021	640	1999543.44	592416.75	12.8	1539.2	1526.4	12.8	3	11.00	67.5	32.04	2,153	2,168	12,543	12.08%	784	0.76%	N	-	-	-	-	-
8/2/2021	610	1999552.69	592409.06	16.8	1539.3	1522.5	16.8	2	9.00	69.5	43.27	2,908	2,932	16,963	12.10%	1,060	0.76%	Y	-	3	1.00E-06	-	302.57
8/2/2021	687	1999528.87	592414.91	**11.8**	1539.4	1532.2	**7.1**	5	20.87	57.7	15.23	1,023	1,432	8,285	16.79%	518	1.05%	N	**Refusal**	-	-	-	-
8/9/2021	664	1999536.24	592414.54	11.0	1538.6	1527.6	11.0	5	25.88	52.7	21.51	1,446	1,545	8,939	12.82%	559	0.80%	N	-	-	-	-	-
8/9/2021	625	1999547.95	592394.81	12.1	1538.8	1526.7	12.2	2	9.00	69.5	31.34	2,106	2,161	12,502	12.31%	781	0.77%	N	-	-	-	-	-
8/9/2021	729	1999515.04	592405.76	**11.9**	1538.8	1529.0	**9.8**	2	12.71	65.8	23.92	1,607	1,725	9,980	12.88%	624	0.80%	N	**Refusal**	-	-	-	-
8/9/2021	678	1999531.50	592400.29	**12.2**	1538.9	1530.6	**8.3**	2	9.00	69.5	21.38	1,437	1,461	8,453	12.20%	528	0.76%	N	**Refusal**	-	-	-	-
8/9/2021	642	1999543.21	592380.56	17.5	1538.4	1520.9	17.5	2	9.00	69.5	45.07	3,029	3,081	17,825	12.21%	1,114	0.76%	Y	-	16	8.00E-07	-	131.99
8/9/2021	694	1999526.75	592386.03	16.3	1538.6	1522.2	16.3	2	9.00	69.5	42.03	2,825	2,862	16,558	12.16%	1,035	0.76%	N	-	-	-	-	-
8/9/2021	758	1999505.56	592377.26	15.2	1538.8	1523.0	15.7	3	13.50	65.0	37.89	2,546	2,559	14,805	12.06%	925	0.75%	N	-	-	-	-	-
8/9/2021	656	1999538.47	592366.31	19.0	1538.5	1519.5	19.0	2	9.00	69.5	48.99	3,292	3,319	19,202	12.10%	1,200	0.76%	N	-	-	-	-	-
8/9/2021	708	1999522.01	592371.78	18.7	1538.5	1519.8	18.7	2	9.00	69.5	48.19	3,238	3,279	18,971	12.15%	1,186	0.76%	N	-	-	-	-	-
8/9/2021	771	1999500.82	592363.00	14.8	1538.5	1523.7	14.8	2	9.00	69.5	38.17	2,565	2,651	15,337	12.40%	959	0.78%	N	-	-	-	-	-
8/9/2021	671	1999533.73	592352.06	18.9	1538.6	1519.7	18.9	2	9.00	69.5	48.70	3,273	3,622	20,955	13.28%	1,310	0.83%	N	-	-	-	-	-
8/9/2021	722	1999517.27	592357.53	18.5	1538.7	1520.2	18.5	3	13.50	65.0	44.59	2,996	3,012	17,426	12.06%	1,089	0.75%	N	-	-	-	-	-
8/9/2021	811	1999487.85	592351.49	14.2	1538.5	1524.3	14.2	2	9.00	69.5	36.65	2,463	2,482	14,360	12.09%	897	0.76%	N	-	-	-	-	-
8/10/2021	637	1999544.46	592411.80	**14.9**	1540.8	1532.6	**8.2**	6	43.00	35.5	10.79	725	1,096	6,341	18.13%	396	1.13%	N	**Refusal**	-	-	-	-
8/10/2021	704	1999523.27	592403.02	**12.3**	1539.0	1531.1	**7.9**	5	22.50	56.0	16.42	1,103	1,132	6,549	12.31%	409	0.77%	N	**Refusal**	-	-	-	-
8/10/2021	652	1999539.72	592397.55	11.8	1538.5	1526.7	11.8	4	18.00	60.5	26.55	1,784	1,812	10,483	12.19%	655	0.76%	N	-	-	-	-	-
8/10/2021	719	1999518.53	592388.77	15.2	1538.9	1523.7	15.2	5	22.50	56.0	31.59	2,123	2,133	12,340	12.06%	771	0.75%	Y	-	14	9.70E-07	-	102.95
8/10/2021	668	1999534.98	592383.30	17.4	1538.6	1521.2	17.5	4	18.00	60.5	39.13	2,629	2,693	15,580	12.29%	974	0.77%	N	-	-	-	-	-
8/10/2021	733	1999513.79	592374.52	17.2	1538.5	1521.3	17.3	5	22.50	56.0	35.80	2,406	2,423	14,018	12.08%	876	0.76%	N	-	-	-	-	-
8/10/2021	682	1999530.24	592369.05	19.0	1538.5	1519.5	19.0	4	18.00	60.5	42.69	2,869	2,929	16,946	12.25%	1,059	0.77%	N	-	-	-	-	-
8/10/2021	796	1999492.59	592365.74	15.0	1538.5	1523.5	15.0	4	18.00	60.5	33.72	2,266	2,288	13,237	12.12%	827	0.76%	N	-	-	-	-	-
8/10/2021	747	1999509.05	592360.27	16.7	1538.5	1521.8	16.7	6	27.00	51.5	31.94	2,146	2,179	12,607	12.18%	788	0.76%	N	-	-	-	-	-
8/10/2021	697	1999525.50	592354.79	18.9	1538.5	1519.6	18.9	5	22.50	56.0	39.27	2,639	2,659	15,384	12.09%	961	0.76%	N	-	-	-	-	-
8/10/2021	786	1999496.08	592348.75	13.0	1538.5	1525.4	13.1	4	18.00	60.5	29.33	1,971	1,982	11,467	12.07%	717	0.75%	N	-	-	-	-	-
8/10/2021	825	1999483.11	592337.24	8.6	1538.7	1530.1	8.6	3	13.50	65.0	20.74	1,394	1,410	8,158	12.14%	510	0.76%	N	-	-	-	-	-
8/10/2021	712	1999520.76	592340.54	16.9	1538.9	1522.0	16.9	6	27.00	51.5	32.28	2,169	2,201	12,734	12.18%	796	0.76%	N	-	-	-	-	-
8/11/2021	845	1999476.62	592331.48	9.7	1538.5	1528.8	9.7	4	18.00	60.5	21.79	1,465	1,485	8,591	12.17%	537	0.76%	N	-	-	-	-	-
8/11/2021	831	1999481.36	592345.73	11.0	1538.5	1527.5	11.0	3	13.50	65.0	26.57	1,786	1,798	10,402	12.08%	650	0.76%	N	-	-	-	-	-
8/11/2021	851	1999474.88	592339.97	10.3	1538.6	1528.2	10.3	4	18.00	60.5	23.14	1,555	1,571	9,089	12.12%	568	0.76%	N	-	-	-	-	-
8/11/2021	710	1999521.52	592411.52	**12.1**	1539.5	1532.7	**6.7**	4	19.83	58.7	14.59	981	1,037	6,000	12.69%	375	0.79%	N	**Refusal**	-	-	-	-
8/11/2021	658	1999537.98	592406.04	**11.5**	1538.8	1530.8	**8.1**	6	27.00	51.5	15.37	1,033	1,070	6,190	12.43%	387	0.78%	N	**Refusal**	-	-	-	-
8/11/2021	673	1999533.24	592391.79	14.2	1538.8	1524.6	14.2	6	27.00	51.5	27.14	1,824	1,876	10,854	12.34%	678	0.77%	N	-	-	-	-	-
8/11/2021	738	1999512.04	592383.01	15.5	1538.7	1523.2	15.5	6	27.00	51.5	29.61	1,990	2,005	11,600	12.09%	725	0.76%	N	-	-	-	-	-
8/11/2021	689	1999528.50	592377.54	18.8	1538.7	1519.9	18.8	6	27.00	51.5	35.91	2,413	2,440	14,117	12.13%	882	0.76%	N	-	-	-	-	-
8/11/2021	702	1999523.76	592363.29	18.9	1538.5	1519.6	18.9	6	27.00	51.5	36.14	2,428	2,451	14,180	12.11%	886	0.76%	N	-	-	-	-	-
8/11/2021	777	1999499.07	592371.50	15.1	1538.8	1523.6	15.1	6	27.00	51.5	28.90	1,942	1,978	11,444	12.22%	715	0.76%	N	-	-	-	-	-
8/11/2021	791	1999494.33	592357.25	15.2	1538.8	1523.5	15.3	6	27.00	51.5	29.19	1,961	1,996	11,548	12.21%	722	0.76%	N	-	-	-	-	-
8/11/2021	761	1999504.30	592346.02	12.9	1538.6	1525.6	12.9	6	27.00	51.5	24.66	1,657	1,685	9,749	12.20%	609	0.76%	Y	-	6	8.70E-07	-	104.76
8/12/2021	871	1999468.40	592334.22	11.7	1538.5	1526.7	11.8	6	27.00	51.5	22.49	1,511	1,549	8,962	12.30%	560	0.77%	N	-	-	-	-	-
8/12/2021	836	1999479.62	592354.23	15.2	1538.9	1523.7	15.2	5	22.50	56.0	31.57	2,122	2,138	12,369	12.09%	773	0.76%	N	-	-	-	-	-
8/12/2021	857	1999473.14	592348.47	12.9	1538.5	1525.2	13.3	6	27.00	51.5	25.41	1,707	1,796	10,391	12.62%	649	0.79%	Y	-	3	2.80E-07	-	258.34
8/12/2021	655	1999538.68	592215.86	10.0	1538.8	1528.7	10.1	0	0.00	78.5	29.23	1,965	1,985	11,484	12.12%	718	0.76%	N	-	-	-	-	-
8/12/2021	782	1999497.54	592229.55	10.5	1538.7	1528.2	10.5	3	13.50	65.0	25.32	1,701	1,745	10,096	12.31%	631	0.77%	N	-	-	-	-	-
8/12/2021	746	1999509.18	592221.12	7.3	1538.8	1531.5	7.3	0	0.00	78.5	21.26	1,429	1,441	8,337	12.10%	521	0.76%	N	-	-	-	-	-
8/12/2021	707	1999522.23	592221.33	8.7	1538.6	1529.8	8.7	0	0.00	78.5	25.42	1,709	1,739	10,061	12.21%	629	0.76%	N	-	-	-	-	-
8/12/2021	767	1999502.28	592243.80	12.1	1538.6	1526.5	12.1	3	13.50	65.0	29.17	1,960	1,979	11,449	12.11%	716	0.76%	N	-	-	-	-	-
8/16/2021	681	1999530.45	592218.60	9.6	1538.9	1529.3	9.6	2	9.00	69.5	24.78	1,665	1,683	9,737	12.13%	609	0.76%	N	-	-	-	-	-
8/16/2021	774	1999500.20	592222.54	7.3	1538.8	1531.4	7.5	3	15.96	62.6	17.27	1,160	1,295	7,492	13.39%	468	0.84%	N	-	-	-	-	-
8/16/2021	732	1999514.00	592224.07	7.9	1538.6	1530.7	7.9	6	29.65	48.9	14.36	965	1,026	5,936	12.76%	371	0.80%	N	-	-	-	-	-
8/16/2021	641	1999543.42	592230.11	**10.1**	1538.5	1529.1	**9.4**	0	0.00	78.5	27.34	1,838	1,856	10,738	12.12%	671	0.76%	N	**Refusal**	-	-	-	-
8/16/2021	742	1999510.51	592241.06	12.1	1538.8	1526.6	12.1	1	4.50	74.0	33.21	2,232	2,281	13,197	12.27%	825	0.77%	Y	-	9	3.00E-06	-	340.82
8/16/2021	693	1999526.97	592235.59	**11.4**	1538.6	1528.6	**9.9**	0	0.00	78.5	28.86	1,939	1,958	11,328	12.12%	708	0.76%	N	**Refusal**	-	-	-	-
8/16/2021	624	1999548.16	592244.36	9.1	1538.5	1529.2	9.3	0	0.00	78.5	27.14	1,824	1,854	10,726	12.20%	670	0.76%	N	-	-	-	-	-
8/16/2021	728	1999515.25	592255.31	14.7	1538.6	1523.8	14.8	0	0.00	78.5	42.91	2,883	2,944	17,032	12.25%	1,065	0.77%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
8/16/2021	677	1999531.71	592249.84	14.9	1538.5	1523.6	14.9	0	0.00	78.5	43.40	2,917	2,944	17,032	12.11%	1,065	0.76%	N	-	-	-	-	-
8/16/2021	609	1999552.90	592258.62	8.3	1538.6	1530.2	8.4	0	0.00	78.5	24.32	1,634	1,656	9,581	12.16%	599	0.76%	N	-	-	-	-	-
8/16/2021	715	1999519.99	592269.56	15.3	1538.8	1523.4	15.3	0	0.00	78.5	44.62	2,999	3,110	17,993	12.45%	1,125	0.78%	N	-	-	-	-	-
8/16/2021	663	1999536.45	592264.09	16.5	1538.5	1521.7	16.8	0	0.00	78.5	48.96	3,290	3,336	19,300	12.17%	1,206	0.76%	N	-	-	-	-	-
8/16/2021	594	1999557.65	592272.87	10.7	1538.7	1528.0	10.7	0	0.00	78.5	31.24	2,100	2,133	12,340	12.19%	771	0.76%	N	-	-	-	-	-
8/16/2021	700	1999524.73	592283.82	11.1	1538.6	1527.4	11.3	0	0.00	78.5	32.75	2,201	2,240	12,959	12.21%	810	0.76%	N	-	-	-	-	-
8/16/2021	648	1999541.19	592278.34	14.1	1538.8	1524.7	14.2	0	0.00	78.5	41.16	2,766	2,792	16,153	12.11%	1,010	0.76%	N	-	-	-	-	-
8/16/2021	577	1999562.39	592287.12	10.3	1538.6	1528.3	10.3	0	0.00	78.5	30.02	2,017	2,039	11,797	12.13%	737	0.76%	N	-	-	-	-	-
8/16/2021	685	1999529.48	592298.07	14.7	1538.5	1523.8	14.7	0	0.00	78.5	42.88	2,881	2,926	16,928	12.19%	1,058	0.76%	Y	-	10	3.00E-06	-	207.39
8/17/2021	604	1999554.44	592400.57	15.3	1538.6	1528.7	9.9	3	13.50	65.0	23.75	1,596	1,618	9,361	12.16%	585	0.76%	N	Refusal	-	-	-	-
8/17/2021	548	1999570.89	592395.10	10.5	1538.5	1528.0	10.5	0	0.00	78.5	30.63	2,058	2,073	11,993	12.08%	750	0.76%	N	-	-	-	-	-
8/17/2021	492	1999587.35	592389.62	8.2	1538.6	1530.3	8.2	0	0.00	78.5	23.94	1,609	1,633	9,448	12.18%	590	0.76%	N	-	-	-	-	-
8/17/2021	620	1999549.69	592386.32	11.8	1538.6	1526.8	11.8	3	13.50	65.0	28.45	1,912	1,940	11,224	12.18%	701	0.76%	N	-	-	-	-	-
8/17/2021	507	1999582.61	592375.37	6.6	1538.6	1532.0	6.6	0	0.00	78.5	19.26	1,294	1,307	7,562	12.12%	473	0.76%	N	-	-	-	-	-
8/17/2021	564	1999566.15	592380.84	3.9	1538.5	1534.6	3.9	0	0.00	78.5	11.40	766	782	4,524	12.25%	283	0.77%	N	-	-	-	-	-
8/17/2021	635	1999544.95	592372.07	18.9	1538.5	1519.6	18.9	3	13.50	65.0	45.58	3,063	3,107	17,975	12.17%	1,123	0.76%	N	-	-	-	-	-
8/17/2021	524	1999577.86	592361.12	9.7	1538.5	1528.8	9.7	1	4.50	74.0	26.68	1,793	1,809	10,466	12.11%	654	0.76%	N	-	-	-	-	-
8/17/2021	580	1999561.41	592366.59	12.5	1538.5	1526.0	12.5	0	0.00	78.5	36.39	2,446	2,460	14,232	12.07%	890	0.75%	N	-	-	-	-	-
8/17/2021	650	1999540.21	592357.81	19.0	1538.5	1519.5	19.0	3	13.50	65.0	45.82	3,079	3,103	17,952	12.09%	1,122	0.76%	N	-	-	-	-	-
8/17/2021	596	1999556.67	592352.34	16.0	1538.6	1522.6	16.0	0	0.00	78.5	46.60	3,132	3,150	18,224	12.07%	1,139	0.75%	Y	-	5	7.30E-06	-	302.70
8/17/2021	540	1999573.12	592346.87	11.2	1538.6	1527.3	11.2	0	0.00	78.5	32.64	2,193	2,211	12,792	12.10%	799	0.76%	N	-	-	-	-	-
8/17/2021	666	1999535.47	592343.56	17.7	1538.5	1520.8	17.7	3	13.50	65.0	42.66	2,867	2,981	17,246	12.48%	1,078	0.78%	N	-	-	-	-	-
8/17/2021	556	1999568.38	592332.61	10.7	1538.5	1527.8	10.7	0	0.00	78.5	31.21	2,098	2,167	12,537	12.40%	784	0.77%	N	-	-	-	-	-
8/17/2021	612	1999551.93	592338.09	13.3	1538.6	1525.2	13.4	0	0.00	78.5	38.92	2,616	2,653	15,349	12.17%	959	0.76%	N	-	-	-	-	-
8/17/2021	680	1999530.73	592329.31	17.0	1538.5	1521.5	17.0	3	13.50	65.0	41.02	2,757	2,782	16,095	12.11%	1,006	0.76%	Y	-	16	1.00E-06	-	218.19
8/17/2021	572	1999563.64	592318.36	12.2	1538.6	1526.4	12.2	0	0.00	78.5	35.52	2,387	2,404	13,908	12.09%	869	0.76%	N	-	-	-	-	-
8/17/2021	627	1999547.19	592323.84	17.0	1538.6	1521.6	17.0	0	0.00	78.5	49.48	3,325	3,353	19,399	12.10%	1,212	0.76%	N	-	-	-	-	-
8/18/2021	757	1999505.77	592226.81	8.0	1538.8	1530.8	8.0	6	35.70	42.8	12.74	856	1,041	6,023	14.59%	376	0.91%	N	-	-	-	-	-
8/18/2021	667	1999535.19	592232.85	10.8	1538.6	1529.7	8.9	2	9.00	69.5	22.97	1,544	1,580	9,141	12.28%	571	0.77%	N	Refusal	-	-	-	-
8/18/2021	718	1999518.74	592238.32	12.3	1538.6	1526.3	12.3	2	9.00	69.5	31.71	2,131	2,172	12,566	12.23%	785	0.76%	Y	-	3	3.90E-07	-	301.51
8/18/2021	651	1999539.94	592247.10	12.6	1538.5	1525.8	12.6	2	9.00	69.5	32.50	2,184	2,237	12,942	12.29%	809	0.77%	N	-	-	-	-	-
8/18/2021	753	1999507.02	592258.05	14.1	1538.6	1524.3	14.3	4	18.00	60.5	32.02	2,152	2,160	12,497	12.05%	781	0.75%	N	-	-	-	-	-
8/18/2021	703	1999523.48	592252.58	15.5	1538.5	1523.0	15.5	2	9.00	69.5	39.97	2,686	2,717	15,719	12.14%	982	0.76%	N	-	-	-	-	-
8/18/2021	636	1999544.68	592261.35	15.9	1538.7	1522.8	15.9	2	9.00	69.5	40.98	2,754	2,795	16,170	12.18%	1,011	0.76%	N	-	-	-	-	-
8/18/2021	739	1999511.77	592272.30	14.5	1538.5	1524.0	14.5	4	18.00	60.5	32.58	2,189	2,237	12,942	12.26%	809	0.77%	N	-	-	-	-	-
8/18/2021	690	1999528.22	592266.83	16.6	1538.7	1522.1	16.6	2	9.00	69.5	42.83	2,878	2,921	16,899	12.18%	1,056	0.76%	N	-	-	-	-	-
8/18/2021	621	1999549.42	592275.61	12.5	1538.8	1526.3	12.5	2	9.00	69.5	32.19	2,164	2,199	12,722	12.20%	795	0.76%	N	-	-	-	-	-
8/18/2021	725	1999516.51	592286.55	12.5	1538.7	1526.2	12.5	4	18.00	60.5	28.05	1,885	1,911	11,056	12.17%	691	0.76%	N	-	-	-	-	-
8/18/2021	674	1999532.96	592281.08	12.0	1538.6	1526.6	12.0	2	9.00	69.5	30.96	2,080	2,106	12,184	12.15%	762	0.76%	N	-	-	-	-	-
8/18/2021	605	1999554.16	592289.86	7.4	1538.7	1531.3	7.4	1	4.50	74.0	20.29	1,364	1,408	8,146	12.39%	509	0.77%	N	-	-	-	-	-
8/18/2021	711	1999521.25	592300.81	15.0	1538.6	1523.6	15.0	4	18.00	60.5	33.66	2,262	2,287	13,231	12.13%	827	0.76%	Y	-	13	1.40E-06	-	169.10
8/18/2021	659	1999537.70	592295.33	12.9	1538.7	1525.7	12.9	1	4.50	74.0	35.43	2,381	2,412	13,955	12.16%	872	0.76%	N	-	-	-	-	-
8/18/2021	589	1999558.90	592304.11	13.0	1538.9	1525.9	13.0	0	0.00	78.5	37.84	2,543	2,574	14,892	12.15%	931	0.76%	N	-	-	-	-	-
8/18/2021	696	1999525.99	592315.06	17.5	1538.7	1521.0	17.7	3	13.50	65.0	42.71	2,870	2,914	16,859	12.18%	1,054	0.76%	N	-	-	-	-	-
8/18/2021	644	1999542.44	592309.58	17.5	1538.6	1521.1	17.5	0	0.00	78.5	51.02	3,429	3,450	19,960	12.07%	1,247	0.75%	N	-	-	-	-	-
8/19/2021	588	1999559.18	592414.82	16.5	1538.8	1522.3	16.5	2	9.00	69.5	42.55	2,859	2,889	16,714	12.12%	1,045	0.76%	N	-	-	-	-	-
8/19/2021	532	1999575.63	592409.35	16.3	1538.7	1522.4	16.3	0	0.00	78.5	47.50	3,192	3,206	18,548	12.05%	1,159	0.75%	N	-	-	-	-	-
8/19/2021	465	1999595.57	592386.89	9.3	1538.7	1529.4	9.3	1	4.50	74.0	25.56	1,718	1,733	10,026	12.11%	627	0.76%	N	-	-	-	-	-
8/19/2021	576	1999562.66	592397.83	14.0	1538.7	1524.7	14.0	2	9.00	69.5	36.08	2,425	2,449	14,169	12.12%	886	0.76%	N	-	-	-	-	-
8/19/2021	520	1999579.12	592392.36	8.0	1538.6	1530.6	8.0	2	9.00	69.5	20.60	1,385	1,410	8,158	12.22%	510	0.76%	N	-	-	-	-	-
8/19/2021	480	1999590.83	592372.63	9.2	1538.9	1529.6	9.2	3	13.50	65.0	22.19	1,491	1,563	9,043	12.58%	565	0.79%	N	-	-	-	-	-
8/19/2021	593	1999557.92	592383.58	6.3	1538.6	1532.3	6.3	2	9.00	69.5	16.28	1,094	1,119	6,474	12.28%	405	0.77%	N	-	-	-	-	-
8/19/2021	536	1999574.38	592378.11	4.6	1538.5	1533.9	4.6	2	9.00	69.5	11.90	800	822	4,756	12.34%	297	0.77%	N	-	-	-	-	-
8/19/2021	552	1999569.64	592363.86	9.7	1538.6	1528.8	9.7	2	9.00	69.5	25.09	1,686	1,709	9,887	12.16%	618	0.76%	Y	-	3	1.50E-06	-	130.72
8/19/2021	608	1999553.18	592369.33	17.5	1538.7	1521.2	17.5	2	9.00	69.5	45.12	3,032	3,058	17,692	12.10%	1,106	0.76%	N	-	-	-	-	-
8/19/2021	512	1999581.35	592344.13	12.9	1538.7	1525.8	12.9	1	4.50	74.0	35.40	2,379	2,399	13,879	12.10%	867	0.76%	N	-	-	-	-	-
8/19/2021	568	1999564.90	592349.60	12.3	1538.5	1526.2	12.3	2	9.00	69.5	31.71	2,131	2,157	12,479	12.15%	780	0.76%	N	-	-	-	-	-
8/19/2021	623	1999548.44	592355.08	18.7	1538.6	1519.8	18.7	2	9.00	69.5	48.19	3,238	3,277	18,959	12.14%	1,185	0.76%	N	-	-	-	-	-
8/19/2021	528	1999576.61	592329.88	12.6	1538.6	1526.0	12.6	1	4.50	74.0	34.61	2,326	2,345	13,567	12.10%	848	0.76%	N	-	-	-	-	-
8/19/2021	584	1999560.15	592335.35	11.0	1538.5	1527.5	11.0	2	9.00	69.5	28.36	1,906	1,930	11,166	12.15%	698	0.76%	N	-	-	-	-	-
8/19/2021	639	1999543.70	592340.82	16.2	1538.4	1522.2	16.2	2	9.00	69.5	41.78	2,807	2,832	16,384	12.11%	1,024	0.76%	N	-	-	-	-	-
8/19/2021	544	1999571.87	592315.62	13.0	1538.6	1525.5	13.0	1	4.50	74.0	35.73	2,401	2,421	14,007	12.10%	875	0.76%	N	-	-	-	-	-
8/19/2021	600	1999555.41	592321.10	14.6	1538.5	1523.9	14.6	2	9.00	69.5	37.65	2,530	2,552	14,765	12.10%	923	0.76%	Y	-	12	1.10E-05	7.60E-06	136.05
8/20/2021	661	1999536.94	592224.35	9.9	1538.6	1528.6	10.0	4	18.00	60.5	22.33	1,501	1,515	8,765	12.11%	548	0.76%	N	-	-	-	-	-
8/20/2021	713	1999520.48	592229.83	10.0	1538.5	1528.4	10.1	4	18.00	60.5	22.67	1,523	1,542	8,921	12.15%	558	0.76%	N	-	-	-	-	-
8/20/2021	762	1999504.03	592235.30	11.0	1538.5	1527.5	11.0	5	22.50	56.0	22.89	1,538	1,552	8,979	12.11%	561	0.76%	N	-	-	-	-	-
8/20/2021	646	1999541.68	592238.61	10.5	1538.5	1528.0	10.5	4	18.00	60.5	23.63	1,588	1,627	9,413	12.29%	588	0.77%	Y	-	9	7.70E-07	-	171.72
8/20/2021	748	1999508.77	592249.55	13.1	1538.6	1525.5	13.1	5	22.50	56.0	27.23	1,830	1,852	10,715	12.14%	670	0.76%	N	-	-	-	-	-
8/20/2021	698	1999525.22	592244.08	13.7	1538.6	1524.8	13.8	4	18.00	60.5	30.92	2,078	2,099	12,144	12.12%	759	0.76%	N	-	-	-	-	-
8/20/2021	630	1999546.42	592252.86	10.6	1538.8	1528.2	10.6	4	18.00	60.5	23.81	1,600	1,694	9,801	12.70%	613	0.79%	N	-	-	-	-	-
8/20/2021	734	1999513.51	592263.81	14.1	1538.6	1524.4	14.2	5	22.50	56.0	29.37	1,974	2,016	11,663	12.26%	729	0.77%	N	-	-	-	-	-
8/20/2021	683	1999529.96	592258.33	16.5	1538.6	1522.1	16.6	4	18.00	60.5	37.15	2,497	2,511	14,527	12.07%	908	0.75%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
8/20/2021	615	1999551.16	592267.11	11.9	1538.5	1526.6	11.9	4	18.00	60.5	26.70	1,795	1,822	10,541	12.18%	659	0.76%	N	-	-	-	-	-
8/20/2021	720	1999518.25	592278.06	12.9	1538.5	1525.6	12.9	5	22.50	56.0	26.80	1,801	1,833	10,605	12.22%	663	0.76%	N	-	-	-	-	-
8/20/2021	669	1999534.71	592272.58	16.3	1538.6	1522.3	16.3	4	18.00	60.5	36.59	2,459	2,486	14,383	12.13%	899	0.76%	N	-	-	-	-	-
8/20/2021	599	1999555.90	592281.36	9.1	1538.5	1529.4	9.1	4	18.00	60.5	20.43	1,373	1,397	8,082	12.21%	505	0.76%	N	-	-	-	-	-
8/20/2021	705	1999522.99	592292.31	11.5	1538.5	1527.0	11.5	5	22.50	56.0	23.89	1,605	1,646	9,523	12.30%	595	0.77%	N	-	-	-	-	-
8/20/2021	653	1999539.45	592286.84	10.3	1538.5	1528.2	10.3	3	13.50	65.0	24.86	1,671	1,715	9,922	12.32%	620	0.77%	N	-	-	-	-	-
8/23/2021	560	1999567.40	592412.09	16.2	1538.5	1522.2	16.3	2	9.00	69.5	41.98	2,821	2,863	16,564	12.18%	1,035	0.76%	N	-	-	-	-	-
8/23/2021	471	1999593.83	592395.38	16.0	1538.7	1522.5	16.2	2	9.00	69.5	41.72	2,804	2,855	16,517	12.22%	1,032	0.76%	N	-	-	-	-	-
8/23/2021	511	1999581.49	592403.15	16.0	1538.5	1522.5	16.0	1	4.50	74.0	43.88	2,949	2,986	17,275	12.15%	1,080	0.76%	N	-	-	-	-	-
8/23/2021	598	1999556.18	592392.08	10.4	1538.5	1528.1	10.4	5	22.50	56.0	21.59	1,451	1,462	8,458	12.09%	529	0.76%	N	-	-	-	-	-
8/23/2021	486	1999589.09	592381.13	7.3	1538.6	1531.3	7.3	4	18.00	60.5	16.37	1,100	1,122	6,491	12.24%	406	0.77%	N	-	-	-	-	-
8/23/2021	542	1999572.63	592386.60	4.8	1538.5	1533.7	4.8	4	18.00	60.5	10.76	723	791	4,576	13.12%	286	0.82%	N	-	-	-	-	-
8/23/2021	614	1999551.44	592377.82	15.5	1538.5	1523.0	15.5	5	22.50	56.0	32.17	2,162	2,178	12,601	12.09%	788	0.76%	Y	-	13	2.40E-06	-	135.10
8/23/2021	502	1999584.35	592366.88	8.7	1538.4	1529.7	8.7	5	22.50	56.0	18.06	1,214	1,293	7,481	12.79%	468	0.80%	N	-	-	-	-	-
8/23/2021	558	1999567.89	592372.35	5.9	1538.5	1532.6	5.9	4	18.00	60.5	13.23	889	906	5,242	12.23%	328	0.76%	N	-	-	-	-	-
8/23/2021	629	1999546.70	592363.57	18.9	1538.5	1519.6	18.9	5	22.50	56.0	39.23	2,636	2,653	15,349	12.08%	959	0.75%	N	-	-	-	-	-
8/23/2021	518	1999579.61	592352.62	11.6	1538.5	1526.9	11.6	4	18.00	60.5	26.01	1,748	1,770	10,240	12.15%	640	0.76%	N	-	-	-	-	-
8/23/2021	574	1999563.15	592358.10	12.8	1538.4	1525.6	12.8	4	18.00	60.5	28.70	1,929	1,978	11,444	12.31%	715	0.77%	N	-	-	-	-	-
8/23/2021	645	1999541.96	592349.32	18.7	1538.6	1519.9	18.7	5	22.50	56.0	38.81	2,608	2,622	15,169	12.06%	948	0.75%	N	-	-	-	-	-
8/23/2021	534	1999574.87	592338.37	11.5	1538.6	1527.1	11.5	4	18.00	60.5	25.79	1,733	1,754	10,148	12.15%	634	0.76%	N	-	-	-	-	-
8/23/2021	591	1999558.41	592343.85	12.9	1538.5	1525.6	12.9	4	18.00	60.5	28.92	1,944	1,965	11,368	12.13%	711	0.76%	N	-	-	-	-	-
8/23/2021	660	1999537.21	592335.07	16.3	1538.5	1522.2	16.3	4	18.00	60.5	36.55	2,456	2,486	14,383	12.15%	899	0.76%	N	-	-	-	-	-
8/23/2021	550	1999570.13	592324.12	11.6	1538.5	1526.9	11.6	4	18.00	60.5	26.01	1,748	1,795	10,385	12.32%	649	0.77%	N	-	-	-	-	-
8/23/2021	606	1999553.67	592329.59	12.9	1538.4	1525.5	12.9	4	18.00	60.5	28.92	1,944	1,965	11,368	12.13%	711	0.76%	Y	-	9	9.50E-07	-	124.06
8/23/2021	567	1999565.38	592309.87	12.0	1538.5	1526.5	12.0	3	13.50	65.0	28.91	1,943	1,962	11,351	12.12%	709	0.76%	N	-	-	-	-	-
8/24/2021	737	1999512.25	592232.57	9.5	1538.6	1529.1	9.5	6	27.00	51.5	18.13	1,219	1,240	7,174	12.21%	448	0.76%	N	-	-	-	-	-
8/24/2021	688	1999528.71	592227.09	10.1	1538.6	1529.2	9.4	6	27.00	51.5	17.94	1,206	1,259	7,284	12.53%	455	0.78%	N	**Refusal**	-	-	-	-
8/24/2021	723	1999517.00	592246.82	14.0	1538.5	1524.5	14.0	6	27.00	51.5	26.72	1,796	1,832	10,599	12.24%	662	0.77%	N	-	-	-	-	-
8/24/2021	672	1999533.45	592241.34	12.6	1538.4	1528.3	10.1	6	27.00	51.5	19.28	1,296	1,334	7,718	12.36%	482	0.77%	N	**Refusal**	-	-	-	-
8/24/2021	709	1999521.74	592261.07	15.5	1538.4	1522.9	15.5	6	27.00	51.5	29.59	1,988	2,014	11,652	12.15%	728	0.76%	N	-	-	-	-	-
8/24/2021	657	1999538.19	592255.60	16.1	1538.5	1522.3	16.2	6	27.00	51.5	30.92	2,078	2,142	12,392	12.37%	775	0.77%	N	-	-	-	-	-
8/24/2021	695	1999526.48	592275.32	14.5	1538.5	1524.0	14.5	6	27.00	51.5	27.68	1,860	1,905	11,021	12.29%	689	0.77%	N	-	-	-	-	-
8/24/2021	643	1999542.93	592269.85	16.0	1538.4	1522.4	16.0	6	27.00	51.5	30.54	2,053	2,199	12,722	12.86%	795	0.80%	N	-	-	-	-	-
8/24/2021	679	1999531.22	592289.57	10.6	1538.4	1527.7	10.7	6	27.00	51.5	20.43	1,373	1,499	8,672	13.10%	542	0.82%	N	-	-	-	-	-
8/24/2021	626	1999547.67	592284.10	8.6	1538.5	1529.9	8.6	5	22.50	56.0	17.85	1,200	1,226	7,093	12.26%	443	0.77%	N	-	-	-	-	-
8/24/2021	583	1999560.64	592295.62	9.7	1538.4	1528.7	9.7	3	13.50	65.0	23.37	1,570	1,592	9,210	12.17%	576	0.76%	N	-	-	-	-	-
8/24/2021	691	1999527.73	592306.56	17.3	1538.5	1521.2	17.3	4	18.00	60.5	38.79	2,607	2,675	15,476	12.31%	967	0.77%	N	-	-	-	-	-
8/24/2021	498	1999585.60	592398.12	14.6	1538.6	1524.0	14.6	6	27.00	51.5	27.87	1,873	1,902	11,004	12.19%	688	0.76%	N	-	-	-	-	-
8/24/2021	554	1999569.15	592403.59	15.9	1538.6	1522.7	15.9	4	18.00	60.5	35.65	2,396	2,420	14,001	12.12%	875	0.76%	Y	-	12	2.50E-07	-	214.50
8/25/2021	582	1999560.92	592406.33	16.1	1538.4	1522.3	16.1	6	27.00	51.5	30.73	2,065	2,087	12,074	12.13%	755	0.76%	N	-	-	-	-	-
8/25/2021	526	1999577.38	592400.85	13.9	1538.6	1524.7	13.9	6	27.00	51.5	26.53	1,783	1,809	10,466	12.17%	654	0.76%	N	-	-	-	-	-
8/25/2021	459	1999597.32	592378.39	9.5	1538.6	1529.1	9.5	4	18.00	60.5	21.30	1,431	1,462	8,458	12.26%	529	0.77%	N	-	-	-	-	-
8/25/2021	570	1999564.41	592389.34	6.0	1538.5	1532.5	6.0	6	27.00	51.5	11.45	770	797	4,611	12.43%	288	0.78%	N	-	-	-	-	-
8/25/2021	514	1999580.86	592383.86	5.7	1538.5	1532.8	5.7	6	27.00	51.5	10.88	731	763	4,414	12.52%	276	0.78%	N	-	-	-	-	-
8/25/2021	586	1999559.67	592375.09	8.8	1538.4	1529.6	8.8	6	27.00	51.5	16.80	1,129	1,166	6,746	12.39%	422	0.77%	N	-	-	-	-	-
8/25/2021	530	1999576.12	592369.61	6.7	1538.5	1531.8	6.7	6	27.00	51.5	12.79	859	887	5,132	12.38%	321	0.77%	N	-	-	-	-	-
8/25/2021	490	1999587.84	592349.89	13.8	1538.5	1524.6	13.9	3	13.50	65.0	33.48	2,250	2,262	13,087	12.06%	818	0.75%	N	-	-	-	-	-
8/25/2021	602	1999554.92	592360.83	17.0	1538.5	1521.5	17.0	6	27.00	51.5	32.45	2,181	2,247	13,000	12.36%	812	0.77%	N	-	-	-	-	-
8/25/2021	546	1999571.38	592355.36	11.1	1538.6	1527.5	11.1	6	27.00	51.5	21.19	1,424	1,501	8,684	12.65%	543	0.79%	N	-	-	-	-	-
8/25/2021	505	1999583.09	592335.63	14.5	1538.6	1524.1	14.5	3	13.50	65.0	34.93	2,347	2,379	13,764	12.16%	860	0.76%	N	-	-	-	-	-
8/25/2021	618	1999550.18	592346.58	16.8	1538.5	1521.7	16.8	6	27.00	51.5	32.07	2,155	2,284	13,214	12.72%	826	0.79%	N	-	-	-	-	-
8/25/2021	562	1999566.64	592341.11	11.0	1538.6	1527.6	11.0	6	27.00	51.5	21.00	1,411	1,442	8,343	12.26%	521	0.77%	Y	-	3	2.00E-06	-	122.50
8/25/2021	522	1999578.35	592321.38	14.7	1538.5	1523.7	14.8	3	13.50	65.0	35.65	2,396	2,441	14,122	12.23%	883	0.76%	N	-	-	-	-	-
8/25/2021	633	1999545.44	592332.33	15.7	1538.6	1522.9	15.7	5	22.50	56.0	32.59	2,190	2,213	12,803	12.13%	800	0.76%	N	-	-	-	-	-
8/25/2021	578	1999561.90	592326.86	11.0	1538.5	1527.5	11.0	6	27.00	51.5	21.00	1,411	1,450	8,389	12.33%	524	0.77%	N	-	-	-	-	-
8/25/2021	654	1999538.96	592326.57	17.2	1538.5	1521.2	17.3	4	18.00	60.5	38.79	2,607	2,669	15,441	12.29%	965	0.77%	N	-	-	-	-	-
8/25/2021	595	1999557.16	592312.60	14.4	1538.6	1524.2	14.4	4	18.00	60.5	32.29	2,170	2,205	12,757	12.19%	797	0.76%	N	-	-	-	-	-
8/25/2021	649	1999540.70	592318.08	17.4	1538.5	1521.1	17.4	3	13.50	65.0	41.91	2,817	2,857	16,529	12.17%	1,033	0.76%	N	-	-	-	-	-
8/25/2021	617	1999550.67	592306.85	16.1	1538.5	1522.4	16.1	3	13.50	65.0	38.78	2,606	2,651	15,337	12.21%	959	0.76%	N	-	-	-	-	-
8/25/2021	670	1999534.22	592312.32	17.4	1538.5	1521.1	17.4	4	18.00	60.5	39.01	2,622	2,655	15,360	12.15%	960	0.76%	Y	-	16	1.10E-06	-	168.65
8/25/2021	638	1999544.19	592301.09	15.5	1538.4	1522.9	15.5	3	13.50	65.0	37.34	2,509	2,545	14,724	12.17%	920	0.76%	N	-	-	-	-	-
8/26/2021	675	1999532.47	592320.82	17.2	1538.3	1521.1	17.2	6	27.00	51.5	32.83	2,206	2,234	12,925	12.15%	808	0.76%	N	-	-	-	-	-
8/26/2021	622	1999548.93	592315.34	16.9	1538.5	1521.6	16.9	6	27.00	51.5	32.26	2,168	2,202	12,740	12.19%	796	0.76%	N	-	-	-	-	-
8/26/2021	665	1999535.96	592303.83	17.2	1538.5	1521.3	17.2	6	27.00	51.5	32.83	2,206	2,230	12,902	12.13%	806	0.76%	N	-	-	-	-	-
8/26/2021	632	1999545.93	592292.59	9.1	1538.6	1529.5	9.1	5	22.50	56.0	18.89	1,269	1,294	7,486	12.23%	468	0.76%	N	-	-	-	-	-
8/26/2021	611	1999552.42	592298.35	10.9	1538.4	1527.5	10.9	6	27.00	51.5	20.81	1,398	1,442	8,343	12.38%	521	0.77%	Y	-	9	2.40E-06	-	104.94
8/26/2021	444	1999602.06	592392.64	16.7	1539.5	1524.6	14.9	2	9.00	69.5	38.38	2,579	2,613	15,117	12.16%	945	0.76%	N	**Refusal**	-	-	-	-
8/26/2021	355	1999628.49	592375.94	16.4	1539.5	1523.1	16.4	0	0.00	78.5	47.71	3,206	3,252	18,814	12.17%	1,176	0.76%	N	-	-	-	-	-
8/26/2021	410	1999612.03	592381.41	13.4	1539.5	1526.1	13.4	0	0.00	78.5	38.98	2,620	2,639	15,268	12.09%	954	0.76%	N	-	-	-	-	-
8/26/2021	343	1999631.97	592358.95	17.0	1539.5	1522.5	17.0	0	0.00	78.5	49.45	3,323	3,362	19,451	12.14%	1,216	0.76%	N	-	-	-	-	-
8/26/2021	398	1999615.52	592364.42	15.9	1539.5	1523.6	15.9	0	0.00	78.5	46.25	3,108	3,157	18,265	12.19%	1,142	0.76%	N	-	-	-	-	-
8/26/2021	359	1999627.23	592344.70	20.7	1539.4	1518.7	20.7	0	0.00	78.5	60.21	4,047	4,077	23,587	12.09%	1,474	0.76%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
8/26/2021	469	1999594.32	592355.64	15.0	1539.3	1524.3	15.0	3	13.50	65.0	36.13	2,428	2,458	14,221	12.15%	889	0.76%	N	-	-	-	-	-
8/26/2021	414	1999610.78	592350.17	20.0	1539.4	1519.4	20.0	0	0.00	78.5	58.18	3,910	3,935	22,766	12.08%	1,423	0.75%	N	-	-	-	-	-
8/26/2021	675	1999532.47	592320.82	17.2	1538.3	1521.1	17.2	6	27.00	51.5	32.83	2,206	2,234	12,925	12.15%	808	0.76%	N	-	-	-	-	-
8/26/2021	622	1999548.93	592315.34	16.9	1538.5	1521.6	16.9	6	27.00	51.5	32.26	2,168	2,202	12,740	12.19%	796	0.76%	N	-	-	-	-	-
8/26/2021	665	1999535.96	592303.83	17.2	1538.5	1521.3	17.2	6	27.00	51.5	32.83	2,206	2,230	12,902	12.13%	806	0.76%	N	-	-	-	-	-
8/26/2021	632	1999545.93	592292.59	9.1	1538.6	1529.5	9.1	5	22.50	56.0	18.89	1,269	1,294	7,486	12.23%	468	0.76%	N	-	-	-	-	-
8/26/2021	611	1999552.42	592298.35	10.9	1538.4	1527.5	10.9	6	27.00	51.5	20.81	1,398	1,442	8,343	12.38%	521	0.77%	N	-	-	-	-	-
8/26/2021	444	1999602.06	592392.64	16.7	1539.5	1524.6	14.9	2	9.00	69.5	38.38	2,579	2,613	15,117	12.16%	945	0.76%	N	-	-	-	-	-
8/26/2021	355	1999628.49	592375.94	16.4	1539.5	1523.1	16.4	0	0.00	78.5	47.71	3,206	3,252	18,814	12.17%	1,176	0.76%	N	-	-	-	-	-
8/26/2021	410	1999612.03	592381.41	13.4	1539.5	1526.1	13.4	0	0.00	78.5	38.98	2,620	2,639	15,268	12.09%	954	0.76%	N	-	-	-	-	-
8/26/2021	343	1999631.97	592358.95	17.0	1539.5	1522.5	17.0	0	0.00	78.5	49.45	3,323	3,362	19,451	12.14%	1,216	0.76%	N	-	-	-	-	-
8/26/2021	398	1999615.52	592364.42	15.9	1539.5	1523.6	15.9	0	0.00	78.5	46.25	3,108	3,157	18,265	12.19%	1,142	0.76%	N	-	-	-	-	-
8/26/2021	359	1999627.23	592344.70	20.7	1539.4	1518.7	20.7	0	0.00	78.5	60.21	4,047	4,077	23,587	12.09%	1,474	0.76%	N	-	-	-	-	-
8/26/2021	469	1999594.32	592355.64	15.0	1539.3	1524.3	15.0	3	13.50	65.0	36.13	2,428	2,458	14,221	12.15%	889	0.76%	N	-	-	-	-	-
8/26/2021	414	1999610.78	592350.17	20.0	1539.4	1519.4	20.0	0	0.00	78.5	58.18	3,910	3,935	22,766	12.08%	1,423	0.75%	N	-	-	-	-	-
8/27/2021	374	1999622.49	592330.44	24.0	1539.4	1515.4	24.0	0	0.00	78.5	69.81	4,692	4,714	27,273	12.06%	1,705	0.75%	N	-	-	-	-	-
8/27/2021	484	1999589.58	592341.39	17.4	1539.3	1521.9	17.4	3	13.50	65.0	41.91	2,817	2,841	16,437	12.10%	1,027	0.76%	N	-	-	-	-	-
8/27/2021	430	1999606.03	592335.92	23.3	1539.3	1516.0	23.3	0	0.00	78.5	67.78	4,555	4,579	26,492	12.06%	1,656	0.75%	Y	-	21	9.30E-08	-	281.14
8/27/2021	389	1999617.75	592316.19	24.4	1539.3	1514.9	24.4	0	0.00	78.5	70.98	4,770	4,822	27,898	12.13%	1,744	0.76%	N	-	-	-	-	-
8/27/2021	500	1999584.84	592327.14	18.6	1539.3	1520.7	18.6	3	13.50	65.0	44.81	3,011	3,037	17,570	12.10%	1,098	0.76%	N	-	-	-	-	-
8/27/2021	446	1999601.29	592321.67	24.4	1539.4	1515.0	24.4	0	0.00	78.5	70.98	4,770	4,807	27,811	12.09%	1,738	0.76%	N	-	-	-	-	-
8/27/2021	406	1999613.01	592301.94	24.5	1539.5	1515.0	24.5	0	0.00	78.5	71.27	4,789	4,813	27,845	12.06%	1,740	0.75%	N	-	-	-	-	-
8/27/2021	516	1999580.10	592312.89	17.6	1539.2	1521.6	17.6	2	9.00	69.5	45.33	3,046	3,084	17,842	12.15%	1,115	0.76%	N	-	-	-	-	-
8/27/2021	461	1999596.55	592307.41	24.2	1539.4	1515.2	24.2	0	0.00	78.5	70.39	4,731	4,754	27,504	12.06%	1,719	0.75%	Y	-	7	1.10E-06	-	364.46
8/27/2021	423	1999608.27	592287.69	23.2	1539.3	1516.1	23.2	0	0.00	78.5	67.49	4,535	4,561	26,387	12.07%	1,649	0.75%	N	-	-	-	-	-
8/30/2021	537	1999574.15	592198.32	14.2	1539.0	1526.2	12.8	0	0.00	78.5	37.29	2,506	2,620	15,158	12.55%	947	0.78%	N	**Refusal**	-	-	-	-
8/30/2021	628	1999546.91	592213.12	11.5	1539.5	1528.0	11.5	1	4.50	74.0	31.56	2,121	2,153	12,456	12.18%	779	0.76%	N	-	-	-	-	-
8/30/2021	573	1999563.36	592207.65	14.3	1539.2	1524.8	14.3	0	0.00	78.5	41.63	2,797	2,820	16,315	12.10%	1,020	0.76%	N	-	-	-	-	-
8/30/2021	501	1999584.56	592216.43	18.6	1539.6	1520.9	18.6	0	0.00	78.5	54.19	3,642	3,655	21,146	12.04%	1,322	0.75%	N	-	-	-	-	-
8/30/2021	613	1999551.65	592227.38	11.8	1539.5	1530.8	8.7	1	4.50	74.0	23.94	1,609	1,632	9,442	12.17%	590	0.76%	N	**Refusal**	-	-	-	-
8/30/2021	557	1999568.11	592221.90	15.1	1539.4	1524.3	15.1	0	0.00	78.5	43.95	2,954	2,972	17,194	12.07%	1,075	0.75%	N	-	-	-	-	-
8/30/2021	485	1999589.30	592230.68	21.0	1539.6	1518.6	21.0	0	0.00	78.5	61.14	4,109	4,126	23,871	12.05%	1,492	0.75%	Y	-	19	3.40E-07	-	328.46
8/30/2021	597	1999556.39	592241.63	10.9	1539.5	1528.6	10.9	1	4.50	74.0	29.94	2,012	2,043	11,820	12.18%	739	0.76%	N	-	-	-	-	-
8/30/2021	541	1999572.85	592236.15	18.1	1539.5	1521.4	18.1	0	0.00	78.5	52.77	3,546	3,563	20,614	12.06%	1,288	0.75%	N	-	-	-	-	-
8/30/2021	470	1999594.04	592244.93	22.8	1539.5	1516.7	22.8	0	0.00	78.5	66.38	4,461	4,489	25,971	12.08%	1,623	0.75%	N	-	-	-	-	-
8/30/2021	581	1999561.13	592255.88	12.8	1539.5	1526.6	12.9	1	4.50	74.0	35.29	2,372	2,424	14,024	12.26%	876	0.77%	N	-	-	-	-	-
8/30/2021	525	1999577.59	592250.41	22.8	1539.4	1516.6	22.8	0	0.00	78.5	66.44	4,465	4,490	25,977	12.07%	1,624	0.75%	Y	-	21	7.50E-07	-	352.50
8/30/2021	454	1999598.78	592259.18	23.1	1539.4	1516.3	23.1	0	0.00	78.5	67.22	4,518	4,557	26,364	12.10%	1,648	0.76%	N	-	-	-	-	-
8/30/2021	565	1999565.87	592270.13	18.1	1539.4	1521.3	18.1	1	4.50	74.0	49.72	3,341	3,410	19,728	12.25%	1,233	0.77%	N	-	-	-	-	-
8/30/2021	508	1999582.33	592264.66	23.2	1539.4	1516.2	23.2	0	0.00	78.5	67.52	4,537	4,563	26,399	12.07%	1,650	0.75%	N	-	-	-	-	-
8/30/2021	439	1999603.53	592273.44	22.9	1539.5	1516.6	22.9	0	0.00	78.5	66.67	4,481	4,493	25,994	12.03%	1,625	0.75%	N	-	-	-	-	-
8/31/2021	328	1999636.71	592373.20	16.3	1539.5	1523.1	16.4	1	4.50	74.0	44.94	3,020	3,086	17,854	12.26%	1,116	0.77%	N	-	-	-	-	-
8/31/2021	438	1999603.80	592384.15	11.4	1539.6	1528.2	11.4	4	18.00	60.5	25.63	1,722	1,745	10,096	12.16%	631	0.76%	N	-	-	-	-	-
8/31/2021	394	1999616.91	592382.47	16.6	1539.6	1522.9	16.6	6	30.77	47.8	29.40	1,976	2,150	12,439	13.06%	777	0.82%	N	-	-	-	-	-
8/31/2021	316	1999640.20	592356.21	16.6	1539.4	1522.8	16.6	1	4.50	74.0	45.60	3,065	3,089	17,871	12.10%	1,117	0.76%	N	-	-	-	-	-
8/31/2021	332	1999635.46	592341.96	19.1	1539.5	1520.4	19.1	1	4.50	74.0	52.46	3,525	3,559	20,590	12.11%	1,287	0.76%	N	-	-	-	-	-
8/31/2021	426	1999607.29	592367.16	14.5	1539.4	1524.8	14.6	2	9.00	69.5	37.50	2,520	2,540	14,695	12.09%	918	0.76%	N	-	-	-	-	-
8/31/2021	370	1999623.74	592361.69	16.4	1539.3	1522.8	16.4	2	9.00	69.5	42.29	2,842	2,870	16,604	12.12%	1,038	0.76%	Y	-	3	5.10E-07	-	200.60
8/31/2021	347	1999630.72	592327.71	23.4	1539.3	1515.9	23.4	1	4.50	74.0	64.25	4,318	4,351	25,173	12.09%	1,573	0.76%	N	-	-	-	-	-
8/31/2021	442	1999602.55	592352.91	17.7	1539.1	1521.4	17.7	2	9.00	69.5	45.64	3,067	3,155	18,253	12.34%	1,141	0.77%	N	-	-	-	-	-
8/31/2021	386	1999619.00	592347.43	20.8	1539.3	1518.5	20.8	2	9.00	69.5	53.62	3,604	3,633	21,019	12.10%	1,314	0.76%	N	-	-	-	-	-
8/31/2021	362	1999625.98	592313.45	24.4	1539.4	1515.0	24.4	1	4.50	74.0	66.96	4,500	4,540	26,266	12.11%	1,642	0.76%	N	-	-	-	-	-
8/31/2021	457	1999597.81	592338.65	21.6	1539.2	1517.5	21.7	2	9.00	69.5	55.89	3,756	3,821	22,106	12.21%	1,382	0.76%	Y	-	11	4.60E-09	-	229.57
8/31/2021	402	1999614.26	592333.18	23.7	1539.2	1515.5	23.7	2	9.00	69.5	61.09	4,106	4,139	23,946	12.10%	1,497	0.76%	N	-	-	-	-	-
9/8/2021	417	1999609.52	592318.93	24.5	1539.4	1514.9	24.5	2	9.00	69.5	63.10	4,241	4,278	24,750	12.11%	1,547	0.76%	N	-	-	-	-	-
9/8/2021	473	1999593.07	592324.40	23.3	1539.4	1516.1	23.3	2	9.00	69.5	60.09	4,038	4,083	23,622	12.13%	1,476	0.76%	N	-	-	-	-	-
9/8/2021	434	1999604.78	592304.68	24.3	1539.2	1514.9	24.3	2	9.00	69.5	62.64	4,209	4,266	24,681	12.16%	1,543	0.76%	N	-	-	-	-	-
9/8/2021	488	1999588.32	592310.15	22.3	1539.3	1517.0	22.3	2	9.00	69.5	57.51	3,865	3,894	22,529	12.09%	1,408	0.76%	Y	-	10	1.70E-06	-	308.86
9/8/2021	450	1999600.04	592290.42	23.3	1539.4	1516.0	23.3	1	4.50	74.0	63.95	4,298	4,321	24,999	12.07%	1,562	0.75%	N	-	-	-	-	-
9/8/2021	561	1999567.13	592301.37	12.7	1539.3	1526.6	12.7	3	13.50	65.0	30.62	2,058	2,078	12,022	12.12%	751	0.76%	N	-	-	-	-	-
9/8/2021	504	1999583.58	592295.90	19.7	1539.5	1519.7	19.7	0	0.00	78.5	57.39	3,857	3,882	22,459	12.08%	1,404	0.75%	N	-	-	-	-	-
9/9/2021	545	1999571.59	592204.91	15.6	1539.5	1523.9	15.6	4	18.72	59.8	34.61	2,326	2,377	13,752	12.26%	860	0.77%	N	-	-	-	-	-
9/9/2021	590	1999558.43	592206.69	13.2	1539.5	1528.9	10.6	6	30.48	48.1	18.89	1,269	1,658	9,592	15.68%	600	0.98%	N	**Refusal**	-	-	-	-
9/9/2021	529	1999576.33	592219.16	16.9	1539.5	1522.6	16.9	2	9.00	69.5	43.58	2,929	2,954	17,090	12.10%	1,068	0.76%	N	-	-	-	-	-
9/9/2021	585	1999559.88	592224.64	13.2	1539.5	1526.3	13.2	2	9.00	69.5	34.10	2,292	2,310	13,364	12.10%	835	0.76%	N	-	-	-	-	-
9/9/2021	569	1999564.62	592238.89	13.8	1539.5	1525.7	13.8	2	9.00	69.5	35.59	2,392	2,413	13,960	12.11%	873	0.76%	Y	-	5	1.80E-07	-	374.23
9/9/2021	513	1999581.07	592233.42	20.0	1539.3	1519.3	20.0	2	9.00	69.5	51.56	3,465	3,495	20,220	12.10%	1,264	0.76%	N	-	-	-	-	-
9/9/2021	497	1999585.82	592247.67	23.0	1539.5	1516.5	23.0	2	9.00	69.5	59.31	3,986	4,014	23,223	12.08%	1,451	0.76%	N	-	-	-	-	-
9/9/2021	553	1999569.36	592253.14	20.5	1539.5	1519.0	20.5	2	9.00	69.5	52.82	3,550	3,587	20,752	12.13%	1,297	0.76%	N	-	-	-	-	-
9/9/2021	481	1999590.56	592261.92	23.2	1539.4	1516.1	23.3	2	9.00	69.5	60.04	4,035	4,075	23,576	12.12%	1,473	0.76%	N	-	-	-	-	-
9/9/2021	538	1999574.10	592267.39	23.0	1539.5	1516.5	23.0	2	9.00	69.5	59.31	3,986	4,020	23,258	12.10%	1,454	0.76%	N	-	-	-	-	-
9/10/2021	460	1999597.04	592267.68	23.3	1539.5	1516.2	23.3	3	13.50	65.0	56.15	3,774	3,799	21,979	12.08%	1,374	0.76%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
9/10/2021	571	1999564.13	592278.63	15.3	1539.5	1524.2	15.3	4	18.00	60.5	34.40	2,311	2,340	13,538	12.15%	846	0.76%	N	-	-	-	-	-
9/10/2021	515	1999580.59	592273.15	23.2	1539.5	1516.2	23.3	2	9.00	69.5	59.93	4,028	4,043	23,391	12.05%	1,462	0.75%	Y	-	20	3.70E-07	-	369.73
9/10/2021	445	1999601.78	592281.93	22.3	1539.3	1516.9	22.3	3	13.50	65.0	53.81	3,616	3,686	21,325	12.23%	1,333	0.76%	N	-	-	-	-	-
9/10/2021	555	1999568.87	592292.88	13.8	1539.5	1525.6	13.8	3	13.50	65.0	33.31	2,239	2,265	13,104	12.14%	819	0.76%	N	-	-	-	-	-
9/10/2021	499	1999585.33	592287.40	21.6	1539.6	1517.9	21.7	1	4.50	74.0	59.37	3,990	4,018	23,246	12.08%	1,453	0.76%	N	-	-	-	-	-
9/10/2021	428	1999606.52	592296.18	24.0	1539.2	1515.2	24.0	4	18.00	60.5	53.86	3,619	3,652	21,129	12.11%	1,321	0.76%	N	-	-	-	-	-
9/10/2021	539	1999573.61	592307.13	14.8	1539.4	1524.5	14.8	4	18.00	60.5	33.27	2,236	2,263	13,093	12.14%	818	0.76%	N	-	-	-	-	-
9/10/2021	482	1999590.07	592301.66	22.8	1539.5	1516.4	23.0	3	13.50	65.0	55.48	3,728	3,730	21,580	12.01%	1,349	0.75%	N	-	-	-	-	-
9/10/2021	384	1999619.49	592307.70	24.4	1539.3	1514.9	24.4	3	13.50	65.0	58.85	3,955	3,984	23,049	12.09%	1,441	0.76%	N	-	-	-	-	-
9/10/2021	494	1999586.58	592318.65	21.2	1539.5	1518.2	21.2	5	22.50	56.0	44.04	2,960	2,987	17,281	12.11%	1,080	0.76%	Y	-	8	1.60E-06	-	156.13
9/10/2021	440	1999603.04	592313.17	24.5	1539.4	1514.8	24.7	4	18.00	60.5	55.27	3,714	3,807	22,025	12.30%	1,377	0.77%	N	-	-	-	-	-
9/10/2021	368	1999624.23	592321.95	24.5	1539.5	1515.0	24.5	4	18.00	60.5	54.98	3,695	3,738	21,626	12.14%	1,352	0.76%	N	-	-	-	-	-
9/13/2021	418	1999609.29	592387.63	16.5	1539.4	1522.9	16.5	6	35.91	42.6	26.07	1,752	2,150	12,439	14.73%	777	0.92%	N	-	-	-	-	-
9/13/2021	300	1999645.22	592369.70	16.5	1539.7	1523.2	16.5	0	2.11	76.4	46.77	3,143	3,251	18,809	12.41%	1,176	0.78%	Y	-	13	5.80E-07	-	233.88
9/13/2021	382	1999620.26	592378.67	15.7	1539.7	1523.9	15.7	6	34.62	43.9	25.56	1,718	2,039	11,797	14.25%	737	0.89%	N	-	-	-	-	-
9/13/2021	337	1999633.71	592350.45	18.4	1539.5	1521.1	18.5	4	18.00	60.5	41.37	2,780	2,798	16,188	12.08%	1,012	0.75%	N	-	-	-	-	-
9/13/2021	448	1999600.80	592361.40	15.0	1539.5	1524.5	15.0	5	22.50	56.0	31.15	2,094	2,108	12,196	12.08%	762	0.76%	N	-	-	-	-	-
9/13/2021	392	1999617.26	592355.93	18.6	1539.5	1520.8	18.7	4	18.00	60.5	41.82	2,810	2,834	16,396	12.10%	1,025	0.76%	N	-	-	-	-	-
9/13/2021	353	1999628.97	592336.20	22.6	1539.5	1516.9	22.6	4	18.00	60.5	50.72	3,408	3,460	20,018	12.18%	1,251	0.76%	N	-	-	-	-	-
9/13/2021	463	1999596.06	592347.15	18.4	1539.5	1521.1	18.4	5	22.50	56.0	38.21	2,568	2,641	15,279	12.34%	955	0.77%	N	-	-	-	-	-
9/13/2021	408	1999612.52	592341.68	22.4	1539.5	1517.1	22.4	4	18.00	60.5	50.29	3,380	3,400	19,671	12.07%	1,229	0.75%	N	-	-	-	-	-
9/13/2021	478	1999591.32	592332.90	21.0	1539.5	1518.4	21.1	5	22.50	56.0	43.69	2,936	2,967	17,165	12.13%	1,073	0.76%	N	-	-	-	-	-
9/13/2021	424	1999607.78	592327.42	24.5	1539.5	1515.0	24.5	4	18.00	60.5	54.96	3,693	3,766	21,788	12.24%	1,362	0.76%	N	-	-	-	-	-
9/13/2021	412	1999611.26	592310.43	24.6	1539.5	1514.9	24.6	6	27.00	51.5	47.03	3,161	3,197	18,496	12.14%	1,156	0.76%	N	-	-	-	-	-
9/13/2021	467	1999594.81	592315.91	24.1	1539.5	1515.3	24.1	6	27.00	51.5	46.06	3,095	3,154	18,247	12.23%	1,140	0.76%	N	-	-	-	-	-
9/14/2021	451	1999599.55	592330.16	24.0	1539.7	1515.6	24.1	6	27.00	51.5	45.91	3,085	3,104	17,958	12.07%	1,122	0.75%	N	-	-	-	-	-
9/14/2021	396	1999616.01	592324.69	24.5	1539.5	1514.9	24.6	6	27.00	51.5	46.86	3,149	3,182	18,409	12.12%	1,151	0.76%	N	-	-	-	-	-
9/14/2021	533	1999575.36	592298.64	15.9	1539.5	1523.3	16.1	4	18.00	60.5	36.19	2,432	2,435	14,088	12.01%	880	0.75%	N	-	-	-	-	-
9/14/2021	477	1999591.81	592293.16	22.5	1539.5	1517.0	22.5	4	18.00	60.5	50.54	3,396	3,463	20,035	12.24%	1,252	0.76%	N	-	-	-	-	-
9/14/2021	466	1999595.30	592276.17	23.0	1539.4	1516.3	23.1	3	13.50	65.0	55.72	3,744	3,782	21,881	12.12%	1,368	0.76%	N	-	-	-	-	-
9/14/2021	521	1999578.84	592281.65	22.1	1539.5	1517.3	22.3	2	9.00	69.5	57.31	3,851	3,937	22,777	12.27%	1,424	0.77%	Y	-	18	8.30E-07	-	233.80
9/15/2021	566	1999565.68	592201.46	14.6	1539.5	1524.9	14.6	6	33.64	44.9	24.29	1,633	1,915	11,079	14.08%	692	0.88%	N	-	-	-	-	-
9/15/2021	601	1999555.14	592210.39	12.7	1539.5	1526.8	12.7	6	35.59	43.0	20.22	1,359	1,654	9,569	14.61%	598	0.91%	Y	-	5	4.00E-07	-	220.34
9/15/2021	535	1999574.59	592227.66	17.2	1539.4	1522.2	17.2	4	18.00	60.5	38.61	2,595	2,606	15,077	12.05%	942	0.75%	N	-	-	-	-	-
9/15/2021	592	1999558.13	592233.13	12.7	1539.5	1526.8	12.7	4	18.00	60.5	28.50	1,915	1,943	11,241	12.17%	703	0.76%	N	-	-	-	-	-
9/15/2021	519	1999579.33	592241.91	21.7	1539.5	1517.8	21.7	4	18.00	60.5	48.68	3,271	3,300	19,092	12.11%	1,193	0.76%	N	-	-	-	-	-
9/15/2021	575	1999562.88	592247.38	13.2	1539.5	1526.3	13.2	4	18.00	60.5	29.62	1,991	2,021	11,692	12.18%	731	0.76%	N	-	-	-	-	-
9/15/2021	503	1999584.07	592256.16	23.2	1539.4	1516.2	23.3	4	18.00	60.5	52.15	3,505	3,544	20,504	12.13%	1,281	0.76%	N	-	-	-	-	-
9/15/2021	559	1999567.62	592261.64	20.0	1539.4	1519.4	20.0	4	18.00	60.5	44.93	3,020	3,043	17,605	12.09%	1,100	0.76%	N	-	-	-	-	-
9/15/2021	549	1999570.61	592284.38	17.8	1539.6	1521.7	17.8	4	18.00	60.5	39.96	2,685	2,709	15,673	12.11%	980	0.76%	N	-	-	-	-	-
9/15/2021	493	1999587.07	592278.91	22.9	1539.5	1516.4	23.0	4	18.00	60.5	51.66	3,472	3,513	20,324	12.14%	1,270	0.76%	N	-	-	-	-	-
9/15/2021	432	1999605.55	592375.65	12.7	1539.7	1527.0	12.7	5	22.50	56.0	26.38	1,773	1,801	10,420	12.19%	651	0.76%	N	-	-	-	-	-
9/15/2021	322	1999638.46	592364.71	16.1	1539.4	1523.3	16.1	4	18.00	60.5	36.12	2,428	2,456	14,209	12.14%	888	0.76%	N	-	-	-	-	-
9/15/2021	376	1999622.00	592370.18	15.4	1539.4	1523.9	15.5	4	18.00	60.5	34.69	2,331	2,355	13,625	12.12%	852	0.76%	N	-	-	-	-	-
9/15/2021	364	1999625.49	592353.19	19.0	1539.5	1520.4	19.1	6	27.00	51.5	36.50	2,453	2,501	14,469	12.24%	904	0.76%	N	-	-	-	-	-
9/15/2021	421	1999609.03	592358.66	17.6	1539.5	1521.8	17.7	6	27.00	51.5	33.71	2,265	2,325	13,451	12.32%	841	0.77%	Y	-	3	2.30E-06	-	132.19
9/16/2021	404	1999613.77	592372.92	14.3	1539.5	1525.2	14.3	6	27.00	51.5	27.34	1,837	1,856	10,738	12.12%	671	0.76%	N	-	-	-	-	-
9/16/2021	349	1999630.23	592367.44	16.0	1539.5	1523.5	16.0	6	27.00	51.5	30.60	2,056	2,083	12,051	12.16%	753	0.76%	N	-	-	-	-	-
9/16/2021	380	1999620.75	592338.94	22.9	1539.4	1516.5	22.9	6	27.00	51.5	43.79	2,943	3,000	17,356	12.23%	1085	0.76%	Y	-	21	1.30E-06	-	96.70
9/16/2021	436	1999604.29	592344.41	21.4	1539.5	1518.1	21.5	6	27.00	51.5	40.96	2,753	2,792	16,153	12.17%	1,010	0.76%	N	-	-	-	-	-
9/16/2021	634	1999545.17	592221.62	11.4	1539.6	1527.5	12.0	5	22.50	56.0	24.99	1,679	1,788	10,344	12.78%	647	0.80%	N	-	-	-	-	-
9/16/2021	523	1999578.08	592210.67	16.8	1539.4	1524.8	14.6	3	13.50	65.0	35.15	2,362	2,471	14,296	12.55%	893	0.78%	N	**Refusal**	-	-	-	-
9/16/2021	579	1999561.62	592216.14	14.1	1539.4	1525.2	14.2	4	18.00	60.5	31.84	2,140	2,184	12,635	12.25%	790	0.77%	N	-	-	-	-	-
9/16/2021	619	1999549.91	592235.87	11.0	1539.6	1528.5	11.0	6	27.00	51.5	21.05	1,415	1,434	8,296	12.16%	519	0.76%	N	-	-	-	-	-
9/16/2021	506	1999582.82	592224.92	19.3	1539.5	1520.2	19.4	5	22.50	56.0	40.18	2,700	2,710	15,679	12.04%	980	0.75%	N	-	-	-	-	-
9/16/2021	563	1999566.36	592230.40	14.7	1539.5	1524.7	14.7	6	27.00	51.5	28.10	1,888	1,929	11,160	12.26%	698	0.77%	N	-	-	-	-	-
9/16/2021	603	1999554.65	592250.12	9.1	1539.4	1530.3	9.2	6	27.00	51.5	17.47	1,174	1,207	6,983	12.34%	436	0.77%	N	-	-	-	-	-
9/16/2021	491	1999587.56	592239.17	22.0	1539.4	1517.3	22.1	5	22.50	56.0	45.95	3,088	3,130	18,108	12.16%	1,132	0.76%	N	-	-	-	-	-
9/16/2021	547	1999571.10	592244.65	19.3	1539.6	1520.3	19.3	6	27.00	51.5	36.88	2,478	3,020	17,472	14.62%	1,092	0.91%	N	-	-	-	-	-
9/16/2021	587	1999559.39	592264.37	12.6	1539.5	1526.7	12.8	6	27.00	51.5	24.34	1,636	1,660	9,604	12.18%	600	0.76%	N	-	-	-	-	-
9/16/2021	476	1999592.30	592253.43	23.2	1539.5	1516.2	23.3	5	22.50	56.0	48.26	3,243	3,275	18,947	12.12%	1,184	0.76%	N	-	-	-	-	-
9/17/2021	607	1999553.39	592218.88	12.4	1539.6	1527.2	12.4	6	27.00	51.5	23.71	1,593	1,618	9,361	12.19%	585	0.76%	N	-	-	-	-	-
9/17/2021	551	1999569.85	592213.41	15.8	1539.5	1523.7	15.8	6	27.00	51.5	30.24	2,032	2,058	11,906	12.15%	744	0.76%	N	-	-	-	-	-
9/17/2021	531	1999575.84	592258.90	23.0	1539.4	1516.4	23.0	6	27.00	51.5	43.98	2,956	3,000	17,356	12.18%	1,085	0.76%	N	-	-	-	-	-
9/17/2021	543	1999572.36	592275.89	21.8	1539.6	1517.7	21.8	6	27.00	51.5	41.67	2,800	2,820	16,315	12.08%	1,020	0.76%	N	-	-	-	-	-
9/17/2021	487	1999588.81	592270.41	23.2	1539.4	1516.2	23.2	6	27.00	51.5	44.36	2,981	3,017	17,455	12.14%	1,091	0.76%	N	-	-	-	-	-
9/17/2021	472	1999593.55	592284.67	22.2	1539.5	1517.3	22.2	6	27.00	51.5	42.40	2,849	2,911	16,841	12.26%	1053	0.77%	Y	-	9	8.40E-07	-	167.92
9/17/2021	527	1999577.10	592290.14	18.9	1539.5	1520.5	19.0	6	27.00	51.5	36.29	2,439	2,476	14,325	12.18%	895	0.76%	N	-	-	-	-	-
9/17/2021	455	1999598.30	592298.92	24.2	1539.5	1515.3	24.2	6	27.00	51.5	46.25	3,108	3,187	18,438	12.30%	1,152	0.77%	N	-	-	-	-	-
9/17/2021	510	1999581.84	592304.39	19.2	1539.6	1520.3	19.2	6	27.00	51.5	36.71	2,467	2,501	14,469	12.17%	904	0.76%	N	-	-	-	-	-
9/20/2021	273	1999653.65	592366.41	15.3	1538.6	1523.3	15.3	0	2.74	75.8	43.06	2,894	3,021	17,478	12.53%	1,092	0.78%	N	-	-	-	-	-
9/20/2021	213	1999670.74	592359.06	15.4	1538.8	1523.4	15.4	0	0.00	78.5	44.88	3,016	3,032	17,542	12.06%	1,096	0.75%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
9/20/2021	176	1999681.34	592342.53	14.6	1538.5	1523.8	14.7	0	0.00	78.5	42.64	2,866	2,903	16,795	12.16%	1,050	0.76%	N	-	-	-	-	-
9/20/2021	289	1999648.43	592353.47	15.1	1538.3	1523.2	15.1	1	4.50	74.0	41.43	2,785	2,829	16,367	12.19%	1,023	0.76%	N	-	-	-	-	-
9/20/2021	233	1999664.88	592348.00	15.0	1538.1	1523.1	15.0	0	0.00	78.5	43.69	2,936	2,962	17,137	12.11%	1,071	0.76%	N	-	-	-	-	-
9/20/2021	192	1999676.60	592328.27	14.4	1538.1	1523.6	14.4	0	0.00	78.5	41.95	2,819	2,844	16,454	12.11%	1,028	0.76%	N	-	-	-	-	-
9/20/2021	305	1999643.69	592339.22	15.8	1538.1	1522.3	15.8	1	4.50	74.0	43.38	2,915	2,957	17,108	12.17%	1069	0.76%	Y	-	6	4.10E-06	3.20E-06	191.05
9/20/2021	250	1999660.14	592333.75	15.0	1538.1	1523.1	15.0	0	0.00	78.5	43.72	2,938	2,982	17,252	12.18%	1,078	0.76%	N	-	-	-	-	-
9/20/2021	208	1999671.86	592314.02	12.0	1538.4	1526.3	12.1	0	0.00	78.5	35.14	2,361	2,387	13,810	12.13%	863	0.76%	N	-	-	-	-	-
9/20/2021	320	1999638.94	592324.97	19.8	1538.0	1518.2	19.8	1	4.50	74.0	54.41	3,656	3,686	21,325	12.10%	1,333	0.76%	N	-	-	-	-	-
9/20/2021	265	1999655.40	592319.50	14.8	1538.1	1523.3	14.9	0	0.00	78.5	43.20	2,903	2,931	16,957	12.12%	1,060	0.76%	N	-	-	-	-	-
9/20/2021	225	1999667.11	592299.77	6.5	1538.1	1531.6	6.5	0	0.00	78.5	18.94	1,273	1,301	7,527	12.27%	470	0.77%	N	-	-	-	-	-
9/20/2021	335	1999634.20	592310.72	22.0	1538.0	1516.0	22.0	1	4.50	74.0	60.36	4,056	4,078	23,593	12.06%	1475	0.75%	Y	-	15	5.70E-06	1.10E-06	206.67
9/20/2021	281	1999650.66	592305.24	15.2	1538.0	1522.8	15.2	0	0.00	78.5	44.27	2,975	2,999	17,351	12.10%	1,084	0.76%	N	-	-	-	-	-
9/20/2021	241	1999662.37	592285.52	6.4	1538.1	1531.7	6.4	0	0.00	78.5	18.68	1,255	1,311	7,585	12.54%	474	0.78%	N	-	-	-	-	-
9/21/2021	509	1999582.28	592195.37	13.2	1538.1	1524.9	13.3	1	4.58	74.0	36.35	2,443	2,480	14,348	12.18%	897	0.76%	N	-	-	-	-	-
9/21/2021	456	1999598.02	592188.21	12.1	1538.0	1525.9	12.1	0	0.00	78.5	35.26	2,369	2,390	13,827	12.10%	864	0.76%	N	-	-	-	-	-
9/21/2021	483	1999589.79	592190.94	12.8	1538.3	1525.4	12.9	1	8.77	69.8	33.33	2,240	2,416	13,978	12.94%	874	0.81%	N	-	-	-	-	-
9/21/2021	495	1999586.30	592207.93	15.5	1538.1	1522.5	15.5	2	9.00	69.5	39.97	2,686	2,712	15,690	12.11%	981	0.76%	N	-	-	-	-	-
9/21/2021	385	1999619.21	592196.98	13.6	1538.0	1524.4	13.6	0	0.00	78.5	39.62	2,663	2,688	15,551	12.11%	972	0.76%	N	-	-	-	-	-
9/21/2021	441	1999602.76	592202.46	14.9	1538.1	1523.2	14.9	0	0.00	78.5	43.46	2,921	2,946	17,044	12.10%	1065	0.76%	Y	-	3	1.70E-06	-	392.72
9/21/2021	479	1999591.05	592222.18	18.8	1538.4	1519.5	18.9	3	13.50	65.0	45.41	3,052	3,108	17,981	12.22%	1,124	0.76%	N	-	-	-	-	-
9/21/2021	369	1999623.96	592211.24	16.8	1538.2	1521.3	16.8	0	0.00	78.5	48.90	3,286	3,327	19,248	12.15%	1,203	0.76%	N	-	-	-	-	-
9/21/2021	425	1999607.50	592216.71	18.4	1538.1	1519.4	18.6	0	0.00	78.5	54.19	3,642	3,644	21,082	12.01%	1,318	0.75%	N	-	-	-	-	-
9/21/2021	464	1999595.79	592236.44	20.5	1538.0	1517.5	20.5	3	13.50	65.0	49.43	3,322	3,391	19,619	12.25%	1,226	0.77%	N	-	-	-	-	-
9/21/2021	354	1999628.70	592225.49	20.5	1538.0	1517.5	20.5	0	0.00	78.5	59.69	4,011	4,052	23,443	12.12%	1,465	0.76%	N	-	-	-	-	-
9/21/2021	409	1999612.24	592230.96	21.5	1538.1	1516.6	21.5	0	0.00	78.5	62.60	4,207	4,238	24,519	12.09%	1,532	0.76%	N	-	-	-	-	-
9/22/2021	443	1999602.27	592242.19	21.3	1537.9	1516.4	21.5	2	9.00	69.5	55.40	3,723	3,771	21,817	12.15%	1,364	0.76%	N	-	-	-	-	-
9/22/2021	333	1999635.18	592231.25	22.2	1538.0	1515.8	22.2	1	4.50	74.0	60.96	4,097	4,124	23,859	12.08%	1,491	0.76%	N	-	-	-	-	-
9/22/2021	387	1999618.73	592236.72	22.3	1538.0	1515.5	22.5	1	4.50	74.0	61.67	4,145	4,215	24,386	12.20%	1,524	0.76%	N	-	-	-	-	-
9/22/2021	427	1999607.01	592256.45	21.6	1538.0	1516.4	21.7	1	4.50	74.0	59.42	3,993	4,042	23,385	12.15%	1462	0.76%	Y	-	18	4.50E-07	-	327.56
9/22/2021	317	1999639.92	592245.50	22.5	1538.1	1515.4	22.6	0	0.00	78.5	65.80	4,422	4,463	25,821	12.11%	1,614	0.76%	N	-	-	-	-	-
9/30/2021	371	1999623.47	592250.97	22.5	1538.0	1515.5	22.5	0	0.00	78.5	65.54	4,404	4,431	25,635	12.07%	1,602	0.75%	N	-	-	-	-	-
9/30/2021	411	1999611.75	592270.70	22.2	1539.0	1516.8	22.2	1	4.50	74.0	60.96	4,097	4,123	23,853	12.08%	1,491	0.75%	N	-	-	-	-	-
9/30/2021	302	1999644.66	592259.75	21.7	1538.0	1516.3	21.7	0	0.00	78.5	63.21	4,248	4,274	24,727	12.07%	1545	0.75%	Y	-	17	7.30E-07	-	451.55
9/30/2021	356	1999628.21	592265.22	21.7	1538.0	1516.0	22.0	0	0.00	78.5	63.91	4,295	4,367	25,265	12.20%	1,579	0.76%	N	-	-	-	-	-
9/30/2021	395	1999616.49	592284.95	21.7	1538.2	1516.5	21.8	1	4.50	74.0	59.64	4,008	4,031	23,321	12.07%	1,458	0.75%	N	-	-	-	-	-
9/30/2021	285	1999649.40	592274.00	16.9	1538.0	1521.0	17.0	0	0.00	78.5	49.31	3,313	3,337	19,306	12.09%	1,207	0.76%	N	-	-	-	-	-
9/30/2021	339	1999632.95	592279.48	19.9	1538.1	1518.2	19.9	0	0.00	78.5	57.92	3,892	3,931	22,743	12.12%	1,421	0.76%	N	-	-	-	-	-
10/1/2021	244	1999661.88	592362.46	14.6	1537.9	1523.3	14.7	0	3.47	75.1	40.73	2,737	2,884	16,685	12.64%	1,043	0.79%	N	-	-	-	-	-
10/1/2021	154	1999687.82	592348.28	12.8	1538.1	1525.1	13.0	1	4.50	74.0	35.70	2,399	2,400	13,885	12.00%	868	0.75%	N	-	-	-	-	-
10/1/2021	204	1999673.11	592345.26	14.9	1538.1	1523.2	14.9	2	9.00	69.5	38.40	2,581	2,607	15,083	12.12%	943	0.76%	N	-	-	-	-	-
10/1/2021	261	1999656.65	592350.74	15.1	1538.2	1523.0	15.2	2	9.00	69.5	39.10	2,627	2,698	15,609	12.32%	976	0.77%	Y	-	3	4.90E-07	-	360.77
10/1/2021	186	1999678.34	592319.78	11.7	1538.1	1526.3	11.8	2	9.00	69.5	30.26	2,034	2,071	11,982	12.22%	749	0.76%	N	-	-	-	-	-
10/1/2021	221	1999668.37	592331.01	15.0	1538.1	1523.1	15.1	2	9.00	69.5	38.79	2,607	2,662	15,401	12.25%	963	0.77%	N	-	-	-	-	-
10/1/2021	278	1999651.91	592336.48	15.0	1538.1	1523.0	15.1	2	9.00	69.5	38.81	2,608	2,654	15,355	12.21%	960	0.76%	N	-	-	-	-	-
10/1/2021	202	1999673.60	592305.53	6.6	1538.1	1531.5	6.6	2	9.00	69.5	17.00	1,142	1,169	6,763	12.28%	423	0.77%	N	-	-	-	-	-
10/1/2021	237	1999663.63	592316.76	13.8	1538.0	1524.1	13.9	2	9.00	69.5	35.70	2,399	2,442	14,128	12.22%	883	0.76%	N	-	-	-	-	-
10/1/2021	219	1999668.86	592291.28	3.3	1538.1	1534.5	3.6	2	9.00	69.5	9.25	621	663	3,836	12.80%	240	0.80%	N	-	-	-	-	-
10/1/2021	293	1999647.17	592322.23	16.8	1538.3	1521.0	17.3	2	9.00	69.5	44.58	2,996	3,066	17,738	12.28%	1,109	0.77%	N	-	-	-	-	-
10/1/2021	253	1999658.89	592302.51	11.2	1538.0	1526.8	11.2	2	9.00	69.5	28.87	1,940	1,983	11,473	12.26%	717	0.77%	N	-	-	-	-	-
10/1/2021	308	1999642.43	592307.98	19.3	1538.1	1518.8	19.3	2	9.00	69.5	49.73	3,342	3,434	19,867	12.33%	1,242	0.77%	Y	-	12	1.10E-06	-	243.26
10/1/2021	269	1999654.15	592288.25	11.0	1537.9	1526.7	11.2	1	4.50	74.0	30.69	2,062	2,121	12,271	12.34%	767	0.77%	N	-	-	-	-	-
10/1/2021	378	1999621.23	592299.20	23.0	1538.1	1515.0	23.0	2	9.00	69.5	59.29	3,984	4,080	23,605	12.29%	1,475	0.77%	N	-	-	-	-	-
10/1/2021	324	1999637.69	592293.73	20.3	1538.1	1517.7	20.4	0	0.00	78.5	59.34	3,988	4,041	23,379	12.16%	1,461	0.76%	N	-	-	-	-	-
10/1/2021	257	1999657.63	592271.27	14.0	1538.0	1524.0	14.0	1	4.50	74.0	38.42	2,582	2,615	15,129	12.15%	946	0.76%	N	-	-	-	-	-
10/1/2021	312	1999641.18	592276.74	18.6	1538.1	1519.5	18.6	2	9.00	69.5	47.93	3,221	3,269	18,913	12.18%	1,182	0.76%	N	-	-	-	-	-
10/4/2021	413	1999610.99	592199.72	14.2	1538.0	1523.8	14.2	2	9.00	69.5	36.62	2,461	2,489	14,400	12.14%	900	0.76%	N	-	-	-	-	-
10/4/2021	468	1999594.53	592205.20	15.3	1538.0	1522.7	15.3	2	9.00	69.5	39.41	2,648	2,683	15,522	12.16%	970	0.76%	N	-	-	-	-	-
10/4/2021	397	1999615.73	592213.97	17.9	1538.1	1520.2	17.9	2	9.00	69.5	46.18	3,103	3,135	18,137	12.12%	1,134	0.76%	N	-	-	-	-	-
10/4/2021	452	1999599.27	592219.45	18.7	1538.1	1519.3	18.7	2	9.00	69.5	48.24	3,242	3,294	19,057	12.19%	1,191	0.76%	Y	-	13	1.10E-06	-	229.57
10/4/2021	381	1999620.47	592228.23	21.6	1538.2	1516.6	21.6	3	13.50	65.0	52.08	3,500	3,609	20,880	12.37%	1,305	0.77%	N	-	-	-	-	-
10/4/2021	437	1999604.01	592233.70	20.7	1537.9	1517.2	20.7	3	13.50	65.0	49.94	3,356	3,390	19,613	12.12%	1,226	0.76%	N	-	-	-	-	-
10/4/2021	344	1999631.69	592248.24	22.5	1538.0	1515.5	22.5	2	9.00	69.5	58.00	3,898	3,959	22,905	12.19%	1,432	0.76%	N	-	-	-	-	-
10/4/2021	399	1999615.24	592253.71	22.1	1538.1	1515.8	22.2	2	9.00	69.5	57.28	3,849	3,907	22,604	12.18%	1,413	0.76%	N	-	-	-	-	-
10/4/2021	329	1999636.44	592262.49	21.8	1538.1	1516.2	21.9	2	9.00	69.5	56.38	3,789	3,837	22,199	12.15%	1,387	0.76%	N	-	-	-	-	-
10/4/2021	383	1999619.98	592267.96	21.2	1538.1	1516.8	21.2	2	9.00	69.5	54.68	3,675	3,724	21,545	12.16%	1,347	0.76%	N	-	-	-	-	-
10/4/2021	366	1999624.72	592282.21	21.0	1538.1	1517.1	21.0	2	9.00	69.5	54.14	3,638	3,683	21,308	12.15%	1,332	0.76%	N	-	-	-	-	-
10/5/2021	210	1999671.37	592353.76	14.7	1537.9	1523.2	14.7	6	36.73	41.8	22.79	1,532	1,910	11,050	14.96%	691	0.94%	N	-	-	-	-	-
10/5/2021	267	1999654.91	592359.23	14.9	1538.2	1523.2	15.0	6	31.42	47.1	26.14	1,757	1,958	11,328	13.37%	708	0.84%	N	-	-	-	-	-
10/5/2021	227	1999666.63	592339.51	14.8	1537.9	1522.9	15.0	4	18.00	60.5	33.66	2,262	2,292	13,260	12.16%	829	0.76%	N	-	-	-	-	-
10/5/2021	283	1999650.17	592344.98	15.0	1538.1	1523.1	15.0	4	18.00	60.5	33.70	2,265	2,291	13,254	12.14%	828	0.76%	N	-	-	-	-	-
10/5/2021	243	1999661.88	592325.25	14.9	1538.1	1523.2	14.9	4	18.00	60.5	33.43	2,247	2,278	13,179	12.17%	824	0.76%	Y	-	8	2.00E-06	-	125.31
10/5/2021	299	1999645.43	592330.73	16.2	1538.1	1521.8	16.2	4	18.00	60.5	36.39	2,446	2,471	14,296	12.12%	893	0.76%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
10/5/2021	259	1999657.14	592311.00	13.5	1538.0	1524.5	13.5	4	18.00	60.5	30.31	2,037	2,086	12,068	12.29%	754	0.77%	N	-	-	-	-	-
10/5/2021	314	1999640.69	592316.48	19.9	1538.0	1518.1	19.9	4	18.00	60.5	44.64	3,000	3,050	17,646	12.20%	1,103	0.76%	N	-	-	-	-	-
10/5/2021	276	1999652.40	592296.75	13.4	1538.0	1524.6	13.5	3	13.50	65.0	32.40	2,177	2,257	13,058	12.44%	816	0.78%	N	-	-	-	-	-
10/5/2021	330	1999635.95	592302.22	21.5	1538.1	1516.6	21.5	3	13.50	65.0	51.82	3,482	3,528	20,411	12.16%	1,276	0.76%	N	-	-	-	-	-
10/5/2021	291	1999647.66	592282.50	15.4	1538.0	1522.6	15.4	3	13.50	65.0	37.19	2,499	2,548	14,741	12.23%	921	0.76%	N	-	-	-	-	-
10/5/2021	345	1999631.21	592287.97	21.0	1538.0	1517.0	21.0	3	13.50	65.0	50.68	3,406	3,452	19,971	12.16%	1,248	0.76%	Y	-	5	2.20E-06	-	183.15
10/5/2021	400	1999614.75	592293.45	22.6	1538.0	1515.3	22.7	5	22.50	56.0	47.14	3,168	3,261	18,866	12.35%	1,179	0.77%	N	-	-	-	-	-
10/5/2021	307	1999642.92	592268.24	20.3	1538.0	1517.7	20.3	4	18.00	60.5	45.56	3,062	3,107	17,975	12.18%	1,123	0.76%	N	-	-	-	-	-
10/5/2021	361	1999626.46	592273.72	20.6	1538.0	1517.4	20.7	4	18.00	60.5	46.30	3,112	3,160	18,282	12.19%	1,143	0.76%	N	-	-	-	-	-
10/5/2021	416	1999610.01	592279.19	20.9	1538.1	1517.1	20.9	5	22.50	56.0	43.42	2,918	2,953	17,084	12.14%	1,068	0.76%	N	-	-	-	-	-
10/6/2021	517	1999579.82	592202.17	13.8	1538.1	1524.2	13.8	6	39.18	39.4	20.18	1,356	1,807	10,454	15.99%	653	1.00%	N	-	-	-	-	-
10/6/2021	407	1999612.73	592191.23	12.4	1538.1	1525.7	12.4	2	9.00	69.5	32.01	2,151	2,194	12,693	12.24%	793	0.76%	N	-	-	-	-	-
10/6/2021	462	1999596.28	592196.70	13.6	1538.0	1524.4	13.6	4	18.00	60.5	30.52	2,051	2,084	12,057	12.19%	754	0.76%	N	-	-	-	-	-
10/6/2021	390	1999617.47	592205.48	15.6	1538.0	1522.4	15.6	4	18.00	60.5	35.00	2,352	2,385	13,798	12.17%	862	0.76%	N	-	-	-	-	-
10/6/2021	447	1999601.02	592210.95	16.9	1538.0	1521.1	16.9	4	18.00	60.5	37.89	2,547	2,587	14,967	12.19%	935	0.76%	N	-	-	-	-	-
10/6/2021	375	1999622.21	592219.73	18.8	1538.0	1519.2	18.8	4	18.00	60.5	42.24	2,839	2,867	16,587	12.12%	1,037	0.76%	N	-	-	-	-	-
10/6/2021	431	1999605.76	592225.21	19.9	1538.0	1518.1	20.0	4	18.00	60.5	44.73	3,006	3,034	17,553	12.11%	1,097	0.76%	N	-	-	-	-	-
10/6/2021	338	1999633.44	592239.74	22.5	1538.0	1515.5	22.5	3	13.50	65.0	54.25	3,646	3,705	21,435	12.20%	1,340	0.76%	N	-	-	-	-	-
10/6/2021	393	1999616.98	592245.21	22.3	1538.0	1515.5	22.5	3	13.50	65.0	54.25	3,646	3,710	21,464	12.21%	1,342	0.76%	Y	-	20	2.00E-06	-	145.12
10/6/2021	449	1999600.53	592250.69	21.6	1538.0	1516.4	21.6	5	22.50	56.0	44.85	3,014	3,042	17,599	12.11%	1,100	0.76%	N	-	-	-	-	-
10/6/2021	323	1999638.18	592253.99	22.4	1538.1	1515.7	22.4	4	18.00	60.5	50.27	3,378	3,445	19,931	12.24%	1,246	0.76%	N	-	-	-	-	-
10/6/2021	433	1999605.27	592264.94	21.5	1538.1	1516.4	21.6	5	22.50	56.0	44.85	3,014	3,070	17,761	12.22%	1,110	0.76%	N	-	-	-	-	-
10/6/2021	377	1999621.72	592259.47	22.1	1538.0	1515.9	22.1	4	18.00	60.5	49.60	3,333	3,369	19,491	12.13%	1,218	0.76%	N	-	-	-	-	-
10/7/2021	182	1999679.59	592351.02	14.4	1538.1	1523.7	14.4	4	18.00	60.5	32.31	2,171	2,194	12,693	12.13%	793	0.76%	N	-	-	-	-	-
10/7/2021	295	1999646.68	592361.97	14.7	1538.0	1523.3	14.8	6	32.71	45.8	25.05	1,684	2,029	11,739	14.46%	734	0.90%	N	-	-	-	-	-
10/7/2021	239	1999663.14	592356.49	14.8	1538.0	1523.2	14.9	6	43.64	34.9	19.21	1,291	1,929	11,160	17.93%	698	1.12%	N	-	-	-	-	-
10/7/2021	198	1999674.85	592336.77	14.8	1538.0	1523.2	14.8	5	22.50	56.0	30.74	2,066	2,091	12,097	12.15%	756	0.76%	N	-	-	-	-	-
10/7/2021	310	1999641.94	592347.72	15.5	1538.1	1522.5	15.6	6	27.00	51.5	29.72	1,997	2,026	11,721	12.17%	733	0.76%	N	-	-	-	-	-
10/7/2021	255	1999658.40	592342.24	15.0	1538.1	1523.1	15.1	6	27.00	51.5	28.73	1,931	1,945	11,253	12.09%	703	0.76%	Y	-	7	8.60E-07	-	140.10
10/7/2021	216	1999670.11	592322.52	14.4	1538.1	1523.7	14.4	6	27.00	51.5	27.56	1,852	1,874	10,842	12.14%	678	0.76%	N	-	-	-	-	-
10/7/2021	326	1999637.20	592333.46	19.0	1538.0	1519.0	19.0	6	27.00	51.5	36.31	2,440	2,464	14,255	12.12%	891	0.76%	N	-	-	-	-	-
10/7/2021	272	1999653.66	592327.99	14.9	1538.0	1523.1	15.0	6	27.00	51.5	28.54	1,918	1,973	11,415	12.35%	713	0.77%	N	-	-	-	-	-
10/7/2021	231	1999665.37	592308.26	10.8	1538.1	1527.3	10.8	6	27.00	51.5	20.65	1,388	1,441	8,337	12.46%	521	0.78%	N	-	-	-	-	-
10/7/2021	341	1999632.46	592319.21	22.3	1538.0	1515.7	22.3	6	27.00	51.5	42.64	2,866	2,954	17,090	12.37%	1,068	0.77%	N	-	-	-	-	-
10/7/2021	287	1999648.92	592313.74	16.2	1538.0	1521.8	16.2	6	27.00	51.5	30.96	2,081	2,141	12,387	12.35%	774	0.77%	N	-	-	-	-	-
10/7/2021	351	1999629.46	592296.47	22.3	1538.1	1515.7	22.4	4	18.00	60.5	50.18	3,372	3,411	19,734	12.14%	1,233	0.76%	N	-	-	-	-	-
10/7/2021	297	1999645.92	592290.99	16.3	1538.1	1521.6	16.4	4	18.00	60.5	36.79	2,473	2,537	14,678	12.31%	917	0.77%	Y	-	14	1.40E-06	-	172.46
10/7/2021	263	1999655.89	592279.76	11.7	1538.0	1526.3	11.7	5	22.50	56.0	24.33	1,635	1,687	9,760	12.38%	610	0.77%	N	-	-	-	-	-
10/7/2021	280	1999651.15	592265.51	19.6	1538.1	1518.1	20.0	4	18.00	60.5	44.80	3,011	3,151	18,230	12.56%	1,139	0.78%	N	-	-	-	-	-
10/7/2021	388	1999618.24	592276.46	20.8	1538.0	1517.2	20.8	6	27.00	51.5	39.74	2,671	2,787	16,124	12.52%	1,008	0.78%	N	-	-	-	-	-
10/7/2021	334	1999634.69	592270.98	20.6	1538.0	1517.4	20.7	6	27.00	51.5	39.46	2,652	2,708	15,667	12.26%	979	0.77%	N	-	-	-	-	-
10/7/2021	296	1999646.41	592251.26	21.9	1538.0	1516.1	21.9	3	13.50	65.0	52.80	3,548	3,587	20,752	12.13%	1,297	0.76%	N	-	-	-	-	-
10/8/2021	489	1999588.05	592199.44	14.2	1538.1	1523.8	14.2	6	35.09	43.4	22.90	1,539	1,846	10,680	14.40%	667	0.90%	N	-	-	-	-	-
10/8/2021	435	1999604.50	592193.96	13.0	1538.1	1525.1	13.0	5	22.50	56.0	27.00	1,815	1,831	10,593	12.11%	662	0.76%	N	-	-	-	-	-
10/8/2021	474	1999592.79	592213.69	17.4	1538.0	1520.6	17.4	6	27.00	51.5	33.29	2,237	2,260	13,075	12.12%	817	0.76%	N	-	-	-	-	-
10/8/2021	420	1999609.24	592208.22	16.2	1538.1	1521.8	16.3	6	27.00	51.5	31.04	2,086	2,111	12,213	12.14%	763	0.76%	N	-	-	-	-	-
10/8/2021	458	1999597.53	592227.94	19.7	1538.1	1518.3	19.8	6	27.00	51.5	37.70	2,534	2,557	14,793	12.11%	925	0.76%	N	-	-	-	-	-
10/8/2021	403	1999613.98	592222.47	19.7	1538.1	1518.3	19.7	6	27.00	51.5	37.66	2,531	2,555	14,782	12.11%	924	0.76%	N	-	-	-	-	-
10/8/2021	422	1999608.76	592247.95	21.7	1538.0	1516.3	21.8	5	22.50	56.0	45.16	3,035	3,061	17,709	12.10%	1,107	0.76%	N	-	-	-	-	-
10/8/2021	365	1999625.21	592242.48	22.5	1538.0	1515.5	22.5	5	22.50	56.0	46.74	3,141	3,160	18,282	12.07%	1,143	0.75%	N	-	-	-	-	-
10/8/2021	405	1999613.50	592262.20	21.4	1538.0	1516.6	21.4	6	27.00	51.5	40.93	2,750	2,806	16,234	12.24%	1,015	0.77%	Y	-	18	6.30E-08	-	165.58
10/8/2021	350	1999629.95	592256.73	22.4	1538.0	1515.6	22.4	6	27.00	51.5	42.80	2,876	2,919	16,888	12.18%	1,055	0.76%	N	-	-	-	-	-
10/8/2021	372	1999622.98	592290.71	22.1	1538.0	1515.9	22.1	6	27.00	51.5	42.21	2,836	2,870	16,604	12.14%	1,038	0.76%	N	-	-	-	-	-
10/8/2021	318	1999639.43	592285.23	18.4	1538.0	1519.5	18.6	6	27.00	51.5	35.43	2,381	2,437	14,099	12.28%	881	0.77%	N	-	-	-	-	-
10/8/2021	248	1999660.63	592294.01	8.0	1538.0	1529.8	8.2	6	27.00	51.5	15.56	1,046	1,095	6,335	12.57%	396	0.79%	N	-	-	-	-	-
10/8/2021	303	1999644.17	592299.49	18.0	1538.1	1520.0	18.0	6	27.00	51.5	34.40	2,312	2,344	13,561	12.17%	848	0.76%	N	-	-	-	-	-
10/8/2021	357	1999627.72	592304.96	22.9	1538.1	1515.0	23.1	6	27.00	51.5	44.02	2,958	3,032	17,542	12.30%	1,096	0.77%	N	-	-	-	-	-
10/11/2021	415	1999610.50	592239.46	21.8	1538.0	1516.2	21.9	6	27.00	51.5	41.71	2,803	2,823	16,332	12.09%	1,021	0.76%	N	-	-	-	-	-
10/11/2021	360	1999626.95	592233.98	22.5	1538.0	1515.5	22.5	6	27.00	51.5	42.99	2,889	2,922	16,905	12.14%	1,057	0.76%	Y	-	21	7.80E-07	-	149.66
10/11/2021	126	1999696.05	592345.55	10.0	1537.9	1527.9	10.0	1	4.50	74.0	27.45	1,845	1,869	10,813	12.16%	676	0.76%	N	-	-	-	-	-
10/11/2021	120	1999697.79	592337.05	7.6	1538.1	1530.4	7.6	1	4.50	74.0	20.87	1,402	1,428	8,262	12.22%	516	0.76%	N	-	-	-	-	-
10/11/2021	148	1999689.57	592339.79	11.7	1538.1	1526.4	11.8	4	18.00	60.5	26.35	1,771	1,797	10,396	12.18%	650	0.76%	N	-	-	-	-	-
10/11/2021	170	1999683.08	592334.03	13.3	1538.0	1524.6	13.4	4	18.00	60.5	29.98	2,015	2,049	11,854	12.20%	741	0.76%	N	-	-	-	-	-
10/11/2021	114	1999699.54	592328.56	5.2	1538.1	1532.8	5.2	1	4.50	74.0	14.34	964	999	5,780	12.44%	361	0.78%	N	-	-	-	-	-
10/11/2021	142	1999691.31	592331.29	8.6	1538.0	1529.4	8.6	4	18.00	60.5	19.37	1,302	1,363	7,886	12.56%	493	0.79%	N	-	-	-	-	-
10/11/2021	108	1999701.28	592320.06	4.2	1538.1	1533.8	4.2	1	4.50	74.0	11.57	778	796	4,605	12.28%	288	0.77%	N	-	-	-	-	-
10/11/2021	164	1999684.82	592325.54	10.4	1538.0	1527.6	10.4	4	18.00	60.5	23.36	1,570	1,617	9,355	12.36%	585	0.77%	N	-	-	-	-	-
10/11/2021	136	1999693.05	592322.80	5.5	1538.1	1532.5	5.5	4	18.00	60.5	12.38	832	884	5,114	12.75%	320	0.80%	N	-	-	-	-	-
10/11/2021	101	1999703.02	592311.57	4.0	1538.0	1533.2	4.8	1	4.50	74.0	13.11	881	1,028	5,947	14.00%	372	0.88%	N	-	-	-	-	-
10/11/2021	96	1999704.77	592303.07	3.9	1538.0	1534.1	3.9	1	4.50	74.0	10.75	722	759	4,391	12.61%	274	0.79%	N	-	-	-	-	-
10/11/2021	158	1999686.57	592317.04	6.3	1538.0	1531.7	6.4	3	13.50	65.0	15.37	1,033	1,085	6,277	12.61%	392	0.79%	N	-	-	-	-	-
10/11/2021	130	1999694.80	592314.31	4.2	1538.0	1533.8	4.3	4	18.00	60.5	9.53	640	673	3,894	12.61%	243	0.79%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	Calculated Cement Addition* %	Calculated Bento. Addition* LBS	Calculated Bento. Addition* %	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
10/11/2021	124	1999696.54	592305.81	4.0	1538.0	1534.0	4.0	3	13.50	65.0	9.68	651	668	3,865	12.32%	242	0.77%	N	-	-	-	-	-
10/11/2021	180	1999680.08	592311.28	7.1	1538.0	1530.9	7.1	4	18.00	60.5	15.94	1,071	1,117	6,462	12.51%	404	0.78%	N	-	-	-	-	-
10/11/2021	152	1999688.31	592308.55	4.1	1538.0	1533.9	4.1	4	18.00	60.5	9.24	621	658	3,807	12.72%	238	0.79%	N	-	-	-	-	-
10/11/2021	118	1999698.28	592297.32	3.2	1538.1	1534.8	3.3	2	9.00	69.5	8.37	563	585	3,384	12.48%	212	0.78%	N	-	-	-	-	-
10/11/2021	112	1999700.03	592288.82	2.3	1538.1	1535.8	2.3	1	4.50	74.0	6.39	429	451	2,609	12.60%	163	0.79%	N	-	-	-	-	-
10/11/2021	174	1999681.83	592302.79	3.0	1538.1	1535.0	3.0	3	13.50	65.0	7.27	489	523	3,026	12.84%	189	0.80%	N	-	-	-	-	-
10/11/2021	146	1999690.05	592300.05	2.9	1538.1	1534.9	3.1	4	18.00	60.5	6.97	469	504	2,916	12.91%	182	0.81%	N	-	-	-	-	-
10/11/2021	140	1999691.80	592291.56	0.7	1538.1	1537.4	0.7	3	13.50	65.0	1.73	117	146	845	15.03%	53	0.94%	N	-	-	-	-	-
10/11/2021	196	1999675.34	592297.03	2.5	1538.1	1535.5	2.5	4	18.00	60.5	5.63	378	411	2,378	13.04%	149	0.82%	N	-	-	-	-	-
10/11/2021	168	1999683.57	592294.30	0.4	1538.0	1537.6	0.5	4	18.00	60.5	1.01	68	80	463	14.16%	29	0.88%	N	-	-	-	-	-
10/11/2021	128	1999695.28	592274.57	4.9	1538.0	1533.1	4.9	0	0.00	78.5	14.28	960	985	5,699	12.31%	356	0.77%	N	-	-	-	-	-
10/11/2021	134	1999693.54	592283.06	2.7	1538.0	1535.0	3.0	3	13.50	65.0	7.25	487	531	3,072	13.08%	192	0.82%	N	-	-	-	-	-
10/11/2021	190	1999677.09	592288.54	0.6	1538.1	1537.4	0.7	3	13.50	65.0	1.69	113	139	804	14.72%	50	0.92%	N	-	-	-	-	-
10/11/2021	162	1999685.31	592285.80	0.3	1538.0	1537.7	0.3	4	18.00	60.5	0.76	51	69	399	16.16%	25	1.01%	N	-	-	-	-	-
10/11/2021	156	1999687.06	592277.31	3.6	1538.0	1534.4	3.6	3	13.50	65.0	8.72	586	611	3,535	12.51%	221	0.78%	N	-	-	-	-	-
10/11/2021	214	1999670.60	592282.78	2.7	1538.0	1535.3	2.8	3	13.50	65.0	6.70	450	482	2,789	12.85%	174	0.80%	N	-	-	-	-	-
10/11/2021	184	1999678.83	592280.04	1.6	1538.1	1536.3	1.8	4	18.00	60.5	4.01	270	343	1,984	15.26%	124	0.95%	N	-	-	-	-	-
10/11/2021	150	1999688.80	592268.81	5.0	1538.1	1533.0	5.0	2	9.00	69.5	12.96	871	924	5,346	12.74%	334	0.80%	N	-	-	-	-	-
10/11/2021	144	1999690.54	592260.32	5.1	1538.1	1532.9	5.1	1	4.50	74.0	14.09	947	976	5,647	12.36%	353	0.77%	N	-	-	-	-	-
10/11/2021	235	1999664.12	592277.02	7.3	1538.0	1530.7	7.3	4	18.00	60.5	16.41	1,103	1,184	6,850	12.88%	428	0.81%	N	-	-	-	-	-
10/11/2021	178	1999680.57	592271.55	4.0	1538.1	1534.0	4.0	3	13.50	65.0	9.73	654	685	3,963	12.57%	248	0.79%	N	-	-	-	-	-
10/11/2021	206	1999672.34	592274.29	4.7	1538.0	1533.3	4.7	4	18.00	60.5	10.61	713	743	4,299	12.51%	269	0.78%	N	-	-	-	-	-
10/11/2021	229	1999665.86	592268.53	9.7	1538.1	1528.3	9.8	3	13.50	65.0	23.58	1,585	1,623	9,390	12.29%	587	0.77%	Y	-	3	1.40E-06	-	201.72
10/11/2021	172	1999682.32	592263.05	5.3	1538.0	1532.7	5.4	3	13.50	65.0	12.91	868	902	5,218	12.47%	326	0.78%	N	-	-	-	-	-
10/11/2021	200	1999674.09	592265.79	6.6	1538.1	1531.5	6.6	4	18.00	60.5	14.82	996	1,029	5,953	12.40%	372	0.77%	N	-	-	-	-	-
10/12/2021	379	1999620.96	592188.49	11.7	1538.0	1526.2	11.7	2	9.00	69.5	30.16	2,027	2,052	11,872	12.15%	742	0.76%	N	-	-	-	-	-
10/12/2021	325	1999637.41	592183.02	11.4	1538.1	1526.6	11.4	0	0.00	78.5	33.28	2,236	2,281	13,197	12.24%	825	0.76%	N	-	-	-	-	-
10/12/2021	226	1999666.84	592189.06	19.8	1538.1	1518.3	19.8	0	0.00	78.5	57.62	3,873	3,897	22,546	12.08%	1,409	0.75%	N	-	-	-	-	-
10/12/2021	336	1999633.93	592200.00	15.9	1538.1	1522.2	15.9	0	0.00	78.5	46.28	3,110	3,148	18,213	12.15%	1,138	0.76%	N	-	-	-	-	-
10/12/2021	282	1999650.38	592194.53	16.8	1538.1	1521.2	16.9	0	0.00	78.5	49.10	3,300	3,366	19,474	12.24%	1,217	0.77%	Y	-	7	8.20E-07	-	281.42
10/12/2021	209	1999671.58	592203.31	20.0	1538.0	1518.0	20.0	0	0.00	78.5	58.24	3,914	3,963	22,928	12.15%	1,433	0.76%	N	-	-	-	-	-
10/12/2021	321	1999638.67	592214.26	15.5	1538.0	1522.5	15.5	0	0.00	78.5	45.15	3,034	3,075	17,790	12.16%	1,112	0.76%	N	-	-	-	-	-
10/12/2021	266	1999655.12	592208.78	17.8	1538.0	1520.2	17.8	0	0.00	78.5	51.81	3,482	3,516	20,342	12.12%	1,271	0.76%	N	-	-	-	-	-
10/12/2021	193	1999676.32	592217.56	17.2	1538.1	1520.8	17.2	0	0.00	78.5	50.09	3,366	3,392	19,624	12.09%	1,227	0.76%	N	-	-	-	-	-
10/12/2021	306	1999643.41	592228.51	19.8	1538.0	1518.2	19.8	1	4.50	74.0	54.41	3,656	3,682	21,302	12.08%	1,331	0.76%	N	-	-	-	-	-
10/12/2021	251	1999659.86	592223.04	17.8	1538.1	1520.2	17.9	0	0.00	78.5	51.92	3,489	3,513	20,324	12.08%	1,270	0.76%	N	-	-	-	-	-
10/12/2021	177	1999681.06	592231.81	12.5	1538.0	1525.5	12.5	0	0.00	78.5	36.48	2,451	2,493	14,423	12.20%	901	0.76%	N	-	-	-	-	-
10/12/2021	290	1999648.15	592242.76	21.5	1538.1	1516.6	21.5	2	9.00	69.5	55.43	3,725	3,782	21,881	12.18%	1,368	0.76%	N	-	-	-	-	-
10/12/2021	234	1999664.61	592237.29	16.8	1538.1	1521.2	16.9	0	0.00	78.5	49.01	3,294	3,315	19,179	12.08%	1,199	0.75%	Y	-	13	8.50E-07	-	238.73
10/12/2021	160	1999685.80	592246.07	9.3	1538.0	1528.7	9.3	0	0.00	78.5	27.11	1,822	1,848	10,692	12.17%	668	0.76%	N	-	-	-	-	-
10/12/2021	275	1999652.89	592257.01	20.0	1538.0	1518.0	20.0	3	13.50	65.0	48.20	3,239	3,296	19,069	12.21%	1,192	0.76%	N	-	-	-	-	-
10/12/2021	218	1999669.35	592251.54	13.6	1538.1	1524.4	13.7	0	0.00	78.5	39.79	2,674	2,720	15,736	12.21%	984	0.76%	N	-	-	-	-	-
10/13/2021	298	1999645.64	592180.28	10.6	1538.0	1527.4	10.6	1	4.50	74.0	29.15	1,959	1,977	11,438	12.11%	715	0.76%	N	-	-	-	-	-
10/13/2021	352	1999629.19	592185.75	11.9	1538.1	1526.2	11.9	2	9.00	69.5	30.67	2,061	2,087	12,074	12.15%	755	0.76%	N	-	-	-	-	-
10/13/2021	363	1999625.70	592202.74	15.3	1538.1	1522.7	15.4	4	18.00	60.5	34.42	2,313	2,350	13,596	12.19%	850	0.76%	Y	-	11	1.90E-06	-	187.68
10/13/2021	254	1999658.61	592191.79	17.9	1538.1	1520.1	18.0	2	9.00	69.5	46.23	3,107	3,144	18,189	12.14%	1,137	0.76%	N	-	-	-	-	-
10/13/2021	309	1999642.15	592197.27	16.6	1538.0	1521.3	16.7	2	9.00	69.5	42.99	2,889	2,936	16,986	12.20%	1,062	0.76%	N	-	-	-	-	-
10/13/2021	348	1999630.44	592216.99	17.0	1538.1	1521.0	17.1	4	18.00	60.5	38.23	2,569	2,631	15,222	12.29%	951	0.77%	N	-	-	-	-	-
10/13/2021	238	1999663.35	592206.05	18.0	1538.0	1520.0	18.0	2	9.00	69.5	46.44	3,121	3,173	18,357	12.20%	1,147	0.76%	N	-	-	-	-	-
10/13/2021	294	1999646.90	592211.52	17.3	1538.0	1520.7	17.3	2	9.00	69.5	44.61	2,998	3,026	17,507	12.11%	1,094	0.76%	N	-	-	-	-	-
10/13/2021	222	1999668.09	592220.30	17.8	1538.0	1520.2	17.8	2	9.00	69.5	45.92	3,086	3,139	18,161	12.21%	1,135	0.76%	N	-	-	-	-	-
10/13/2021	279	1999651.64	592225.77	17.1	1538.0	1520.9	17.1	2	9.00	69.5	44.14	2,967	3,005	17,385	12.16%	1,087	0.76%	N	-	-	-	-	-
10/13/2021	205	1999672.83	592234.55	15.9	1538.0	1522.0	16.0	2	9.00	69.5	41.13	2,764	2,796	16,176	12.14%	1,011	0.76%	N	-	-	-	-	-
10/13/2021	262	1999656.38	592240.02	19.0	1538.1	1519.0	19.1	2	9.00	69.5	49.06	3,297	3,327	19,248	12.11%	1,203	0.76%	N	-	-	-	-	-
10/13/2021	188	1999677.57	592248.80	9.8	1538.1	1527.8	10.3	2	9.00	69.5	26.53	1,783	1,833	10,605	12.34%	663	0.77%	Y	-	3	6.60E-07	-	250.80
10/13/2021	247	1999661.12	592254.28	16.9	1538.0	1521.1	16.9	2	9.00	69.5	43.55	2,927	2,960	17,125	12.14%	1,070	0.76%	N	-	-	-	-	-
10/14/2021	358	1999627.44	592194.25	13.9	1538.1	1524.1	14.0	5	22.50	56.0	29.10	1,956	1,996	11,548	12.25%	722	0.77%	N	-	-	-	-	-
10/14/2021	249	1999660.35	592183.30	17.4	1538.0	1520.6	17.4	2	9.00	69.5	44.92	3,019	3,042	17,599	12.09%	1,100	0.76%	N	-	-	-	-	-
10/14/2021	304	1999643.90	592188.77	14.8	1538.0	1523.2	14.8	4	18.00	60.5	33.23	2,233	2,281	13,197	12.26%	825	0.77%	N	-	-	-	-	-
10/14/2021	342	1999632.18	592208.50	15.7	1538.0	1522.0	16.0	5	22.50	56.0	33.27	2,236	2,308	13,353	12.39%	835	0.77%	Y	-	12	2.20E-06	-	193.26
10/14/2021	232	1999665.09	592197.55	19.4	1538.0	1518.6	19.4	4	18.00	60.5	43.52	2,925	2,958	17,113	12.14%	1,070	0.76%	N	-	-	-	-	-
10/14/2021	288	1999648.64	592203.03	17.6	1538.1	1520.4	17.6	4	18.00	60.5	39.53	2,657	2,683	15,522	12.12%	970	0.76%	N	-	-	-	-	-
10/14/2021	327	1999636.92	592222.75	17.7	1538.1	1520.0	18.1	5	22.50	56.0	37.48	2,519	2,611	15,106	12.44%	944	0.78%	N	-	-	-	-	-
10/14/2021	217	1999669.84	592211.80	17.9	1538.1	1520.2	17.9	4	18.00	60.5	40.23	2,703	2,770	16,026	12.30%	1,002	0.77%	N	-	-	-	-	-
10/14/2021	274	1999653.38	592217.28	17.8	1538.0	1520.2	17.9	4	18.00	60.5	40.02	2,690	2,751	15,916	12.27%	995	0.77%	Y	-	16	2.50E-06	-	184.58
10/14/2021	311	1999641.67	592237.00	22.4	1538.0	1515.6	22.4	5	22.50	56.0	46.53	3,127	3,159	18,276	12.12%	1,142	0.76%	N	-	-	-	-	-
10/14/2021	199	1999674.58	592226.06	16.8	1538.1	1521.2	16.9	4	18.00	60.5	37.85	2,544	2,616	15,135	12.34%	946	0.77%	N	-	-	-	-	-
10/14/2021	256	1999658.12	592231.53	17.5	1538.1	1520.5	17.5	4	18.00	60.5	39.31	2,641	2,688	15,551	12.21%	972	0.76%	N	-	-	-	-	-
10/14/2021	183	1999679.32	592240.31	12.8	1538.0	1525.1	12.9	4	18.00	60.5	28.88	1,941	2,020	11,687	12.49%	730	0.78%	N	-	-	-	-	-
10/14/2021	240	1999662.86	592245.78	16.9	1538.0	1521.0	17.0	4	18.00	60.5	38.10	2,560	2,579	14,921	12.09%	933	0.76%	N	-	-	-	-	-
10/14/2021	166	1999684.06	592254.56	6.5	1538.0	1531.1	6.9	4	18.00	60.5	15.43	1,037	1,052	6,086	12.18%	380	0.76%	N	-	-	-	-	-
10/14/2021	223	1999667.60	592260.03	11.6	1538.0	1526.4	11.6	4	18.00	60.5	26.05	1,751	1,778	10,287	12.19%	643	0.76%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
10/15/2021	277	1999652.13	592186.04	15.3	1538.0	1522.7	15.3	5	22.50	56.0	31.80	2,137	2,153	12,456	12.09%	779	0.76%	N	-	-	-	-	-
10/15/2021	331	1999635.67	592191.51	15.1	1538.0	1522.8	15.2	6	27.00	51.5	29.03	1,951	1,969	11,392	12.11%	712	0.76%	N	-	-	-	-	-
10/15/2021	260	1999656.87	592200.29	17.7	1538.0	1520.3	17.7	6	27.00	51.5	33.83	2,273	2,308	13,353	12.18%	835	0.76%	N	-	-	-	-	-
10/15/2021	315	1999640.41	592205.76	16.4	1538.0	1521.6	16.4	6	27.00	51.5	31.34	2,106	2,141	12,387	12.20%	774	0.76%	N	-	-	-	-	-
10/15/2021	187	1999678.06	592209.07	18.7	1538.0	1519.3	18.7	3	13.50	65.0	45.07	3,029	3,083	17,837	12.21%	1,115	0.76%	N	-	-	-	-	-
10/15/2021	245	1999661.61	592214.54	17.8	1538.0	1520.2	17.8	6	27.00	51.5	34.04	2,287	2,326	13,457	12.20%	841	0.76%	N	-	-	-	-	-
10/15/2021	301	1999645.15	592220.01	16.1	1538.0	1521.9	16.1	6	27.00	51.5	30.77	2,068	2,111	12,213	12.25%	763	0.77%	N	-	-	-	-	-
10/15/2021	228	1999666.35	592228.79	17.4	1538.0	1520.6	17.4	6	27.00	51.5	33.25	2,235	2,286	13,226	12.28%	827	0.77%	N	-	-	-	-	-
10/15/2021	284	1999649.89	592234.27	20.2	1538.0	1517.8	20.3	6	27.00	51.5	38.65	2,598	2,644	15,297	12.21%	956	0.76%	Y	-	19	1.60E-06	-	156.20
10/18/2021	138	1999692.29	592251.82	6.2	1538.0	1531.8	6.2	3	13.50	65.0	14.98	1,007	1,026	5,936	12.23%	371	0.76%	N	-	-	-	-	-
10/18/2021	194	1999675.83	592257.30	8.5	1538.0	1529.4	8.6	6	27.00	51.5	16.38	1,101	1,136	6,572	12.39%	411	0.77%	N	-	-	-	-	-
10/18/2021	252	1999659.38	592262.77	16.4	1538.0	1521.6	16.4	6	27.00	51.5	31.32	2,105	2,142	12,392	12.21%	775	0.76%	N	-	-	-	-	-
10/18/2021	155	1999687.55	592237.57	10.2	1538.0	1527.8	10.2	3	13.50	65.0	24.67	1,658	1,689	9,772	12.23%	611	0.76%	N	-	-	-	-	-
10/18/2021	171	1999682.80	592223.32	12.0	1538.1	1525.5	12.6	3	13.50	65.0	30.28	2,035	2,141	12,387	12.63%	774	0.79%	N	-	-	-	-	-
10/18/2021	212	1999671.09	592243.04	15.0	1538.0	1523.0	15.0	6	27.00	51.5	28.67	1,927	1,986	11,490	12.37%	718	0.77%	N	-	-	-	-	-
10/18/2021	268	1999654.63	592248.52	19.6	1538.0	1518.4	19.6	6	27.00	51.5	37.49	2,519	2,571	14,874	12.25%	930	0.77%	Y	-	14	5.70E-07	-	186.40
10/18/2021	419	1999609.27	592180.08	11.4	1538.0	1526.4	11.6	0	0.00	78.5	33.68	2,264	2,338	13,526	12.39%	845	0.77%	N	-	-	-	-	-
10/18/2021	391	1999617.32	592176.88	11.9	1538.0	1528.7	9.3	1	4.50	74.0	25.39	1,706	1,766	10,217	12.42%	639	0.78%	N	-	-	-	-	-
10/18/2021	292	1999647.38	592171.78	7.2	1538.0	1530.8	7.2	1	4.50	74.0	19.80	1,331	1,365	7,897	12.31%	494	0.77%	N	-	-	-	-	-
10/18/2021	319	1999639.16	592174.52	10.6	1538.1	1527.4	10.6	3	13.50	65.0	25.58	1,719	1,763	10,200	12.31%	637	0.77%	N	-	-	-	-	-
10/18/2021	346	1999630.93	592177.26	12.0	1538.0	1526.0	12.0	3	13.50	65.0	28.95	1,946	1,986	11,490	12.25%	718	0.77%	N	-	-	-	-	-
10/19/2021	313	1999640.90	592166.03	10.6	1538.0	1527.3	10.7	2	9.00	69.5	27.61	1,855	1,899	10,987	12.28%	687	0.77%	N	-	-	-	-	-
10/19/2021	340	1999632.67	592168.76	11.8	1538.1	1526.2	11.8	3	13.50	65.0	28.47	1,913	1,947	11,264	12.21%	704	0.76%	N	-	-	-	-	-
10/19/2021	367	1999624.44	592171.50	12.0	1538.0	1526.0	12.0	2	12.21	66.3	29.50	1,983	2,128	12,311	12.88%	769	0.80%	N	-	-	-	-	-
10/19/2021	429	1999606.25	592185.47	11.6	1538.1	1526.4	11.7	6	34.32	44.2	19.13	1,286	1,559	9,020	14.55%	564	0.91%	N	-	-	-	-	-
10/19/2021	401	1999614.47	592182.73	11.7	1538.0	1526.3	11.7	6	49.17	29.4	12.76	857	1,551	8,973	21.71%	561	1.36%	N	-	-	-	-	-
10/19/2021	373	1999622.70	592180.00	12.0	1538.0	1526.0	12.0	6	39.88	38.7	17.21	1,157	1,584	9,164	16.43%	573	1.03%	Y	-	3	8.70E-07	-	269.15
10/19/2021	270	1999653.87	592177.54	13.4	1538.1	1524.6	13.5	4	18.00	60.5	30.23	2,031	2,107	12,190	12.45%	762	0.78%	N	-	-	-	-	-
10/19/2021	103	1999702.48	592341.02	7.1	1538.0	1530.9	7.1	6	27.00	51.5	13.61	915	946	5,473	12.41%	342	0.78%	N	-	-	-	-	-
10/19/2021	91	1999706.02	592334.31	5.3	1538.1	1532.7	5.4	4	18.00	60.5	12.02	808	854	4,941	12.69%	309	0.79%	N	-	-	-	-	-
10/19/2021	63	1999714.25	592331.58	4.4	1538.1	1533.7	4.4	1	4.50	74.0	12.12	815	839	4,854	12.36%	303	0.77%	N	-	-	-	-	-
10/19/2021	57	1999715.99	592323.08	4.2	1538.1	1533.8	4.2	1	4.50	74.0	11.63	781	840	4,860	12.90%	304	0.81%	N	-	-	-	-	-
10/19/2021	85	1999707.76	592325.82	4.3	1538.1	1533.6	4.5	5	22.50	56.0	9.24	621	680	3,934	13.15%	246	0.82%	N	-	-	-	-	-
10/19/2021	51	1999717.74	592314.59	4.0	1538.0	1534.0	4.0	1	4.50	74.0	11.05	743	774	4,478	12.51%	280	0.78%	N	-	-	-	-	-
10/19/2021	79	1999709.51	592317.33	4.1	1538.1	1533.9	4.2	5	22.50	56.0	8.61	579	650	3,761	13.47%	235	0.84%	N	-	-	-	-	-
10/19/2021	44	1999719.48	592306.09	4.0	1538.1	1534.1	4.0	1	4.50	74.0	11.05	743	767	4,437	12.39%	277	0.77%	N	-	-	-	-	-
10/19/2021	73	1999711.25	592308.83	4.0	1538.0	1534.0	4.0	5	22.50	56.0	8.32	559	598	3,460	12.83%	216	0.80%	N	-	-	-	-	-
10/19/2021	39	1999721.22	592297.60	3.7	1538.0	1534.3	3.7	1	4.50	74.0	10.17	684	717	4,148	12.58%	259	0.79%	N	-	-	-	-	-
10/19/2021	67	1999712.99	592300.34	3.8	1538.0	1534.2	3.8	4	18.00	60.5	8.57	576	620	3,587	12.93%	224	0.81%	N	-	-	-	-	-
10/19/2021	34	1999722.97	592289.11	3.7	1538.0	1534.3	3.8	1	4.50	74.0	10.28	691	741	4,287	12.87%	268	0.80%	N	-	-	-	-	-
10/19/2021	61	1999714.74	592291.84	3.5	1538.1	1534.5	3.6	3	13.50	65.0	8.74	588	623	3,604	12.72%	225	0.80%	N	-	-	-	-	-
10/19/2021	89	1999706.51	592294.58	3.3	1538.0	1534.7	3.3	5	22.50	56.0	6.93	466	506	2,927	13.03%	183	0.81%	N	-	-	-	-	-
10/19/2021	29	1999724.71	592280.61	4.1	1538.0	1533.6	4.4	1	4.50	74.0	12.04	809	844	4,883	12.52%	305	0.78%	N	-	-	-	-	-
10/19/2021	55	1999716.48	592283.35	4.0	1538.0	1534.0	4.1	3	13.50	65.0	9.76	656	728	4,212	13.32%	263	0.83%	N	-	-	-	-	-
10/19/2021	83	1999708.25	592286.08	3.6	1538.0	1534.4	3.7	4	18.00	60.5	8.18	550	594	3,437	12.96%	215	0.81%	N	-	-	-	-	-
10/19/2021	23	1999726.45	592272.12	4.4	1538.1	1533.6	4.4	1	4.50	74.0	12.18	818	849	4,912	12.45%	307	0.78%	N	-	-	-	-	-
10/19/2021	49	1999718.22	592274.85	4.7	1538.1	1533.3	4.8	3	13.50	65.0	11.59	779	803	4,646	12.38%	290	0.77%	N	-	-	-	-	-
10/19/2021	77	1999710.00	592277.59	4.8	1538.1	1533.2	4.9	3	13.50	65.0	11.78	792	844	4,883	12.79%	305	0.80%	N	-	-	-	-	-
10/19/2021	106	1999701.77	592280.33	4.3	1538.0	1533.7	4.3	5	22.50	56.0	8.97	603	664	3,842	13.22%	240	0.83%	N	-	-	-	-	-
10/19/2021	18	1999728.20	592263.62	4.2	1538.0	1533.8	4.2	1	4.50	74.0	11.57	778	812	4,698	12.53%	294	0.78%	N	-	-	-	-	-
10/19/2021	42	1999719.97	592266.36	4.8	1538.1	1533.2	4.8	3	13.50	65.0	11.59	779	813	4,704	12.53%	294	0.78%	N	-	-	-	-	-
10/19/2021	71	1999711.74	592269.10	5.0	1538.0	1533.0	5.1	3	13.50	65.0	12.16	818	874	5,056	12.83%	316	0.80%	N	-	-	-	-	-
10/19/2021	99	1999703.51	592271.83	5.0	1538.0	1532.9	5.1	4	18.00	60.5	11.37	764	799	4,623	12.55%	289	0.78%	N	-	-	-	-	-
10/19/2021	37	1999721.71	592257.86	4.7	1538.1	1533.4	4.7	2	9.00	69.5	12.16	817	852	4,929	12.51%	308	0.78%	N	-	-	-	-	-
10/19/2021	65	1999713.48	592260.60	5.0	1538.1	1533.0	5.0	3	13.50	65.0	12.07	811	835	4,831	12.35%	302	0.77%	N	-	-	-	-	-
10/20/2021	32	1999723.45	592249.37	3.9	1538.0	1534.1	3.9	1	4.50	74.0	10.80	726	741	4,287	12.25%	268	0.77%	N	-	-	-	-	-
10/20/2021	122	1999697.03	592266.07	5.0	1538.0	1532.9	5.1	4	18.00	60.5	11.37	764	783	4,530	12.30%	283	0.77%	N	-	-	-	-	-
10/20/2021	94	1999705.26	592263.34	5.0	1538.0	1533.0	5.0	4	18.00	60.5	11.30	759	778	4,501	12.29%	281	0.77%	N	-	-	-	-	-
10/20/2021	22	1999726.94	592232.38	3.1	1538.1	1534.8	3.2	0	0.00	78.5	9.42	633	691	3,998	13.09%	250	0.82%	N	-	-	-	-	-
10/20/2021	27	1999725.20	592240.87	3.1	1538.0	1534.9	3.2	1	4.50	74.0	8.67	582	597	3,454	12.30%	216	0.77%	N	-	-	-	-	-
10/20/2021	59	1999715.23	592252.11	4.8	1538.0	1533.2	4.9	3	13.50	65.0	11.71	787	809	4,680	12.34%	293	0.77%	N	-	-	-	-	-
10/20/2021	87	1999707.00	592254.84	5.0	1538.0	1533.0	5.0	3	13.50	65.0	12.12	814	832	4,814	12.26%	301	0.77%	N	-	-	-	-	-
10/20/2021	116	1999698.77	592257.58	5.1	1538.1	1532.9	5.2	5	22.50	56.0	10.73	721	785	4,542	13.06%	284	0.82%	N	-	-	-	-	-
10/20/2021	53	1999716.97	592243.61	4.4	1538.0	1533.6	4.4	3	13.50	65.0	10.62	714	763	4,414	12.83%	276	0.80%	N	-	-	-	-	-
10/20/2021	47	1999718.71	592235.12	4.7	1538.1	1533.3	4.8	3	13.50	65.0	11.44	769	798	4,617	12.45%	289	0.78%	N	-	-	-	-	-
10/20/2021	81	1999708.74	592246.35	5.3	1538.0	1532.7	5.3	3	13.50	65.0	12.79	860	882	5,103	12.31%	319	0.77%	N	-	-	-	-	-
10/20/2021	110	1999700.51	592249.09	5.6	1538.0	1532.4	5.6	4	18.00	60.5	12.65	850	882	5,103	12.45%	319	0.78%	Y	-	3	8.60E-07	-	212.49
10/20/2021	36	1999722.20	592218.13	6.0	1538.0	1532.0	6.0	0	0.00	78.5	17.51	1,177	1,205	6,971	12.29%	436	0.77%	N	-	-	-	-	-
10/20/2021	41	1999720.46	592226.62	5.0	1538.0	1533.0	5.0	3	13.50	65.0	12.09	813	853	4,935	12.60%	308	0.79%	N	-	-	-	-	-
10/20/2021	75	1999710.49	592237.85	6.0	1538.0	1532.0	6.0	3	13.50	65.0	14.55	978	1,013	5,861	12.43%	366	0.78%	N	-	-	-	-	-
10/20/2021	104	1999702.26	592240.59	6.3	1538.0	1531.0	7.0	3	13.50	65.0	16.91	1,136	1,168	6,757	12.33%	422	0.77%	N	-	-	-	-	-
10/20/2021	132	1999694.03	592243.33	7.7	1538.0	1530.3	7.7	5	22.50	56.0	16.00	1,075	1,124	6,503	12.54%	406	0.78%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	Calculated Cement Addition* %	Calculated Bento. Addition* LBS	Calculated Bento. Addition* %	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
10/20/2021	70	1999712.23	592229.36	5.9	1538.1	1532.1	6.0	3	13.50	65.0	14.43	970	1,009	5,838	12.49%	365	0.78%	N	-	-	-	-	-
10/20/2021	64	1999713.97	592220.87	5.8	1538.0	1532.2	5.9	3	13.50	65.0	14.09	947	997	5,768	12.63%	361	0.79%	N	-	-	-	-	-
10/20/2021	98	1999704.00	592232.10	6.3	1538.1	1531.8	6.3	3	13.50	65.0	15.22	1,023	1,055	6,104	12.37%	381	0.77%	N	-	-	-	-	-
10/20/2021	127	1999695.77	592234.83	7.6	1538.1	1530.4	7.6	4	18.00	60.5	17.09	1,148	1,201	6,948	12.55%	434	0.78%	N	-	-	-	-	-
10/20/2021	58	1999715.72	592212.37	6.9	1538.0	1531.1	6.9	2	9.00	69.5	17.85	1,199	1,231	7,122	12.32%	445	0.77%	N	-	-	-	-	-
10/20/2021	52	1999717.46	592203.88	8.7	1538.0	1529.0	9.0	1	4.50	74.0	24.65	1,657	1,760	10,182	12.75%	636	0.80%	N	-	-	-	-	-
10/20/2021	92	1999705.74	592223.60	5.8	1538.1	1532.3	5.8	3	13.50	65.0	14.00	941	973	5,629	12.41%	352	0.78%	N	-	-	-	-	-
10/20/2021	121	1999697.52	592226.34	6.4	1538.1	1531.7	6.4	3	13.50	65.0	15.47	1,039	1,058	6,121	12.22%	383	0.76%	N	-	-	-	-	-
10/20/2021	149	1999689.29	592229.08	9.4	1538.1	1528.7	9.4	5	22.50	56.0	19.59	1,317	1,402	8,111	12.78%	507	0.80%	N	-	-	-	-	-
10/20/2021	86	1999707.49	592215.11	6.4	1538.0	1531.6	6.4	3	13.50	65.0	15.47	1,039	1,142	6,607	13.19%	413	0.82%	N	-	-	-	-	-
10/20/2021	80	1999709.23	592206.61	8.5	1538.0	1529.5	8.6	3	13.50	65.0	20.60	1,384	1,444	8,354	12.52%	522	0.78%	N	-	-	-	-	-
10/20/2021	115	1999699.26	592217.84	5.4	1538.1	1532.6	5.4	3	13.50	65.0	13.08	879	921	5,328	12.57%	333	0.79%	N	-	-	-	-	-
10/20/2021	143	1999691.03	592220.58	6.4	1538.0	1531.6	6.5	4	18.00	60.5	14.48	973	1,034	5,982	12.75%	374	0.80%	Y	-	5	5.20E-07	-	239.84
10/20/2021	109	1999701.00	592209.35	7.8	1538.1	1529.7	8.4	3	13.50	65.0	20.26	1,361	1,420	8,215	12.52%	513	0.78%	N	-	-	-	-	-
10/20/2021	137	1999692.78	592212.09	8.4	1538.0	1529.3	8.7	3	13.50	65.0	20.96	1,408	1,494	8,643	12.73%	540	0.80%	N	-	-	-	-	-
10/20/2021	165	1999684.55	592214.82	13.8	1538.0	1524.1	13.9	5	22.50	56.0	28.93	1,944	2,014	11,652	12.43%	728	0.78%	N	-	-	-	-	-
10/20/2021	159	1999686.29	592206.33	19.3	1538.0	1518.0	20.0	3	13.50	65.0	48.18	3,238	3,393	19,630	12.58%	1,227	0.79%	N	-	-	-	-	-
10/20/2021	131	1999694.52	592203.59	17.3	1538.0	1520.2	17.8	3	13.50	65.0	42.90	2,883	3,050	17,646	12.69%	1,103	0.79%	N	-	-	-	-	-
10/21/2021	161	1999685.53	592135.35	5.8	1538.1	1532.3	5.8	0	0.00	78.5	16.96	1,140	1,174	6,792	12.36%	425	0.77%	N	-	-	-	-	-
10/21/2021	189	1999677.30	592138.09	6.7	1538.0	1531.2	6.8	1	4.50	74.0	18.73	1,259	1,349	7,805	12.86%	488	0.80%	N	-	-	-	-	-
10/21/2021	286	1999649.13	592163.29	8.4	1538.0	1529.5	8.5	2	9.00	69.5	21.84	1,468	1,511	8,742	12.35%	546	0.77%	N	-	-	-	-	-
10/21/2021	271	1999653.79	592156.60	8.9	1538.0	1529.1	8.9	1	7.28	71.3	23.60	1,586	1,684	9,743	12.74%	609	0.80%	N	-	-	-	-	-
10/21/2021	246	1999661.48	592153.64	7.6	1538.0	1530.4	7.6	1	6.79	71.8	20.25	1,361	1,438	8,319	12.68%	520	0.79%	N	-	-	-	-	-
10/21/2021	224	1999667.33	592149.32	7.7	1538.0	1530.3	7.7	2	12.88	65.7	18.82	1,265	1,384	8,007	13.13%	500	0.82%	N	-	-	-	-	-
10/21/2021	211	1999671.28	592142.75	7.1	1538.1	1530.9	7.2	4	20.84	57.7	15.37	1,033	1,156	6,688	13.43%	418	0.84%	N	-	-	-	-	-
10/21/2021	167	1999683.78	592143.85	7.2	1538.1	1530.8	7.3	2	9.00	69.5	18.67	1,255	1,315	7,608	12.58%	475	0.79%	N	-	-	-	-	-
10/21/2021	195	1999675.55	592146.58	7.7	1538.0	1530.3	7.7	6	33.95	44.6	12.77	858	1,073	6,208	15.01%	388	0.94%	N	-	-	-	-	-
10/21/2021	258	1999657.36	592160.55	7.5	1538.0	1530.5	7.5	6	36.12	42.4	11.80	793	1,064	6,156	16.10%	385	1.01%	N	-	-	-	-	-
10/21/2021	264	1999655.61	592169.05	9.6	1538.0	1528.1	9.9	4	18.00	60.5	22.22	1,493	1,561	9,031	12.54%	564	0.78%	N	-	-	-	-	-
10/21/2021	230	1999665.58	592157.82	9.4	1538.0	1528.6	9.4	6	28.77	49.8	17.38	1,168	1,279	7,400	13.14%	462	0.82%	N	-	-	-	-	-
10/21/2021	201	1999673.81	592155.08	9.5	1538.0	1528.2	9.8	3	13.50	65.0	23.68	1,591	1,656	9,581	12.49%	599	0.78%	N	-	-	-	-	-
10/21/2021	173	1999682.04	592152.34	9.0	1538.1	1529.1	9.0	3	13.50	65.0	21.73	1,460	1,513	8,753	12.43%	547	0.78%	N	-	-	-	-	-
10/21/2021	145	1999690.27	592149.60	8.1	1538.0	1529.6	8.4	2	9.00	69.5	21.74	1,461	1,507	8,719	12.38%	545	0.77%	N	-	-	-	-	-
10/21/2021	236	1999663.84	592166.31	11.5	1538.0	1526.5	11.5	3	13.50	65.0	27.77	1,867	1,910	11,050	12.28%	691	0.77%	Y	-	9	1.50E-06	-	214.79
10/21/2021	151	1999688.52	592158.10	9.4	1538.1	1528.6	9.5	2	9.00	69.5	24.36	1,637	1,673	9,679	12.26%	605	0.77%	N	-	-	-	-	-
10/21/2021	179	1999680.30	592160.84	10.5	1538.0	1527.5	10.6	3	13.50	65.0	25.41	1,708	1,766	10,217	12.41%	639	0.78%	N	-	-	-	-	-
10/21/2021	207	1999672.07	592163.57	11.1	1538.0	1526.8	11.2	4	18.00	60.5	25.00	1,680	1,753	10,142	12.52%	634	0.78%	N	-	-	-	-	-
10/21/2021	242	1999662.10	592174.80	14.8	1538.1	1523.3	14.8	4	18.00	60.5	33.23	2,233	2,286	13,226	12.28%	827	0.77%	N	-	-	-	-	-
10/21/2021	129	1999695.01	592163.86	9.2	1538.0	1528.8	9.2	1	4.50	74.0	25.28	1,699	1,728	9,997	12.20%	625	0.76%	N	-	-	-	-	-
10/21/2021	157	1999686.78	592166.59	9.8	1538.0	1528.2	9.8	3	13.50	65.0	23.66	1,590	1,628	9,419	12.29%	589	0.77%	N	-	-	-	-	-
10/21/2021	185	1999678.55	592169.33	12.5	1538.0	1525.5	12.5	3	13.50	65.0	30.18	2,028	2,053	11,878	12.15%	742	0.76%	N	-	-	-	-	-
10/21/2021	215	1999670.32	592172.07	14.1	1538.1	1523.9	14.2	4	18.00	60.5	31.79	2,137	2,229	12,896	12.52%	806	0.78%	N	-	-	-	-	-
10/21/2021	135	1999693.26	592172.35	9.2	1538.0	1528.8	9.2	2	9.00	69.5	23.75	1,596	1,634	9,453	12.29%	591	0.77%	N	-	-	-	-	-
10/21/2021	220	1999668.58	592180.56	18.4	1538.1	1519.7	18.4	4	18.00	60.5	41.28	2,774	2,846	16,465	12.31%	1,029	0.77%	N	-	-	-	-	-
10/21/2021	163	1999685.04	592175.09	12.9	1538.0	1525.1	12.9	3	13.50	65.0	31.10	2,090	2,116	12,242	12.15%	765	0.76%	N	-	-	-	-	-
10/21/2021	113	1999699.75	592178.11	9.8	1538.1	1528.2	9.9	1	4.50	74.0	27.04	1,817	1,843	10,663	12.17%	666	0.76%	N	-	-	-	-	-
10/21/2021	191	1999676.81	592177.83	17.3	1538.0	1520.5	17.5	4	18.00	60.5	39.24	2,637	2,718	15,725	12.37%	983	0.77%	N	-	-	-	-	-
10/21/2021	141	1999691.52	592180.85	14.0	1538.0	1523.7	14.3	3	13.50	65.0	34.45	2,315	2,363	13,671	12.25%	854	0.77%	Y	-	11	2.20E-06	-	184.50
10/22/2021	93	1999705.30	592126.17	4.4	1538.1	1533.4	4.7	0	0.00	78.5	13.58	913	966	5,589	12.70%	349	0.79%	N	-	-	-	-	-
10/22/2021	133	1999693.75	592132.62	5.8	1538.1	1532.3	5.8	1	4.50	74.0	15.96	1,073	1,115	6,451	12.48%	403	0.78%	N	-	-	-	-	-
10/22/2021	105	1999701.98	592129.88	5.3	1538.0	1532.7	5.3	6	35.45	43.1	8.48	570	716	4,142	15.09%	259	0.94%	N	-	-	-	-	-
10/22/2021	82	1999708.47	592135.64	6.2	1538.0	1531.8	6.2	1	4.50	74.0	17.03	1,144	1,192	6,896	12.50%	431	0.78%	N	-	-	-	-	-
10/22/2021	111	1999700.24	592138.37	6.2	1538.0	1531.8	6.2	3	13.50	65.0	15.01	1,009	1,035	5,988	12.31%	374	0.77%	N	-	-	-	-	-
10/22/2021	139	1999692.01	592141.11	6.6	1538.0	1531.4	6.6	5	22.50	56.0	13.74	923	966	5,589	12.55%	349	0.78%	N	-	-	-	-	-
10/22/2021	88	1999706.72	592144.13	7.0	1538.1	1531.1	7.0	2	9.00	69.5	18.08	1,215	1,240	7,174	12.25%	448	0.77%	N	-	-	-	-	-
10/22/2021	117	1999698.49	592146.87	7.0	1538.1	1531.1	7.0	4	18.00	60.5	15.74	1,058	1,103	6,381	12.51%	399	0.78%	Y	-	6	6.30E-07	-	225.85
10/22/2021	66	1999713.21	592149.89	7.0	1538.0	1530.9	7.1	1	4.50	74.0	19.36	1,301	1,319	7,631	12.17%	477	0.76%	N	-	-	-	-	-
10/22/2021	95	1999704.98	592152.63	7.6	1538.0	1530.4	7.6	3	13.50	65.0	18.36	1,234	1,247	7,214	12.13%	451	0.76%	N	-	-	-	-	-
10/22/2021	123	1999696.75	592155.36	8.9	1538.0	1529.1	8.9	5	22.50	56.0	18.49	1,243	1,277	7,388	12.33%	462	0.77%	N	-	-	-	-	-
10/22/2021	72	1999711.46	592158.38	7.6	1538.1	1530.5	7.6	2	9.00	69.5	19.60	1,317	1,345	7,781	12.25%	486	0.77%	N	-	-	-	-	-
10/22/2021	100	1999703.24	592161.12	8.9	1538.0	1528.9	9.1	4	18.00	60.5	20.47	1,376	1,429	8,267	12.46%	517	0.78%	N	-	-	-	-	-
10/22/2021	78	1999709.72	592166.88	8.7	1538.0	1529.3	8.7	2	9.00	69.5	22.46	1,509	1,541	8,915	12.25%	557	0.77%	N	-	-	-	-	-
10/22/2021	107	1999701.49	592169.61	9.2	1538.1	1528.9	9.2	5	22.50	56.0	19.10	1,283	1,328	7,683	12.42%	480	0.78%	N	-	-	-	-	-
10/22/2021	84	1999707.98	592175.37	9.5	1538.1	1528.6	9.5	3	13.50	65.0	22.91	1,540	1,595	9,228	12.43%	577	0.78%	N	-	-	-	-	-
10/22/2021	197	1999675.07	592186.32	20.4	1538.0	1517.5	20.5	3	13.50	65.0	49.48	3,325	3,341	19,329	12.06%	1,208	0.75%	N	-	-	-	-	-
10/22/2021	62	1999714.46	592181.13	9.6	1538.1	1528.5	9.6	1	4.50	74.0	26.35	1,771	1,815	10,501	12.30%	656	0.77%	N	-	-	-	-	-
10/22/2021	90	1999706.23	592183.87	11.2	1538.1	1526.8	11.3	3	13.50	65.0	27.15	1,824	1,864	10,784	12.26%	674	0.77%	N	-	-	-	-	-
10/22/2021	119	1999698.01	592186.60	15.4	1538.0	1522.6	15.4	3	13.50	65.0	37.19	2,499	2,541	14,701	12.20%	919	0.76%	N	-	-	-	-	-
10/22/2021	175	1999681.55	592192.08	20.6	1538.0	1517.4	20.7	1	4.50	74.0	56.63	3,805	3,853	22,291	12.15%	1,393	0.76%	N	-	-	-	-	-
10/22/2021	69	1999712.72	592189.62	10.5	1538.1	1527.6	10.5	2	9.00	69.5	27.15	1,824	1,858	10,749	12.22%	672	0.76%	N	-	-	-	-	-
10/22/2021	45	1999719.20	592195.38	9.1	1538.0	1528.8	9.2	2	9.00	69.5	23.70	1,592	1,611	9,320	12.14%	583	0.76%	N	-	-	-	-	-
10/25/2021	169	1999683.29	592183.58	19.9	1538.0	1518.1	19.9	5	22.50	56.0	41.34	2,778	2,815	16,286	12.16%	1,018	0.76%	N	-	-	-	-	-

Date	Column ID	Northing	Easting	Design Depth (feet)	Top of Column Elevation	Bottom of Column Elevation	As-Built Depth (feet)	Column Overlaps	Overlap Area (SF)	Effective Area (SF)	Effective Volume (CY)	Gallons Required	Gallons Injected	Calculated Cement Addition* LBS	%	Calculated Bento. Addition* LBS	%	Sample Collected (Y/N)	Comments	Depth of Sample (ft)	28-Day Perm Result (cm/sec)	Post 28-Day Perm Result (cm/sec)	28-Day Strength (psi)
10/25/2021	203	1999673.32	592194.81	20.6	1538.1	1517.4	20.6	5	22.50	56.0	42.78	2,875	2,900	16,778	12.11%	1,049	0.76%	Y	-	15	9.70E-07	-	191.43
10/25/2021	147	1999689.78	592189.34	20.4	1538.0	1517.5	20.5	4	18.00	60.5	45.97	3,089	3,138	18,155	12.19%	1,135	0.76%	N	-	-	-	-	-
10/25/2021	97	1999704.49	592192.36	13.1	1538.1	1525.0	13.1	3	13.50	65.0	31.60	2,124	2,171	12,560	12.27%	785	0.77%	N	-	-	-	-	-
10/25/2021	181	1999679.81	592200.57	20.6	1538.1	1517.4	20.6	5	22.50	56.0	42.82	2,878	2,900	16,778	12.09%	1,049	0.76%	N	-	-	-	-	-
10/25/2021	153	1999688.03	592197.83	20.5	1538.0	1517.5	20.5	5	22.50	56.0	42.59	2,862	2,906	16,813	12.18%	1,051	0.76%	N	-	-	-	-	-
10/25/2021	125	1999696.26	592195.10	17.8	1538.0	1520.2	17.8	5	22.50	56.0	36.97	2,484	2,508	14,510	12.12%	907	0.76%	N	-	-	-	-	-
10/25/2021	74	1999710.97	592198.12	10.7	1538.0	1527.3	10.7	5	22.50	56.0	22.27	1,497	1,509	8,730	12.10%	546	0.76%	N	-	-	-	-	-
10/25/2021	102	1999702.75	592200.86	13.1	1538.1	1525.0	13.1	6	27.00	51.5	25.03	1,682	1,705	9,864	12.17%	617	0.76%	N	-	-	-	-	-
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Summary

Total Number of Columns:	1,121	
Total Volume Treated (includes Overlaps):	48,102	Cubic Yards
Total Effective Volume (without overlaps, includes pilot):	39,719	Cubic Yards
Total Cement Used:	7,892	Tons
Total Bentonite Used:	493	tons
Total Number of Columns that hit Refusal:	28	
Total Linear Feet of Refusal:	84.8	feet
Total Volume of Refusal	196	Cubic Yards
Percentage of Refusal	0.49%	

Total Columns that hit refusal:	30	
Total Column Depth left untreated:	84.8	feet
Average thickness of untreated soil per column:	2.8	feet
Unconfined Compressive Strength Geometric Mean:	171.54	PSI
Permeability Geometric Mean*:	9.98E-07	cm/sec

*Geometric Mean of the permeabilities used one average permeability for all the pilot test columns and late-day permeability results where tested.

Table 3.4: Documentation Soil Sample Results

	Media:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
	Location:	CONFIRM SOIL #1A	CONFIRM SOIL #1B	CONFIRM SOIL #1C	CONFIRM SOIL #1D	CONFIRM SOIL #1E	CONFIRM SOIL #1F	CONFIRM SOIL #1G	CONFIRM SOIL #1H	CONFIRM SOIL #1I	CONFIRM SOIL #1J	CONFIRM SOIL #1K	CONFIRM SOIL #1L	CONFIRM SOIL #1M
	Bottom or Sidewall:													
	Sample Date:	5/25/2021 & 6/14/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021 & 8/30/2021	5/25/2021 & 8/30/2021	5/25/2021 & 8/30/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021
	Lab ID:	AD23682-015	AD23682-016	AD23682-017	AD23682-018	AD23682-019	AD23682-006	AD23682-007	AD23682-008	AD23682-020	AD23682-021	AD23682-022	AD23682-023	AD23682-024
	Description:	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter
Parameter	Commercial SCOs													
Metals (mg/kg)														
Mercury	2.8	<0.11	<0.11	<0.1	<0.097	<0.11	<0.11	<0.1	<0.1	<0.093	<0.11	<0.11	<0.11	<0.094
Aluminum	NA	2000	3500	3400	3800	3300	6600	7500	2700	1700	2700	2500	1700	1400
Barium	400	<13	<13	14	13	<13	<14	14	<12	<11	<13	15	<13	<11
Calcium	NA	<1300	<1300	<1200	<1200	<1300	<1400	<1200	<1200	<1100	<1300	<1300	<1300	<1100
Chromium	400	<6.4	<6.7	<6	<5.8	<6.4	<6.8	<6.2	<6.1	<5.6	<6.4	<6.5	<6.4	<5.6
Cobalt	NA	<3.2	<3.3	<3	<2.9	<3.2	<3.4	<3.1	<3	<2.8	<3.2	<3.2	<3.2	<2.8
Copper	270	<6.4	<6.7	<6	<5.8	<6.4	<6.8	<6.2	<6.1	<5.6	<6.4	<6.5	<6.4	<5.6
Iron	NA	8800	7800	9000	13000	6500	13000	7100	4200	6000	4400	10000	5500	5100
Lead	1,000	<6.4	<6.7	<6	<5.8	<6.4	<6.8	<6.2	<6.1	<5.6	<6.4	<6.5	<6.4	<5.6
Magnesium	NA	1100	970	960	1100	1000	1700	1400	880	790	740	1100	860	610
Manganese	10,000	43	38	43	40	43	55	49	23	23	18	61	67	86
Nickel	310	<6.4	<6.7	<6	<5.8	<6.4	<6.8	<6.2	<6.1	<5.6	<6.4	<6.5	<6.4	<5.6
Potassium	NA	<640	<670	<600	<580	<640	<680	<620	<610	<560	<640	<650	<640	<560
Sodium	NA	<320	<330	<300	<290	<320	<340	<310	<300	<280	<320	<320	<320	<280
Zinc	10,000	24	21	19	22	21	25	31	17	17	13	33	14	24
Antimony	NA	<1	<1.1	<0.96	<0.93	<1	<1.1	<1	<0.98	<0.89	<1	<1	<1	<0.9
Arsenic	16	0.29	0.76	0.62	0.71	0.34	0.49	0.48	0.36	0.59	0.32	0.37	0.37	0.32
Beryllium	590	<0.26	<0.27	<0.24	<0.23	<0.26	<0.27	<0.25	<0.24	<0.22	<0.26	<0.26	<0.26	<0.22
Cadmium	9.3	<0.51	<0.53	<0.48	<0.47	<0.51	<0.54	<0.5	<0.49	<0.44	<0.51	<0.52	<0.51	<0.45
Selenium	1,500	<2.6	<2.7	<2.4	<2.3	<2.6	<2.7	<2.5	<2.4	<2.2	<2.6	<2.6	<2.6	<2.2
Silver	1,500	<0.26	<0.27	<0.24	<0.23	<0.26	<0.27	<0.25	<0.24	<0.22	<0.26	<0.26	<0.26	<0.22
Thallium	NA	<0.51	<0.53	<0.48	<0.47	<0.51	<0.54	<0.5	<0.49	<0.44	<0.51	<0.52	<0.51	<0.45
Vanadium	NA	2.8	4.5	3.8	8.7	6.6	13	6.6	4	2.7	3.9	3.1	2.5	2
SemiVolatiles (mg/kg)														
2-Methylnaphthalene	NA	<0.043	<0.044	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	2.5	<0.043	<0.043	<0.043	<0.037
Acenaphthene	500	<0.043	<0.044	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	1.9	<0.043	<0.043	<0.043	<0.037
Acenaphthylene	500	0.14	0.3	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	1.4	<0.043	0.069	<0.043	<0.037
Anthracene	500	<0.043	0.084	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	1.4	<0.043	<0.043	<0.043	<0.037
Benzaldehyde	NA	<0.47	<0.48	<0.44	<0.42	<0.47	<0.49	<0.45	<0.44	<2	<0.47	<0.47	<0.47	<0.41
Benzo[a]anthracene	5.6	<0.043	0.11	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	2.4	<0.043	<0.043	<0.043	<0.037
Benzo[a]pyrene	1	0.32	0.2	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	**1.8**	<0.043	0.045	<0.043	<0.037
Benzo[b]fluoranthene	5.6	0.21	0.22	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	2.2	<0.043	0.056	<0.043	<0.037
Benzo[g,h,i]perylene	500	0.22	0.38	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	1.3	<0.043	0.046	<0.043	<0.037
Benzo[k]fluoranthene	56	0.056	0.055	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	0.47	<0.043	<0.043	<0.043	<0.037
Chrysene	56	0.057	0.14	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	2.3	<0.043	0.047	<0.043	<0.037
Dibenzo[a,h]anthracene	0.56	<0.043	0.05	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	0.26	<0.043	<0.043	<0.043	<0.037
Dibenzofuran	350	<0.011	<0.011	<0.01	<0.0098	<0.011	<0.011	<0.011	<0.01	0.16	<0.011	<0.011	<0.011	<0.0095
Fluoranthene	500	<0.043	0.13	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	5.5	<0.043	0.052	<0.043	<0.037
Fluorene	500	<0.043	<0.044	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	1.4	<0.043	<0.043	<0.043	<0.037
Indeno[1,2,3-cd]pyrene	5.6	0.15	0.25	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	0.9	<0.043	<0.043	<0.043	<0.037
Naphthalene	500	<0.012	<0.013	<0.012	<0.011	<0.012	<0.013	<0.012	<0.012	0.68	<0.012	0.028	<0.012	<0.011
Phenanthrene	500	<0.043	<0.044	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	5.2	<0.043	0.069	<0.043	<0.037
Pyrene	500	<0.043	0.3	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	10	<0.043	0.11	<0.043	<0.037
Volatiles (mg/kg)														
Acetone	500	<0.012	0.043	<0.011	<0.01	<0.012	<3.9	<0.42	<0.0097	0.032	0.025	<0.012	<0.012	<0.01
Ethylbenzene	390	<0.0012	<0.0013	<0.0011	<0.001	<0.0012	2.8	<0.084	0.001	0.005	0.073	<0.0012	<0.0012	0.0026
Isopropylbenzene	NA	<0.0012	0.0014	<0.0011	<0.001	<0.0012	<0.78	<0.084	<0.00097	<0.001	0.0079	<0.0012	<0.0012	<0.001
m&p-Xylenes	500	<0.0015	0.0028	<0.0013	<0.0012	<0.0015	2.9	<0.084	<0.0012	0.021	0.16	<0.0015	<0.0014	0.02
Methyl Acetate	NA	<0.0024	<0.0025	<0.0022	<0.0021	<0.0025	8.7	7	<0.0019	<0.0021	<0.0021	<0.0025	<0.0024	<0.0021
Methylene chloride	500	0.0046	0.01	<0.0022	0.0045	0.0043	<0.78	<0.084	0.0031	0.017	0.0038	0.0064	0.022	0.0087
o-Xylene	500	<0.0012	0.0027	<0.0011	<0.001	<0.0012	1.4	<0.084	<0.00097	0.037	0.11	<0.0012	<0.0012	0.032
Styrene	NA	<0.0024	0.0058	<0.0022	<0.0021	<0.0025	1.3	<0.084	<0.0019	<0.0021	0.11	<0.0025	<0.0024	<0.0021
Toluene	500	<0.0012	<0.0013	<0.0011	<0.001	<0.0012	1.6	<0.084	0.0011	0.0015	0.021	<0.0012	<0.0012	0.0027
Xylenes (Total)	500	<0.0012	0.0055	<0.0011	<0.001	<0.0012	4.3	<0.084	<0.00097	0.058	0.27	<0.0012	<0.0012	0.052
Wet Chemistry														
% Solids	NA	78	75	83	86	78	69	90	92	90	78	77	78	89

Results are reported in milligrams per kilogram (mg/kg)
Only parameters detected in at least one sample are shown here.
Highlighted values exceed the the Commercial SCO
SCO = Soil Cleanup Objectives
NA = No limit specified.
NT = Not tested
< = Not detected above the laboratory reporting limit
J = Result considered estimated.
R = Result considered unusable.

Prepared by: DG 7/29/22
Checked by: JDW 7/29/22

Table 3.4: Documentation Soil Sample

	Media:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
	Location:	CONFIRM 1N	CONFIRM 1O	CONFIRM 1P	CONFIRM 1R	CONFIRM 1S	CONFIRM 1T	CONFIRM DUPLICATE	Confirm Soil #2A	Confirm Soil #2B	Confirm Soil #2C	Confirm Soil #2D	Confirm Soil #2E	Confirm Soil #2F
	Bottom or Sidewall:													
	Sample Date:	9/2/2021 & 11/30/2021	9/2/2021 & 11/30/2022	9/2/2021 & 11/30/2023	11/30/2021	11/30/2021	11/30/2021	11/30/2021	9/8/2021	9/8/2021	9/8/2021	9/8/2021	9/8/2021	9/8/2021
	Lab ID:	AD27646-001	AD27646-002	AD27646-003	AD27646-005	AD27646-006	AD27646-007	AD27646-008	AD25852-001	AD25852-002	AD25852-003	AD25852-004	AD25852-005	AD25852-006
	Description:	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter
Parameter	Commercial SCOs													
Metals (mg/kg)														
Mercury	2.8	<0.097	<0.094	<0.094	<0.11	<0.086	<0.1	<0.098	<0.11	<0.11	<0.094	<0.091	<0.088	<0.089
Aluminum	NA	3400	4100	4400	2400 J	2000 J	4500 J	5200	2500	1700	1400	2500	1600	2500
Barium	400	17	17	18	<13	10	12	13	15	<13	<11	<11	<11	15
Calcium	NA	<1200	<1100	1300	<1300	<1000	2600	4600	<1300	<1300	<1100	<1100	<1100	<1100
Chromium	400	<5.8	<5.6	<5.6	<6.7	<5.2	<6	9.4	<6.5	<6.4	<5.6	<5.4	<5.3	<5.3
Cobalt	NA	<2.9	<2.8	<2.8	<3.3	<2.6	<3	3	<3.2	<3.2	<2.8	3.2	<2.6	2.8
Copper	270	<5.8	<5.6	<5.6	<6.7	<5.2	<6	<5.9	<6.5	<6.4	<5.6	<5.4	<5.3	<5.3
Iron	NA	13000	8600	7800	4400	6300	7800 J	12000	10000 J	5500 J	5100 J	6800 J	4400 J	6800 J
Lead	1,000	9.4	<5.6	8.2	<6.7	<5.2	13	11	<6.5	<6.4	<5.6	<5.4	<5.3	<5.3
Magnesium	NA	980	1300	950	710	820	960 J	2800	1100	860	610	1000	750	1000
Manganese	10,000	36	51	100	20 J	49 J	40 J	70	61	67	86	93	50	86
Nickel	310	<5.8	<5.6	<5.6	<6.7	<5.2	<6	<5.9	<6.5	<6.4	<5.6	<5.4	<5.3	<5.3
Potassium	NA	<580	<560	<560	<13	13	22	31	<650	<640	<560	<540	<530	<530
Sodium	NA	<290	<280	<280	<1.1	<0.82	<0.96	<0.94	<320	<320	<280	<270	<260	<270
Zinc	10,000	19	40	63	0.35	0.31	0.8	1.3	33	14	24	18	13	17
Antimony	NA	<0.93 J	<0.9 J	<0.9 J	<0.27 J	<0.21 J	0.25 J	0.32	<1 J	<1 J	<0.9 J	<0.87 J	<0.84 J	<0.85 J
Arsenic	16	0.95	0.68	1.4	<0.53	<0.41	<0.48 J	<0.47	0.37	0.37	0.32	0.53	0.4	0.5
Beryllium	590	<0.23	<0.22	<0.22	1.4	1.3	3.3	3.1	<0.26	<0.26	<0.22	<0.22	<0.21	<0.21
Cadmium	9.3	<0.47	<0.45	<0.45	**160**	**190**	**270**	**290**	<0.52	<0.51	<0.45	<0.43	<0.42	<0.43
Selenium	1,500	<2.3	<2.2	<2.2	<2.7	<2.1	<2.4	<2.4	<2.6	<2.6	<2.2	<2.2	<2.1	<2.1
Silver	1,500	<0.23	<0.22	<0.22	<0.27	<0.21	<0.24	<0.24	<0.26	<0.26	<0.22	<0.22	<0.21	<0.21
Thallium	NA	<0.47	<0.45	<0.45	<0.53	<0.41	<0.48	<0.47	<0.52	<0.51	<0.45	<0.43	<0.42	<0.43
Vanadium	NA	7.8	4.2	5.8	3	3	6.1	7.7	3.1	2.5	2	3.5	2.5	3.6
SemiVolatiles (mg/kg)														
2-Methylnaphthalene	NA	<0.039	<0.11	0.084	<0.044	0.042	2.6 J	9.7	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Acenaphthene	500	<0.039	0.19	0.11	<0.044	<0.034	1.2 J	3.6	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Acenaphthylene	500	0.13	0.57	0.63	<0.044	0.084	3.3 J	8	0.069	<0.043	<0.037	<0.036	<0.035	<0.035
Anthracene	500	0.043	0.41	0.37	<0.044	0.051	2.3 J	4.8	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Benzaldehyde	NA	<0.42	<1.2	<0.41	<0.48	<0.37	<1.3	<4.3	<0.47	<0.47	<0.41	<0.39	<0.38	<0.39
Benzo[a]anthracene	5.6	0.098	1.2	0.96	<0.044	0.047	1.5 J	3.2	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Benzo[a]pyrene	1	0.094	**1.1**	**1.1**	<0.044	0.048	1.4 J	**2.8**	0.045	<0.043	<0.037	<0.036	<0.035	<0.035
Benzo[b]fluoranthene	5.6	0.14	1.6	1.3	<0.044	0.052	1.4 J	3	0.056	<0.043	<0.037	<0.036	<0.035	<0.035
Benzo[g,h,i]perylene	500	0.095	1.2	0.96	<0.044	0.045	0.89 J	1.7	0.046	<0.043	<0.037	<0.036	<0.035	<0.035
Benzo[k]fluoranthene	56	0.049	0.48	0.4	<0.044	<0.034	0.34	0.73	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Chrysene	56	0.094	1.3	0.95	<0.044	0.042	1.4 J	3	0.047	<0.043	<0.037	<0.036	<0.035	<0.035
Dibenzo[a,h]anthracene	0.56	<0.039	0.23	0.18	<0.044	<0.034	0.13	<0.39	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Dibenzofuran	350	<0.0098	<0.028	0.021	<0.011	<0.0087	0.19	0.49	<0.011	<0.011	<0.0095	<0.0092	<0.0089	<0.009
Fluoranthene	500	0.12	2.9	1.8	<0.044	0.1	3.3 J	6.7	0.052	<0.043	<0.037	<0.036	<0.035	0.043
Fluorene	500	<0.039	0.19	0.14	<0.044	0.057	1.9 J	4.7	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Indeno[1,2,3-cd]pyrene	5.6	0.08	0.88	0.69	<0.044	<0.034	0.59	1.2	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Naphthalene	500	<0.011	0.048	0.13	<0.013	0.027	2.6 J	12	0.028	<0.012	<0.011	<0.01	<0.01	<0.01
Phenanthrene	500	0.044	0.41	0.62	<0.044	0.22	9.4	21	0.069	<0.043	<0.037	<0.036	<0.035	<0.035
Pyrene	500	0.16	5.1	2.9	<0.044	0.18	6.4	13	0.11	<0.043	<0.037	<0.036	<0.035	0.061
Volatiles (mg/kg)														
Acetone	500	<0.0048	<0.005	<3.3	<0.0082 J	<0.0048 J	0.013 J	0.051	<0.21	<0.0043	0.008	<0.0041	<0.0048	<0.0048
Ethylbenzene	390	<0.00048	<0.0005	<0.67	<0.00082	0.0067	<0.00055 J	0.016	0.069	<0.00043	0.027	<0.00041	<0.00048	<0.00048
Isopropylbenzene	NA	<0.00048	<0.0005	<0.67	<0.00082	0.00051	<0.00055	0.0015	<0.042	<0.00043	0.0015	<0.00041	<0.00048	<0.00048
m&p-Xylenes	500	<0.00058	<0.00061	0.94	<0.00098	0.0095	<0.00066 J	0.023	0.1	<0.00052	0.026	<0.00049	<0.00057	<0.00057
Methyl Acetate	NA	<0.00096	<0.001	<0.67	<0.0016	<0.00095	<0.0011	<0.00092	0.87B0.042	<0.00087	<0.00072	<0.00081	<0.00096	<0.00095
Methylene chloride	500	<0.00096	<0.001	<0.67	<0.0016	<0.00095	<0.0011	<0.00092	<0.042	0.0012	0.00086	0.0009 J	<0.00096	<0.00095
o-Xylene	500	<0.00048	<0.0005	<0.67	<0.00082	0.0053	<0.00055 J	0.012	0.078	<0.00043	0.013	<0.00041	<0.00048	<0.00048
Styrene	NA	<0.00096	<0.001	<0.67	<0.0016	0.0081	<0.0011	0.0098	<0.042	<0.00087	0.012	<0.00081	<0.00096	<0.00095
Toluene	500	<0.00048	<0.0005	<0.67	<0.00082	0.0028	<0.00055	0.0047	0.046	0.0007	0.017	<0.00041	<0.00048	<0.00048
Xylenes (Total)	500	<0.00048	<0.0005	0.94	<0.00082	0.015	<0.00055	0.035	0.18	<0.00043	0.039	<0.00041	<0.00048	<0.00048
Wet Chemistry														
% Solids	NA	96	93	83	75	97	83	85	96	95	98	92	95	94

Results are reported in milligrams per kilogram (mg/kg)
Only parameters detected in at least one sample are shown here.
Highlighted values exceed the the Commercial SCO
SCO = Soil Cleanup Objectives
NA = No limit specified.
NT = Not tested
< = Not detected above the laboratory reporting limit
J = Result considered estimated.
R = Result considered unusable.

Prepared by: DG 7/29/22
Checked by: JDW 7/29/22

Table 3-5: Summary of Compaction Testing

	Subcontractor	QCQA Labs		
	Testing Device	Troxler 3430		
	Test Method	ASTM D 6938		
	Maximum Dry Density	123.1 pcf		
	Optimum Moisture Content %	7.7		
	Minimum % Compaction	93 or 90		
Date	Number of tests performed	Greatest % Compaction	Lowest % Compaction	Failures?
9/30/21	12	100	93.1	No
10/4/21	12	100	93.6	No
10/6/21	12	102	93.2	No
10/7/21	12	95.7	93	No
10/11/21	12	96.5	93.1	No
10/27/21	9	97.8	93.4	No
10/28/21	9	99.6	93.8	No
11/1/21	6	98.6	93.3	No
11/2/21	15	99.4	93.1	No
11/10/21	10	100	94.3	No
11/16/21	14	99.5	94.7	No
11/18/21	12	96.5	93	No
11/22/21	18	99.3	93.6	No
12/6/21	16	98.6	90.1	No
12/7/21	20	97.7	94.7	No
12/8/21	28	99.7	93	No
12/9/21	15	97..5	93.1	No
12/10/21	46	97.6	93.2	No

Note: Individual test results are included in Appendix M

Table 5-1: Re-Use Soil Sample Laboratory Data

	Media:	Soil	Soil
	Location:	ReUse Soil #1	ReUse Soil #1
	Sample Type:	Composite	Composite
	Sample Date:	6/29/2021	9/21/2021
	Lab ID:	AD24338-001	AD246142-001
	Description:		
Parameter	Commercial SCOs		
Metals (mg/kg)			
Mercury	2.8	<0.095	<0.088
Chromium	400	6.1	<5.3
Copper	270	14	8.2
Cyanide	27	5.7	3.1
Lead	1,000	47	65
Zinc	10,000	93	53
Arsenic	16	3.3	1.3
Selenium	1,500	<2.3	<2.1
Silver	1,500	<0.23	<0.21
Pesticides (mg/kg)			
Alpha-BHC	3.4	<0.0011	<0.0011
beta-BHC	3	<0.0011	<0.0011
Dieldrin	1.4	<0.0011	<0.0011
Endrin	89	<0.0057	<0.0053
p,p'-DDD	92	<0.0028	<0.0026
p,p'-DDE	62	<0.0028	<0.0026
p,p'-DDT	47	<0.0028	<0.0026
SemiVolatiles (mg/kg)			
Acenaphthene	500	4.4	0.34
Acenaphthylene	500	6.4	3.2
Anthracene	500	15	2.2
Benzo[a]anthracene	5.6	**11**	3.6
Benzo[a]pyrene	1	**12**	**5.2**
Benzo[b]fluoranthene	5.6	**13**	**6.4**
Benzo[g,h,i]perylene	500	11	5.7
Benzo[k]fluoranthene	56	3.8	1.9
Chrysene	56	11	4.2
Dibenzo[a,h]anthracene	0.56	**1.7**	**0.83**
Fluoranthene	500	23	6
Fluorene	500	4.8	0.54
Indino[1,2,4-cd]pyrene	5.6	**7.5**	3.7
Naphthalene	500	0.71	0.54
Phenanthrene	500	21	1.7
Pyrene	500	32	11
Volatiles (mg/kg)			
1,2,4-Trimethylbenzene	NA	0.11	<0.00070
1,3,5-Trimethylbenzene	NA	0.076	<0.00070
Acetone	500	<0.057	<0.0070
Benzene	44	<0.0057	<0.00070
Ethylbenzene	390	0.0091	<0.00070
m&p-Xylenes	500	0.032	<0.00070
Methylene chloride	500	<0.011	0.0032
o-Xylene	500	0.033	<0.00070
Toluene	500	<0.0057	<0.00070
Xylenes (Total)	500	<0.0057	<0.00070
Wet Chemistry			
% Solids	NA	88	95

Results are reported in milligrams per kilogram (mg/kg)
Highlighted values exceed the the Commercial Use Soil Cleanup Objective
NA = No limit specified.
< = Not detected above the laboratory reporting limit

Prepared by: DG 7/29/22
Checked by: JDW 7/29/22

APPENDICES

Cover-sheets Only
Appendix A through V Under Separate Cover

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