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FINAL COMPLIANCE MONITORING REPORT

Groundwater Treatment Injections

8801 EAST MARGINAL WAY S., TUKWILA, WASHINGTON
AGREED ORDER NO. 6069

SHANNON & WILSON

March 30, 2023

Shannon & Wilson No: 108056-001

Submitted To: PACCAR Inc

Subject: FINAL COMPLIANCE MONITORING REPORT, GROUNDWATER TREATMENT INJECTIONS, 8801 EAST MARGINAL WAY S., TUKWILA, WASHINGTON
AGREED ORDER NO. 6069

Shannon & Wilson prepared this report and participated in this project as a consultant to PACCAR Inc. This submittal presents the Final Compliance Monitoring Report for groundwater treatment injections completed at 8801 East Marginal Way S., Tukwila, Washington. This report was prepared by the undersigned.

This report is one of multiple documents that fulfills the Compliance Monitoring Report requirements discussed in Task 4 of Exhibit C to Agreed Order No. 6069.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON

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EXECUTIVE SUMMARY

This Final Compliance Monitoring Report (CMR) summarizes the groundwater treatment injections completed in August 2021 at 8801 East Marginal Way S., Tukwila, Washington (8801 property) and in December 2022 at the adjoining property to the north (Boeing property) in accordance with the Groundwater Injections Engineering Design Report (EDR) (Shannon & Wilson, 2021c).

The two targeted treatment areas were a halogenated volatile organic compound (HVOC) groundwater plume and the Northwest Area. The HVOC groundwater plume extends from the northern boundary of the 8801 property, downgradient to the south and west, to the western boundary of the 8801 property. A portion of the HVOC plume extends under the Boeing property. The primary contaminants of concern (COCs) in the HVOC plume are trichloroethylene (TCE) and vinyl chloride (VC).

The Northwest Area is located in the northwest corner of the 8801 property. The majority of the Northwest Area is within the HVOC plume. Gasoline-range hydrocarbons are the primary COC for soil and groundwater in the Northwest Area.

The objective of the groundwater treatment injections is to reduce concentrations of COCs in groundwater in the HVOC plume to remediation levels (RLs) and reduce concentrations of COCs in groundwater in the northwest treatment Area to cleanup levels (CULs). Once these remedial actions are completed, it is anticipated that natural degradation will continue, and concentrations will be less than the applicable CULs at the conditional points on compliance along the western boundary of the 8801 property.

During August 2021, remediation compounds were injected at 194 locations between 5 to 20 feet below ground surface (bgs) on the 8801 property. In December 2022 after access was granted, remediation compounds were injected at 13 locations on the Boeing property. The injections were designed to promote enhanced biological degradation of COCs in groundwater. The remediation compounds included a carbon source, dechlorinating microbes, buffer compound, and anaerobic water.

Minor deviations from the Groundwater Injections EDR were necessary during both injection events due to field conditions, availability of materials, and best practices. The deviations are unlikely to affect the efficacy of the groundwater treatment injections.

The success of the groundwater treatment injections will be assessed through the analysis of groundwater samples collected from monitoring wells within and downgradient of the

injection areas. Previously existing monitoring wells were decommissioned in spring 2021 in accordance with the approved Compliance Monitoring Plan (Shannon & Wilson, 2021a) to accommodate redevelopment activities at the 8801 property by the current property owner. New monitoring wells are planned for installation in summer 2023, after the redevelopment activities are mostly complete. Groundwater monitoring will resume after the wells are installed and accessible.

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ACRONYMS

AO	Agreed Order
AS/SVE	air sparging/soil vapor extraction
bgs	below ground surface
COC	contaminant of concern
CMR	Compliance Monitoring Report
CUL	cleanup level
Ecology	Washington State Department of Ecology
EDR	Engineering Design Report
EPA	U.S. Environmental Protection Agency
FS	Feasibility Study
HASP	Health and Safety Plan
HVOC	halogenated volatile organic compound
IAWP	Interim Action Work Plan
LDW	Lower Duwamish Waterway
MOU	Memorandum of Understanding
MSL	mean sea level
MTCA	Model Toxics Control Act
PCE	tetrachloroethene
RL	remediation level
TCE	trichloroethylene
VC	vinyl chloride
WAC	Washington Administrative Code

1 INTRODUCTION

This Final CMR was prepared by Shannon & Wilson on behalf of PACCAR Inc to summarize the groundwater treatment injections completed in August 2021 at 8801 East Marginal Way S., Tukwila, Washington (8801 property) and in December 2022 at the adjoining property to the north in accordance with the Groundwater Injections EDR (Shannon & Wilson, 2021c).

1.1 Purpose of the Compliance Monitoring Report

The purpose of this CMR is to document the groundwater treatment injections implemented in accordance with the Groundwater Injections EDR.

1.2 Physical Description and Use

The 8801 property occupies 24.30 acres on the east bank of the Lower Duwamish Waterway (LDW) and is relatively flat, with a ground surface elevation of approximately 20 feet above mean sea level (MSL). A vicinity map is provided as Figure 1.

The current owner of the 8801 property, CenterPoint 8801 Marginal LLC, is currently in the process of redeveloping the 8801 property. CenterPoint's redevelopment activities are separate from the remedial activities described in this CMR. Monitoring wells throughout the 8801 property, except some near the western property boundary, were decommissioned during spring 2021 in preparation for redevelopment.

CenterPoint is constructing an approximately 414,400-square-foot warehouse for industrial use and trailer storage on the 8801 property. Additionally, CenterPoint will install a landscaped shoreline berm within the 100-foot river buffer located along the western edge of the 8801 property. Most of the remainder of the 8801 property that will not be covered by the warehouse or the berm will be covered with an asphalt/concrete parking lot and driveways.

Groundwater treatment injections were also performed on the north adjoining property, referred to by the Washington State Department of Ecology (Ecology) as the Boeing Isaacson Thompson Site (Boeing property). The Boeing property is used for aircraft assembly and testing by The Boeing Company. The elevation of the Boeing property is approximately 6 feet higher than the 8801 property at the north property line.

1.3 Geology

Due to the ongoing redevelopment of the 8801 property, the subsurface material in some areas may have been reworked during demolition and grading activities. For the purposes of this CMR, we assume that the geology of the 8801 property has remained generally consistent with the geology encountered during pre-development investigations.

Based on pre-development investigations, fill material underlies the ground surface and is up to 10 feet thick in some locations. Fill material includes gravelly structural fill beneath former buildings and paved areas, poorly graded sand to silty sand fill deposits, and gravelly backfill materials in historical excavations. Fill material at the 8801 property is underlain by a layer of fine-grained material, including silt, sandy silt, and silty sand that extends to a depth of 5 to 15 feet bgs. A poorly graded sand layer, which typically contains less than 10% silt, is generally present beneath the fine-grained layer beginning at 10 to 15 feet bgs, although at some locations it is present immediately beneath the pavement surface or the fill material. A layer of fine-grained materials, consisting mainly of silt and silty sand, is typically present beneath the poorly graded, sandy layer at depths of approximately 30 to 50 feet bgs. This fine-grained silty material acts as a confining layer to groundwater flow on the western portion of the 8801 property (Amec Earth & Environmental, 2011). The lower, fine-grained layer is typically underlain by poorly graded sand to the maximum depth explored at the 8801 property (60 feet bgs).

After the injections were completed on the 8801 property in August 2021, fill material was imported during redevelopment work to elevate the footprint of the future warehouse building. The finished grade of the warehouse building footprint was designed to be approximately 4 feet above the former elevation of the 8801 property.

1.4 Hydrogeology

Results of groundwater monitoring at the 8801 property indicate that the shallow aquifer is typically 8 to 10 feet bgs. Due to the higher ground surface on the Boeing property, the shallow aquifer beneath the Boeing property is typically 12 to 16 feet bgs. The hydraulic gradient in the shallow aquifer is generally toward the west. Groundwater velocity is estimated to be 40 feet per year.

Evaluation of the tidal influence on monitoring wells on the 8801 property indicate that the maximum tidal fluctuation along the western boundary of the 8801 property ranges from -3.03 feet relative to MSL to +1.85 feet MSL in the southern portion of the 8801 property, where riprap demarcates the 8801 property boundary. Farther north, where the sheet piling bulkhead demarcates the 8801 property boundary, the maximum tidal fluctuation ranges between -1.80 feet MSL and +1.32 feet MSL.

1.5 Regulatory Framework

The 8801 site consists of both an upland portion (the 8801 property) and the adjoining sediments in the LDW that are part of a Superfund site designated by the U.S. Environmental Protection Agency (EPA). The 8801 site is subject to two separate Agreed Orders (AOs) with Ecology: AO No. 6069, which applies to the 8801 property, and AO No. 3599, which applies to the sediments. Under a Memorandum of Understanding (MOU), Ecology is working with EPA to identify and remove sources of ongoing contamination to the LDW.

This CMR is one of multiple documents that fulfills the CMR requirements discussed in Task 4 of Exhibit C to Agreed Order No. 6069. Separate CMRs will be submitted for other remedial actions at the 8801 property as they are completed. Remedial actions required pursuant to AO No. 6069 and their status are shown in Exhibit 1-1.

Exhibit 1-1: Status of Interim Remedial Actions

Interim Remedial Action	Status of Implementation
Removal of PCB-containing caulk in pavement expansion joints	Completed in January 2022. Completion of this action will be reported with the Hotspot Excavation CMR as approved by Ecology.
Excavation of hotspots, placement of clay/asphalt/concrete covers, and implementation of institutional controls	The hotspots identified in the Engineering Design Report (Shannon & Wilson, 2021d and 2021g) were excavated and the work was completed in September 2022. CenterPoint found additional hotspots during redevelopment activities that will be excavated. The hotspot excavation activities completed by PACCAR and CenterPoint will be reported in a single CMR. Ecology has authorized the CMR to be submitted by April 30, 2023 due to the ongoing redevelopment activities (Thomas, 2022). Installation of the building foundation and clay/asphalt/concrete covers over the 8801 property and implementation of the institutional controls are anticipated to be completed in late 2023.
Injection of remediation compounds to promote enhanced reductive dechlorination of VOCs across the HVOC groundwater plume and TPH-G in the Northwest Area	Completed as detailed in this CMR.
Expansion of the AS/SVE system	The expansion was started in September 2021 and is being conducted concurrent with redevelopment of the 8801 property. It is anticipated that the expansion will be completed in early 2023. Once the expansion is completed and electricity is available (electricity was disconnected during the property redevelopment), the AS/SVE system will be reactivated. We anticipate that the system will be reactivated in late 2023.
Installation of a sub-slab depressurization system and implementation of institutional controls to restrict extraction of groundwater and protect indoor air from vapor	Installation of the sub-slab depressurization system is occurring as the warehouse building is being constructed and is anticipated to be completed during late 2023.
Groundwater Performance Monitoring	Monitoring wells throughout the 8801 property, except some near the western property boundary, were decommissioned during spring 2021 in preparation for redevelopment. Performance monitoring wells on the 8801 property will be installed following construction of the landscaped shoreline berm and paving of the 8801 property by CenterPoint. We anticipate that performance groundwater sampling could begin in mid-2023.

AS/SVE = air sparging/soil vapor extraction; PCB = polychlorinated biphenyls; TPH-G = total petroleum hydrocarbons as gasoline-range organics

Because the 8801 property is adjacent to the LDW, the remedial actions detailed in this CMR are designed to be protective of the sediments and surface water of the LDW, to achieve the source sufficiency requirements in the MOU, and meet Model Toxics Control Act (MTCA) requirements. This CMR was prepared in accordance with MTCA and Ecology's Cleanup Regulation (Washington Administrative Code [WAC] Chapter 173-340) (Ecology, 2013).

2 BACKGROUND

This section summarizes the COCs targeted by the groundwater treatment injections and the remedial actions completed and proposed to address the COCs.

2.1 Halogenated Volatile Organic Compound Plume

A groundwater plume with concentrations of HVOCs extends from the northwestern boundary of the 8801 property, downgradient (south and west), to the western boundary of the 8801 property (Figure 2). A portion of the HVOC plume extends under the adjoining Boeing property to the north. The primary COCs identified in the HVOC plume are TCE and VC. As discussed in the Final Feasibility Study (FS) (Shannon & Wilson, 2020a), the HVOCs are naturally degrading at the 8801 property. VC is present due to degradation of TCE.

The HVOC plume is intercepted by the existing air sparging/soil vapor extraction (AS/SVE) system at about 130 to 200 feet from the western boundary of the 8801 property. The AS/SVE system is designed to be a polishing step to further remove HVOCs from the groundwater prior to groundwater reaching the western boundary of the 8801 property. The AS system injects pressurized air below the ground surface into the saturated zone, causing contaminants to volatilize and promote in situ aerobic degradation. Vapors are extracted from the subsurface via negative pressure created by the SVE system.

A pilot injection study was conducted on the 8801 property during July 2019 (Shannon & Wilson, 2020d and 2021b). The pilot injection study was undertaken to acquire data for the implementation of the full-scale groundwater treatment injections. The pilot injection study consisted of injection of remediation compounds at 44 locations within the HVOC plume. Groundwater collected 2 months and 18 months after the pilot injection indicated that reductive dechlorination was improved above baseline conditions with concentrations of HVOCs reduced.

After 18 months, the dechlorination rate appeared to have slowed potentially due to the decrease in pH that may have suppressed microbial activity. Therefore, a buffering compound (calcium carbonate) was selected for addition to the remediation compounds during the full-scale injection.

In addition to the groundwater treatment injections discussed in this CMR, other remedial actions designed to reduce concentrations in the HVOC groundwater plume have been selected and are in various stages of completion but are not discussed in this CMR. These remedial actions include:

- A hotspot excavation at Area 1 to remove the TCE-impacted soil above the site-specific RLs was completed in fall 2021 and will be reported in a separate CMR.
- Expansion of the AS/SVE system to enhance removal of HVOCs from groundwater. The expansion is being conducted concurrent with redevelopment of the 8801 property. It is anticipated that the expansion will be completed in early 2023. The expansion will be reported in a separate CMR.
- Construction of a sub-slab depressurization system under a portion of the new warehouse building to limit the potential for migration of HVOCs from groundwater to indoor air. Installation of the sub-slab depressurization system is occurring as the warehouse building is being constructed and is anticipated to be completed during late 2023. Completion of the sub-slab depressurization system will be reported in a separate CMR.

2.2 Northwest Area

The Northwest Area of the 8801 property is shown in Figure 3. The Northwest Area consists of approximately 13,000 square feet with several former and existing structures and underground utilities. A sheet pile wall separates this portion of the 8801 property from the LDW. The hydraulic gradient in the shallow aquifer is generally toward the west but may have a northerly and southerly component closer to the sheet pile wall.

The majority of the Northwest Area is within the HVOC plume. In addition to VC associated with the HVOC plume, gasoline-range hydrocarbons have been detected in saturated soil and groundwater in the Northwest Area.

In addition to the groundwater treatment injections discussed in this CMR, a hotspot excavation at Area 8 to remove gasoline-impacted soil above the site-specific CULs was completed in October 2021 and will be reported in a separate CMR.

3 PLANNING AND SELECTION OF REMEDIAL ACTIONS

This section provides an overview of the process used to select the groundwater treatment injections as a component of the remedy for the 8801 property. Further details are provided in the reports referenced below.

In 2020, the Final FS for the 8801 property was approved by Ecology. Analytical data from previous investigations at the 8801 property was screened against Ecology's LDW-specific preliminary CULs to establish COCs and areas of concern. The COCs and areas of concern were used as the basis for the remedial alternative analysis and selection presented in the Final FS.

In 2020, the Final Interim Action Work Plan (IAWP) for the 8801 property was approved by Ecology. The Final IAWP was based on the findings from the Final FS and detailed the cleanup standards, remedial action alternatives, rationale for the selected remedial actions, and the compliance monitoring requirements. The report was called an "Interim" Action Work Plan because it addressed only the upland portion of the 8801 site (i.e., the 8801 property), not the sediment portion of the 8801 site.

In 2020, an Addendum to the Final FS and IAWP (Addendum) (Shannon & Wilson, 2020c) was approved by Ecology. The Final IAWP and the Addendum together constitute the IAWP for the 8801 property. The remedial actions described in the IAWP constitute the final cleanup action for the 8801 property.

In 2021, several engineering design reports describing the selected remedial actions for the 8801 property were approved by Ecology. The Groundwater Injections EDR details the engineering design for the remedial actions discussed in this CMR. Requirements for the protection monitoring, performance monitoring, and confirmation monitoring to be conducted during the remedial actions, including those applicable to the groundwater treatment injections, are described in the Ecology-approved Compliance Monitoring Plan (Shannon & Wilson, 2021a).

4 CLEANUP STANDARDS

Cleanup standards consist of site-specific concentrations of hazardous substances and points of compliance where the concentrations must be attained. A discussion about the development of cleanup standards for the 8801 property is provided in the IAWP (Shannon & Wilson, 2020b and 2020c).

The cleanup standards selected in the IAWP for the HVOC plume consist of RLs and CULs for tetrachloroethene (PCE), TCE, and VC, which are the primary COCs for the HVOC plume. The RLs apply to groundwater in the interior portion of the 8801 property. The CULs apply to groundwater along the western boundary of the 8801 property, which represent the condition of groundwater as it enters the LDW. The RLs differ between the eastern and western portions of the HVOC plume because the concentration of the COCs in the plume decline naturally as they migrate across the 8801 property in a westward direction. The addition of bacteria and food via injections accelerate the decline. Based on the modeling, the RLs to be achieved in different parts of the groundwater plume vary; more stringent RLs are required to be achieved to the west/downgradient, whereas less stringent RLs are required to be achieved to the east/upgradient. This is because in the east

there is greater distance to travel before reaching the LDW and more time for concentrations to decline. The RLs and CULs for the HVOC plume are shown in Exhibit 4-1.

Exhibit 4-1: Remediation Levels and Cleanup Levels for Groundwater

Type	Remediation Level	Remediation Level	Cleanup Level
Location	Plume at MW-14A/G0	Plume East of Existing AS/SVE	At Compliance Wells Along West Property Boundary
Analyte	µg/L	µg/L	µg/L
PCE	-	-	2.9
TCE	5	1	0.7
VC	1	0.5	0.18

µg/L = micrograms per liter; PCE = tetrachloroethene

The cleanup standards selected in the IAWP for the Northwest Area consist of CULs for HVOCs (shown in Exhibit 4-1) and a CUL for gasoline-range hydrocarbons. The addition of bacteria and food via injections will enlarge the microbial community which will co-metabolize any residual gasoline-range hydrocarbons in groundwater.

5 GROUNDWATER TREATMENT INJECTIONS

The objective of the groundwater treatment injections is to reduce concentrations of COCs in groundwater in the HVOC plume to RLs and reduce concentrations of COCs in groundwater in the northwest treatment area to CULs. Once these remedial actions are completed, it is anticipated that natural degradation will continue, and concentrations will be less than the applicable CULs.

The groundwater treatment program includes the following components:

- Injection of a carbon source, dechlorinating microbes, buffer compound, and anaerobic water in the main portion of the HVOC plume and eastern portion of the Northwest Area. Injections were completed in August 2021 on the 8801 property and December 2022 on the Boeing property. Compliance monitoring included monitoring injection equipment parameters.
- Collection and analysis of groundwater samples after the injection events to evaluate the efficacy of the injections. Groundwater monitoring was suspended in spring 2021 because the monitoring wells were decommissioned due to the redevelopment activities per the approved Compliance Monitoring Plan (Shannon & Wilson, 2021a). It is anticipated that new monitoring wells will be installed during summer 2023, after which groundwater monitoring will resume.

The groundwater treatment injections promote enhanced biological degradation of COCs in groundwater. Bacteria consume the carbon source and co-metabolize (dechlorinate) the HVOCs. The buffer compound and anerobic water improve subsurface conditions for bacteria growth. At the Northwest Area, the injected carbon source promotes growth of the microbial community and will migrate with groundwater to the west where access is limited due to infrastructure and where higher concentrations of gasoline-range hydrocarbons have been encountered. The microbial community will co-metabolize any residual gasoline-range hydrocarbons in groundwater.

Now that the injections have been completed, it is anticipated that natural degradation of the COCs will continue, that the AS/SVE system will assist in reducing the concentrations, and that concentrations will be less than applicable CULs at the downgradient conditional points of compliance along the western boundary of the 8801 property.

6 IMPLEMENTATION

This section provides a summary of methods and observations during the groundwater treatment injections completed during August 2021 on the 8801 property and during December 2022 on the Boeing property.

6.1 Preparation

Pre-injection preparation activities included preparation of a Health and Safety Plan (HASP), location of underground utilities, decommissioning of groundwater monitoring wells, temporary plugging of stormwater pipes, and registration with the Ecology team responsible for underground injection control.

6.1.1 Health and Safety Plan

A HASP was prepared to address health and safety considerations for the proposed remedial activities and meet requirements in federal (29 Code of Federal Regulations 1910.120 and 1926) and state (WAC 296) regulations. The HASP was submitted and accepted by Ecology as an appendix in the Compliance Monitoring Plan (Shannon & Wilson, 2021a). The remediation contractor (Cascade Environmental) prepared a supplemental HASP that discussed health and safety considerations that were specific to its means and methods.

During fieldwork, planned field activities and relevant health and safety topics were discussed during daily tailgate meetings. Health and safety topics included, but were not limited to, action levels and proper use of personal protective equipment, working near

heavy equipment, handling contaminated material, decontamination procedures, spill response, and fall protection.

No significant adverse health and safety events occurred during fieldwork.

6.1.2 Location of Underground Utilities

Shannon & Wilson notified the Washington Underground Utilities Location Center (1-800-424-5555) at least 48 hours before the start of subsurface work at the 8801 property. Additionally, Shannon & Wilson contracted a private utility locator (APS Locates) to identify potential utilities in the proposed injection locations using conductible methods and ground-penetrating radar. Several injection locations were shifted up to 10 feet due to potential conflicts with subsurface utilities.

6.1.3 Well Decommissioning

Groundwater monitoring wells on the 8801 property were decommissioned prior to the injection events in preparation for redevelopment of the 8801 property. The decommissioning activities were discussed in the approved Compliance Monitoring Plan (Shannon & Wilson, 2021a). The wells were decommissioned by filling the well casings with bentonite chips or concrete grout from total depth to 2 feet depth and then concrete grout to the surface. Decommissioning logs will be provided in a separate CMR.

6.1.4 Stormwater Pipe Plugging

Stormwater pipes located near the injection area were temporarily plugged with inflatable packers to prevent remediation compounds that may seep into stormwater pipes from being transported downstream. Packers were placed at the outlet pipe of storm drain manholes SDMH-B and SDMH-C on the 8801 property and storm drain manholes 1.20M and 1.18M on the Boeing property. The locations of stormwater packers are shown in Figures 4 and 5. The manholes were visually monitored during injection activities for signs of buildup of remediation compound behind the packer and leakage around the packer.

6.1.5 Underground Injection Registration

Ecology requires any material that is injected into the subsurface be registered with Ecology's Water Quality Program as an injection control registration. All injection locations must be registered, and approval must be received prior to beginning injections. Injections may only occur in the specified locations, timeframe, and for the material specified. The injection locations on the 8801 property were registered with Ecology as Underground Injection Site 34448.

6.2 Injection Locations

The initial design as stated in the Groundwater Injections EDR (Shannon & Wilson, 2021c) was to inject at 147 locations on the 8801 property and 16 locations on the Boeing property. The injection locations were spaced approximately 30 feet apart with an estimated radius of influence of 20 feet laterally and 30 feet downgradient. The locations of several injection points were shifted due to conflicts with utilities, underground structures, or due to encountering refusal during drilling.

Remediation compounds were injected at 194 locations on the 8801 property during August 2021 and 13 locations on the Boeing property during December 2022. The number of locations varied from the initial design for reasons discussed below:

- Field measurements of the spacing of injection locations allowed for tighter spacing (more injection locations) than previously estimated in the Groundwater Injections EDR.
- The initial design had injection locations offset from monitoring well locations to limit the potential for daylighting of remediation compound. Because the monitoring wells were decommissioned prior to the injection events, approximately 14 injection points were added at locations adjacent to the decommissioned wells.
- During the injection event on the 8801 property in August 2021, an access agreement had not been finalized with the owner of the Boeing property to perform injections. An agreement was later reached; however, due to the limited shelf-life of the remediation compounds, the remediation compounds that were allocated for the Boeing property were injected at 16 new locations on the 8801 property. The modification to the injection program was agreed by the Ecology project manager (Strong, 2021b). Injection locations 179 through 194 were located up to 90 feet east (upgradient) of the initially targeted injection area with the goal of the compounds migrating with groundwater to beneficially promote biodegradation of HVOCs in the plume.
- Injections did not occur at locations 201, 202, and 203 on the Boeing property due to encountering refusal at 5 to 8 feet bgs and the proximity of utilities that prevented drilling. Injection locations 200, 204, and 205 on the Boeing property received a double volume of remediation compound that was originally meant for locations 201, 202, and 203. This action was undertaken since injection locations 200, 204, and 205 were upgradient of the points where injection did not occur. The compounds would then migrate to those downgradient areas.

The approximate injection locations are shown in Figures 2 and 3.

6.3 Injection Equipment

The remediation compounds were mixed in a large tank and then pumped to the injection points. At each injection point, a direct-push rig was used to insert a metal tube with a

5-foot section that had drilled holes (referred to as the injection tool). The remediation compounds were dispersed into the subsurface through the 5-foot injection tool. Injections were performed on the 8801 property at the following three depth intervals in each injection location: 20 to 15 feet bgs, 15 to 10 feet bgs, and 10 to 5 feet bgs. Injections on the Boeing property were performed at deeper depths than the 8801 property because the ground surface at the Boeing property is approximately 6 feet higher elevation. The three depth intervals at Boeing property were: 26 to 21 feet bgs, 21 to 16 feet bgs, and 16 to 11 feet bgs. The injections started at the deepest depth interval and proceeded to the shallower.

Remediation compound from the mixing tank was pumped to a header (a short length of pipe with multiple outlets). Up to ten rubber hoses were connected to the header with each hose connecting to a different injection location (up to 10 injection locations at a time). Each injection location was monitored for pressure and flow rate. A profile view of a typical injection location is provided as Figure 6. The cavity created by the injection tool was immediately backfilled following completion of the injection event.

Photos of the mixing tank, pumping assembly, 5-foot injection tool, and an injection point are provided below.

Exhibit 6-1: Photo of Pumping Assembly with Mixing Tank Used for Mixing of Remediation Compounds

Exhibit 6-2: Photo of the Direct-Push Drill Rig on the 8801 Property

Exhibit 6-3: Photo of Several 5-Foot Injection Tools

Exhibit 6-4: Photo of an Injection Point with 5-Foot Injection Tool Inserted (Watermarks are From Concrete Cutting)

6.4 Remediation Compounds

The remediation compounds were mixed in a large tank immediately prior to injection. The volumes of each compound are listed below on a "per injection location" basis and were split evenly between three depth intervals at each location; however, the compounds were mixed in the large tanks at volumes that allowed for injection at several locations simultaneously.

- 93.9 gallons of Regenesis' 3DME® solution. 3DME® was the carbon source and consists of a patented molecular structure consisting of oleic acids and lactates/polylactates. The product spec sheet is provided as Appendix A.
- 24 gallons of Microna™ Aquacal 70. The product is a 70% (by weight) calcium carbonate slurry and was used to slightly raise the pH of the groundwater towards optimal levels for microbial growth. The product spec sheet is provided as Appendix B.
- RNAS Newman Zone OS® was used as an oxygen scavenger to lower the dissolved oxygen of the injection solution to 0.2 milligram per liter or less. The active ingredients are proprietary; however, the manufacturer stated that the product uses vitamin C/ascorbate chemistry, and the product contains sodium bicarbonate for buffering and chelated ferrous iron as a catalyst. The product spec sheet is provided as Appendix C. The dissolved oxygen concentration of the injection solution was monitored using a hand-held water quality meter (calibrated daily).
- 1,790 gallons of water obtained from a fire hydrant.

- 0.8 liter of BDI PLUS® was added directly to the injection line for each location. The volume was split evenly between depth intervals. BDI PLUS® is an enriched, natural microbial consortium containing species of *Dehalococcoides sp.*, which are capable of completely dechlorinating contaminants during in situ anaerobic bioremediation processes. The product spec sheet is provided as Appendix D.

The remediation contractor's (Cascade Environmental) field logs, including injection volumes, pressures, and locations, are provided as Appendices E and F for the two injection events (August 2021 for the 8801 property and December 2022 for the Boeing property).

6.5 Construction Procedures and Controls

This section describes the construction procedures and controls that were implemented, as necessary, in conjunction with the remedial actions described in previous sections.

6.5.1 Site Control

A perimeter fence with locked gate was in place around the 8801 property and Boeing property to restrict public access during the injection events. The injection area was cordoned off with cones and tape.

6.5.2 Pavement Coring

Pavement at injection locations was cored in preparation for injection activities. The coring wash water was vacuumed, drummed, and disposed of off the 8801 property.

6.5.3 Spill Control

The remediation contractor implemented Best Management Practices to prevent spills of oil, fuel, remediation compound, and other products containing hazardous substances. An absorbent berm was placed around the storage area for plastic totes of 3DME and calcium carbonate. Secondary containments were placed under generators, pumps, and mixing tanks. Spill kits were available to respond to minor spills.

Surfacing of remediation compounds was observed at several locations where the injection probe was inserted and the compounds were actively being injected. The surfacing of remediation compounds was stopped by reestablishing a bentonite seal around the metal probe, except as described below. Surfaced remediation compounds were vacuumed, placed into 55-gallon drums, and disposed of off the 8801 property.

- Surfacing of remediation compounds at location 59 was observed during injection at the top (final) interval (10 to 5 feet bgs) and was not reduced by reestablishing a bentonite seal. Injection at location 59 was terminated and the remaining volume of the

remediation compounds was injected in the top interval (10 to 5 feet bgs) of adjacent location 60.

- Remediation compounds was observed to be surfacing through cracks in the asphalt pavement at location 186 during the bottom (first) injection interval (20 to 15 feet bgs). The injection was terminated after completing the 20- to 15-foot interval. The remaining volume of remediation compounds was injected in the 15- to 10-foot and 10- to 5-foot depth intervals at adjacent location 187.

6.5.4 Leakage to Stormwater Pipes

Leakage of remediation compounds into stormwater pipes was observed during injection events at three locations. During all cases, the remediation compounds were contained in the stormwater system, removed via pumping, the stormwater pipe was rinsed and pumped again, and the remediation compounds were not observed to have migrated downstream to the stormwater treatment systems. The pumped fluid and rinse water were disposed of off the 8801 property. Details about the three events are provided below.

6.5.4.1 Leakage at Catch Basin CB-74

White discolored water was observed in stormwater catch basin CB-74 on the 8801 property during injection at point 4, which was located approximately 7 feet to the northwest of the catch basin. The location of CB-74 is shown in Figure 4. The white discolored water was assumed to be leakage of remediation compounds from point 4. White discolored water was not observed downstream from CB-74 at the stormwater lift station or storm filter vault.

When the leakage was observed, injection at location 4 was immediately and permanently terminated. A wastewater disposal company used a vacuum truck to remove approximately 850 gallons of white discolored water and rinse water from CB-74 within two hours of the start of injections at location 4. The water was disposed of off the 8801 property at a permitted facility. Leakage of remediation compounds into CB-74 was not observed during the remainder of injection activities.

Since injections at point 4 were permanently terminated, location 4 received a partial volume of remediation compounds, totaling approximately 118 gallons at 20- to 15-foot depth, and no remediation compounds at the shallower two depth intervals. The remaining remediation compounds that were allocated for location 4 were injected into an adjacent location (location 1) at the shallower two depth intervals. The positions of locations 1 and 4 are shown in Figure 3.

6.5.4.2 Leakage at Unnamed Stormwater Manhole

White discolored water was observed in an unnamed stormwater manhole on the 8801 property and two downstream manholes in the northeast portion of the injection area (Figure 4). The white discolored water was assumed to be leakage of remediation compounds from nearby injection points. The injection program at nearby injection points was allowed to continue to completion because two stormwater packers were installed downstream from the white discolored water, and no leakage was observed past the packers.

After the injections were completed, the white discolored water was pumped out, and the stormwater lines were rinsed and pumped again using a vacuum truck. Approximately 2,800 gallons of water were pumped into several 260-gallon plastic totes and disposed of off the 8801 property.

6.5.4.3 Leakage at Stormwater Manhole 1.20M

White discolored water was observed to have accumulated behind the packer at stormwater manhole 1.20M on the Boeing property (Figure 5). The white discolored water was assumed to be leakage of remediation compounds from nearby injection points adjacent to the north branch of the stormwater pipe from that manhole. The injection program was allowed to continue to completion because the stormwater packer was observed to be retaining the remediation compounds and no leakage was observed past the packer.

After the injections were completed, the white discolored water was pumped out, and the stormwater lines were jetted and pumped again using a vacuum truck. Approximately 300 gallons of water were pumped into 260-gallon plastic totes and left on the 8801 property. The totes were disposed of off the 8801 property after analytical results were available.

6.5.5 Waste Disposal

Waste fluids included concrete coring slurry, remediation compounds that had surfaced, decontamination water, and water from the pump out of the stormwater manholes (required to install and remove packers). Waste fluids were collected in Washington State Department of Transportation 55-gallon drums and 260-gallon plastic totes, characterized, and transferred to a qualified treatment or disposal facility off the 8801 property.

7 DEVIATIONS FROM REMEDIAL DESIGN

Deviations from the remedial design, as detailed in the Groundwater Injections EDR (Shannon & Wilson, 2021c), were implemented during the injection events due to field conditions, availability of materials, and best practices. In our opinion, the deviations are unlikely to affect the efficacy of the remedial action. The deviations are listed in the following Exhibit 7-1.

Exhibit 7-1: Deviations from Remedial Design

Remedial Design Component	Deviation
The locations of inflatable plugs (packers) for stormwater lines were identified in Figure 4 of the Groundwater Injections EDR.	A packer was installed in manhole SDMH-C in place of manhole SDMH-E due to worker safety considerations. SSMH-E was located inside of a building that was being demolished during the injection event as part of redevelopment activities. SSMH-C was located downstream from SSMH-E and provided similar protection to prevent inadvertent migration of remediation compounds.
An inflatable plug (packer) was to be installed at monitoring well IT-MW-6 on the Boeing property to limit the potential for daylighting of remediation compounds through the well.	A packer was not installed at IT-MW-6. Instead, the well casing plug was tightened to limit the potential for daylighting of remediation compounds. Daylighting of remediation compounds at IT-MW-6 was not observed during or after the injection event.
Groundwater levels at monitoring wells near the injection area were designated to be monitored during the injection event to evaluate for effects.	Monitoring of groundwater levels in the injection area was not possible because the groundwater monitoring wells were decommissioned in preparation for redevelopment of the 8801 property with the advance approval of Ecology. Findings from the pilot injection suggested a low potential for influence of groundwater levels at 150 to 200 feet from the injection locations. During the pilot injection, groundwater levels at wells located 150 to 200 feet downgradient from the injection area were observed to temporarily increase by about 0.1 foot during some injection periods, although tides were observed to influence the groundwater level by about 1 to 4 feet (Shannon & Wilson, 2020d).
VitaCal® precipitated calcium carbonate was identified in the remedial design as the compound used for buffering the pH of the groundwater.	AquaCal 70 is a calcium carbonate slurry and was used in place of VitaCal® due to limited availability. The mass of calcium carbonate injected at each location was equal to the remedial design and therefore the buffering capability is equivalent. The material substitution was accepted by Ecology (Strong, 2021a).
A volume of 0.8 liter of BDI PLUS® was identified in the remedial design for injection at each location.	A double dose of BDI PLUS® was accidentally applied to 22 injection locations. The canisters of BDI PLUS® were provided at double concentration and was initially injected in a volume as if it was standard concentration. The double dosage of BDI PLUS® should not adversely affect the remedial action and may provide a slight benefit due to increases size of the microbial community. The double dose of BDI PLUS® was injected at locations 9, 10, 11, 26, 28, 76, 77, 91, 92, 105, 106, 118 through 123, and 130 through 134.
Sodium bisulfate was identified as the oxygen scavenger to reduce dissolved oxygen in the injection water.	RNAS Newman Zone OS® was used as an oxygen scavenger. The active ingredients are proprietary; however, the manufacturer stated that the product uses vitamin C/ascorbate chemistry, and the product contains

Remedial Design Component	Deviation
	sodium bicarbonate for buffering and chelated ferrous iron as a catalyst. RNAS Newman Zone OS was used as the oxygen scavenger because it has been laboratory tested and found to not have a detrimental effect on the bacteria that were being co-injected with it. We were unable to obtain similar information for the sodium bisulfate and consequently selected the RNAS Newman Zone OS product during the injection implementation.
The remediation compounds were to be injected in sequential phases at each location.	The remediation compounds were mixed into large tanks immediately prior to injection. Injection was undertaken at six to ten points simultaneously. For this reason, the remediation compounds were premixed to homogenize the solution such that each location received the same mixture. The quantity of individual remediation compounds was consistent with the remedial design. The pre-mixing of remediation compounds should not adversely affect the remedial action.
Injection of the same volume of remediation compounds were to occur at each injection location.	Injections at points 4, 59, and 186 were prematurely terminated due to surfacing of remediation compounds or perceived leakage of remediation compounds to a nearby stormwater catch basin. The remainder of the remediation compounds allocated for the terminated points was injected at adjacent points.
16 injection locations were planned for the Boeing property.	During the injection event on the 8801 property in August 2021, an access agreement had not been finalized with the owner of the Boeing property to perform injections. An agreement was later reached; however, due to the limited shelf-life of the remediation compounds, the remediation compounds that were allocated for the Boeing property were injected at 16 new locations on the 8801 property. The modification to the injection program was agreed by the Ecology project manager (Strong, 2021b). Injection locations 179 through 194 were located up to 90 feet east (upgradient) of the initially targeted injection area with the goal of the compounds migrating with groundwater to beneficially promote biodegradation of HVOCs in the plume. During the injection event on the Boeing property in December 2022, injections did not occur at three locations on the Boeing property (locations 201, 202, and 203) due to the drill rig encountering refusal at 5 to 8 feet bgs. Attempts were made to find alternative drilling points proximate to the three locations; however, due to numerous utilities in the area, no alternatives were available. Injection locations 200, 204, and 205 on the Boeing property (upgradient of locations 201, 202, and 203) received a double volume of remediation compound that was originally meant for locations 201, 202, and 203.
Two permanent injection wells were proposed to be installed in the northwest corner of the 8801 property.	Redevelopment activities including excavation in the northwest corner of the 8801 property have prevented the installation of permanent injection wells. The absence of these permanent wells does not detrimentally impact the performance of the injection work as temporary injection points were used to deliver the compounds in that area.

Remedial Design Component	Deviation
	After redevelopment is complete, the installation of permanent injections points in the northwest corner of the 8801 property will be dependent on whether future injections are required. The groundwater data will be used in conjunction with discussions with Ecology to make that determination.

8 POST-INJECTION MONITORING

Post-injection performance monitoring and confirmational monitoring will include groundwater and air sampling to determine if groundwater and air RLs or CULs have been achieved, as appropriate based on the monitoring location. The locations of the sampling points, selected analyses, and schedule are provided in the Compliance Monitoring Plan (Shannon & Wilson, 2021a).

Monitoring wells will be installed or replaced as needed following completion of redevelopment activities on the 8801 property. It is anticipated that groundwater monitoring will resume in summer 2023, depending on completion of construction of the landscaped shoreline berm and completion of paving on the 8801 property at the locations where the new wells will be installed. The air samples will be collected on completion of the warehouse building construction.

Analytical data from the performance and confirmational groundwater sampling will be submitted to Ecology after each event. Periodic memos detailing proposed activities such as well sampling modifications based on the groundwater sampling results will be submitted to Ecology.

9 INSTITUTIONAL CONTROLS

Because COCs will remain on the 8801 property at concentrations greater than the CULs, institutional controls will be implemented using an environmental covenant developed in accordance with WAC 173-340-440 and Ecology's Toxics Cleanup Program Procedure 440A.

In general, the environmental covenant will restrict activities that could disturb or expose contaminated soil beneath the clay cap and asphalt/concrete pavement covers, require regular inspections of the clay cap and asphalt/concrete pavement covers, and restrict the use of groundwater on the property. The requirements for the environmental covenant are described in the EDRs (Shannon & Wilson, 2021d and 2021g).

The environmental covenant will be prepared and implemented after the remaining remedial actions at the 8801 property are completed, including installation of the sub-slab depressurization system (Shannon & Wilson, 2021e) and expansion of the AS/SVE system Shannon & Wilson, 2021f), and after the 8801 property is covered with the landscaped shoreline berm and paved.

10 SOURCE CONTROL SUFFICIENCY

Ecology signed an MOU with EPA to identify and control upland sources of contamination that could re-contaminate the LDW after remediation of the sediments (Ecology, 2016). The groundwater treatment injections, together with the excavation of TCE-impacted soil in Area 1 and total petroleum hydrocarbons as gasoline-range organics-impacted soil in Area 8 (reported in a separate CMR) contribute to satisfying the source control requirements because the RLs and CULs meet the MTCA requirements for protection of human health and the environment as discussed in the IAWP (Shannon & Wilson, 2020b).

The groundwater treatment injections will promote the degradation of COCs in groundwater and are expected to result in the RLs for the COCs being achieved at their respective points of compliance. Operation of the expanded AS/SVE system should further reduce the COC concentrations, and it is expected that the treatment injections in conjunction with operation of the AS/SVE system will result in CULs for the COCs being achieved at the conditional points of compliance along the western boundary of the 8801 property. The success of the treatment injections will be assessed through the analysis of groundwater samples collected from monitoring wells installed on the 8801 property after redevelopment activities are mostly complete in summer 2023.

11 LIMITATIONS

The findings and conclusions documented in this report have been prepared for specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in this area.

Site conditions, both surface and subsurface, may be affected because of natural processes or human influence. The conclusions presented are based on interpretation of information currently available to us and are made within the operational scope, budget, and schedule constraints of this project. No warranty, express or implied, is made.

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0 500 1,000

Approximate Scale in Feet

Compliance Monitoring Report
Groundwater Injections
8801 East Marginal Way S.
Tukwila, Washington

VICINITY MAP

March 2023 108056-001

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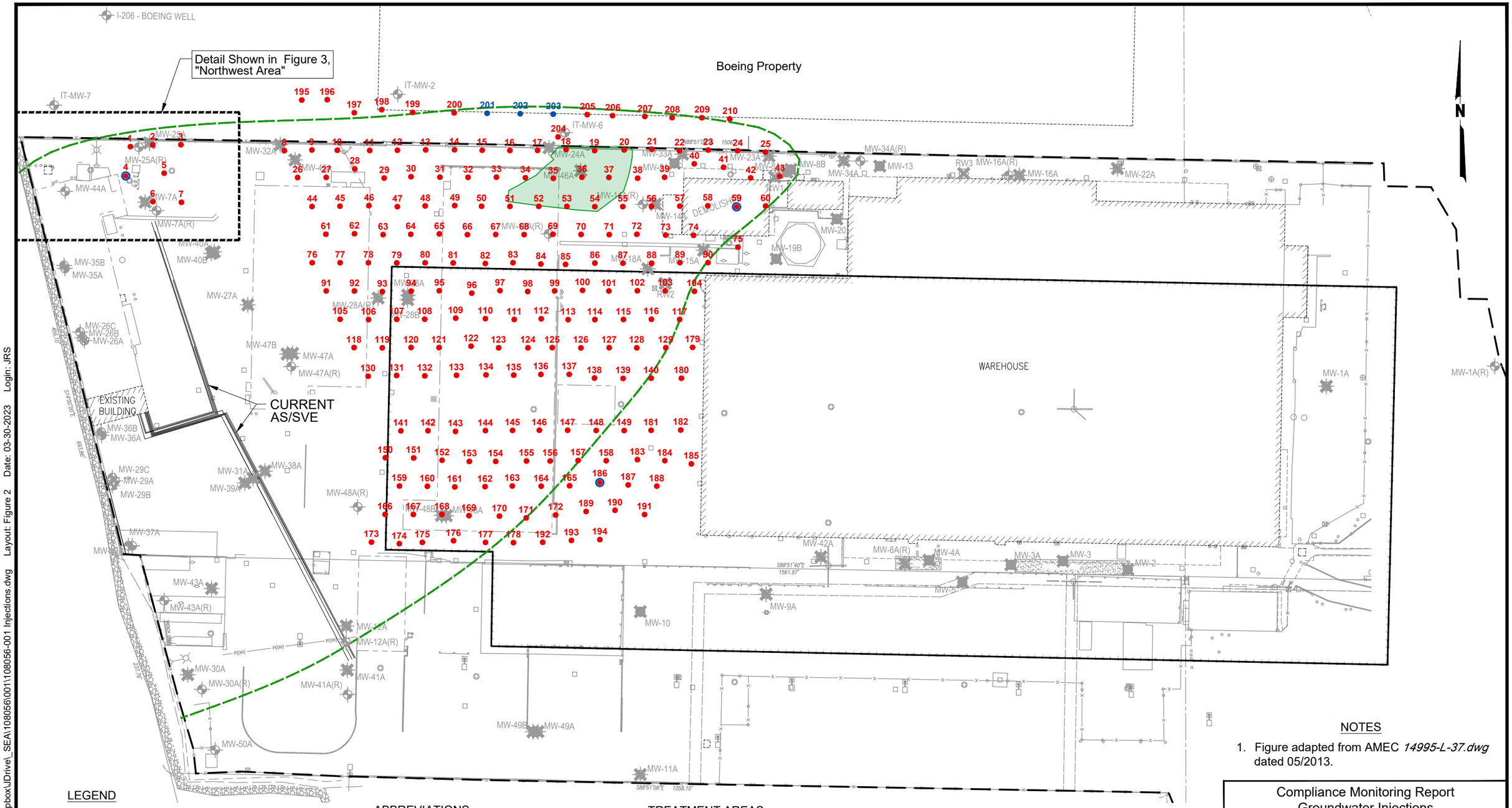
FIG. 1

Filename: C:\Users\jrs\CAD Group Dropbox\JDrive_SEA\108056\001\108056-001 Vicinity Map.dwg Date: 03-30-2023 Login: JRS



NOTES

1. Figure adapted from AMEC *14995-L-37.dwg* dated 05/2013.

LEGEND

- MW-35B — Groundwater Level Monitoring Well
- Monitoring Wells (Decommissioned)
- Conceptual Building Footprint
- 8801 Property Boundary
- Limit of VC/TCE Plume - Primarily VC
- Extents of Excavation at Area 1, Completed September 2021

ABBREVIATIONS

AS/SVE = Air Sparging/Soil Vapor Extraction
TCE = Trichloroethylene
VC = Vinyl Chloride

TREATMENT AREAS

- 6 — Injection Location
- 201 — Proposed Injection Point Injection Not Feasible
- 4 — Injection Point Terminated Before 100% Injected

NOTE

Injections did not occur at locations 201, 202, or 203 due to refusal at 5 to 8 feet depth.

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INJECTION LOCATIONS

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FIG. 2

Filename: C:\Users\jrs\CAD Group Dropbox\JDrivel_SEA\108056\001\108056-001 Injections.dwg Layout: Figure 2 Date: 03-30-2023 Login: JRS

Boeing Property

N

P(OH)

P(OH)

MW-25A(R)

MW-25A

1

2

3

4

5

MW-44B
(Abandoned)

A1

MW-44A

Warehouse (Demolished)

MW-7A

6

7

MW-7A(R)

DUWAMISH WATERWAY

0 16 32

Scale in Feet

NOTES

1. Figure adapted from AMEC *14995-L-37.dwg* dated 05/2013.

LEGEND

MW-35B — Groundwater Level Monitoring Well

Monitoring Wells (Decommissioned)

MW-48A(R) — Replacement Well Tentative Location

8801 Property Boundary

Limit of VC/TCE Plume - Primarily VC

TREATMENT AREAS

6 — Injection Location

4 — Injection Point Terminated Before 100% Injected

Northwest Area

ABBREVIATIONS

TCE = Trichloroethylene

VC = Vinyl Chloride

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NORTHWEST AREA

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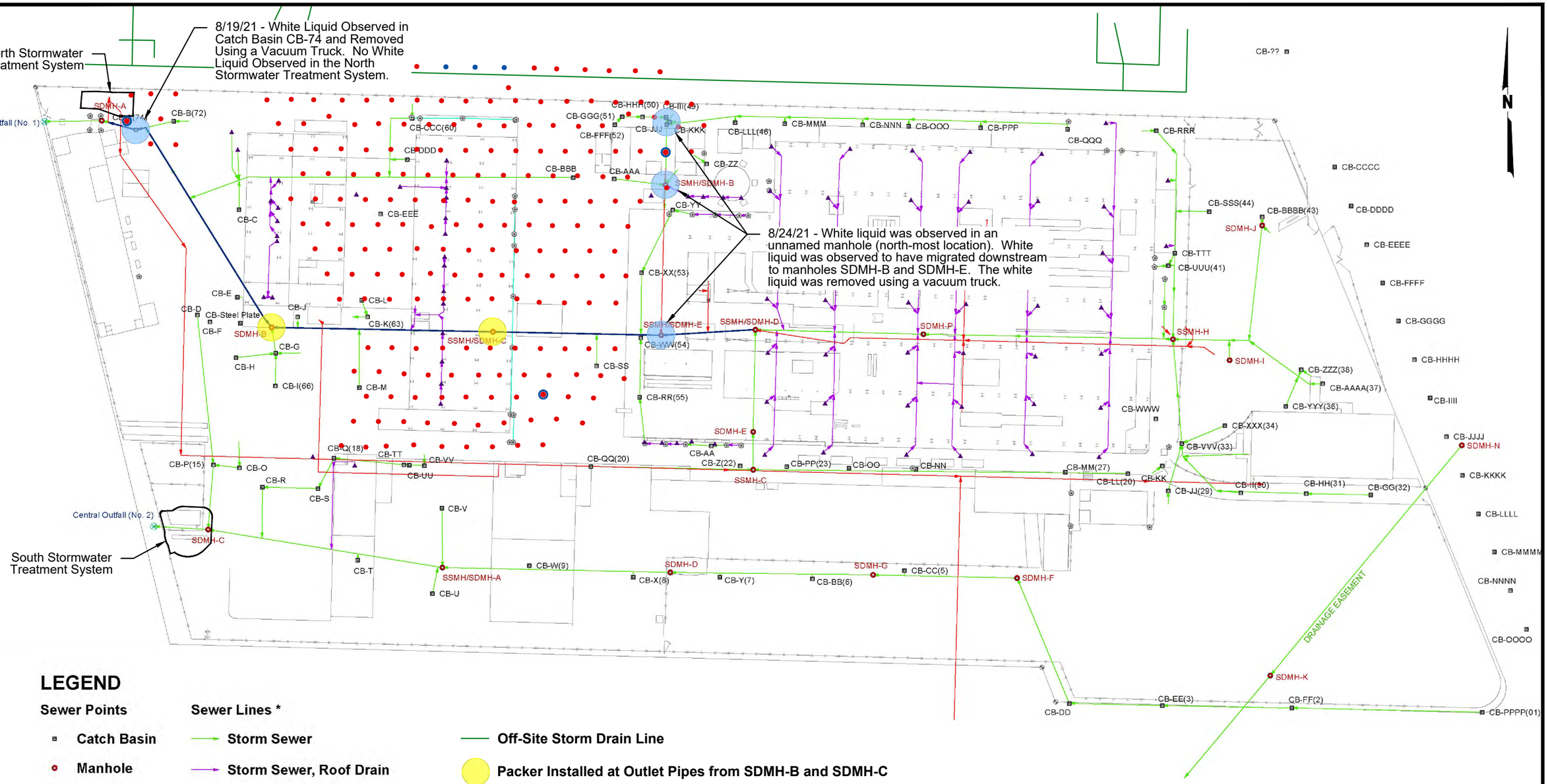
FIG. 3

Filename: C:\Users\jrs\CAD Group Dropbox\JDrive_SEA\108056\001\108056-001 NW Injections.dwg Layout: Figure 3 Date: 03-30-2023 Login: JRS



LEGEND

Sewer Points

- Catch Basin
- Manhole
- Outfall
- Roof Drain
- Storm Drain

Sewer Lines *

- Storm Sewer
- Storm Sewer, Roof Drain
- Sanitary Sewer
- Combined Storm-Sanitary Sewer
- Trench Drain

- Off-Site Storm Drain Line
- Packer Installed at Outlet Pipes from SDMH-B and SDMH-C
- White Liquid Observation Location
- Injection Location
- Proposed Injection Point Injection Not Feasible
- Injection Point Terminated Before 100% Injected

NOTES

1. Surveyed locations of catch basins, manholes, and storm drains from Barghausen Consulting Engineers, Inc figure dated 11/16/04 - "ALTA / ASCM LAND TITLE SURVEY"
2. Loation and connection of sewer lines from Kenworth Truck Company figure dated 01/31/99 - "Sewer and Drainage Map" and from some limited survey information.
3. All Locations are approximate.

0 120 240

Scale in Feet

Compliance Monitoring Report
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8801 PROPERTY STORMWATER AND SANITARY DRAINAGE MAP

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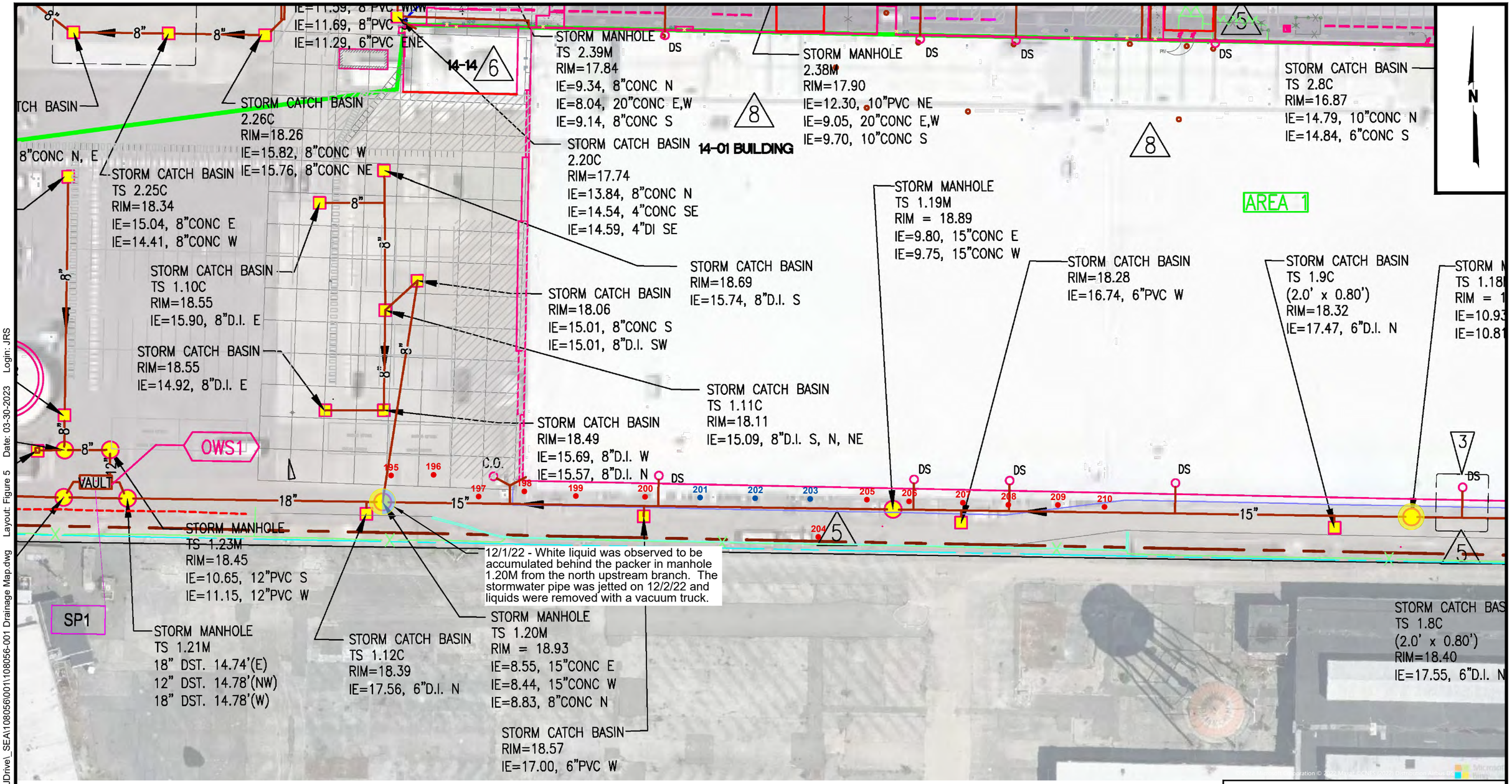
FIG. 4

Filename: C:\Users\jrs\CAD Group Dropbox\JDrive_SEA\108056\001\108056-001-D Drainage.dwg Layout: Figure 4 Date: 03-30-2023 Login: JRS



LEGEND

Packer Installed at Outlet Pipes from Manholes 1.20M and 1.18M

White Liquid Observation Location

195 **Injection Location**

201 **Proposed Injection Point**
Injection Not Feasible

NOTE

Figure adapted from *Thompson Site Stormwater Drainage*, "Building 14-YRD," Sheet C390, dated 09/10/2011.

0 60 120

Scale in Feet

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BOEING PROPERTY
STORMWATER DRAINAGE MAP

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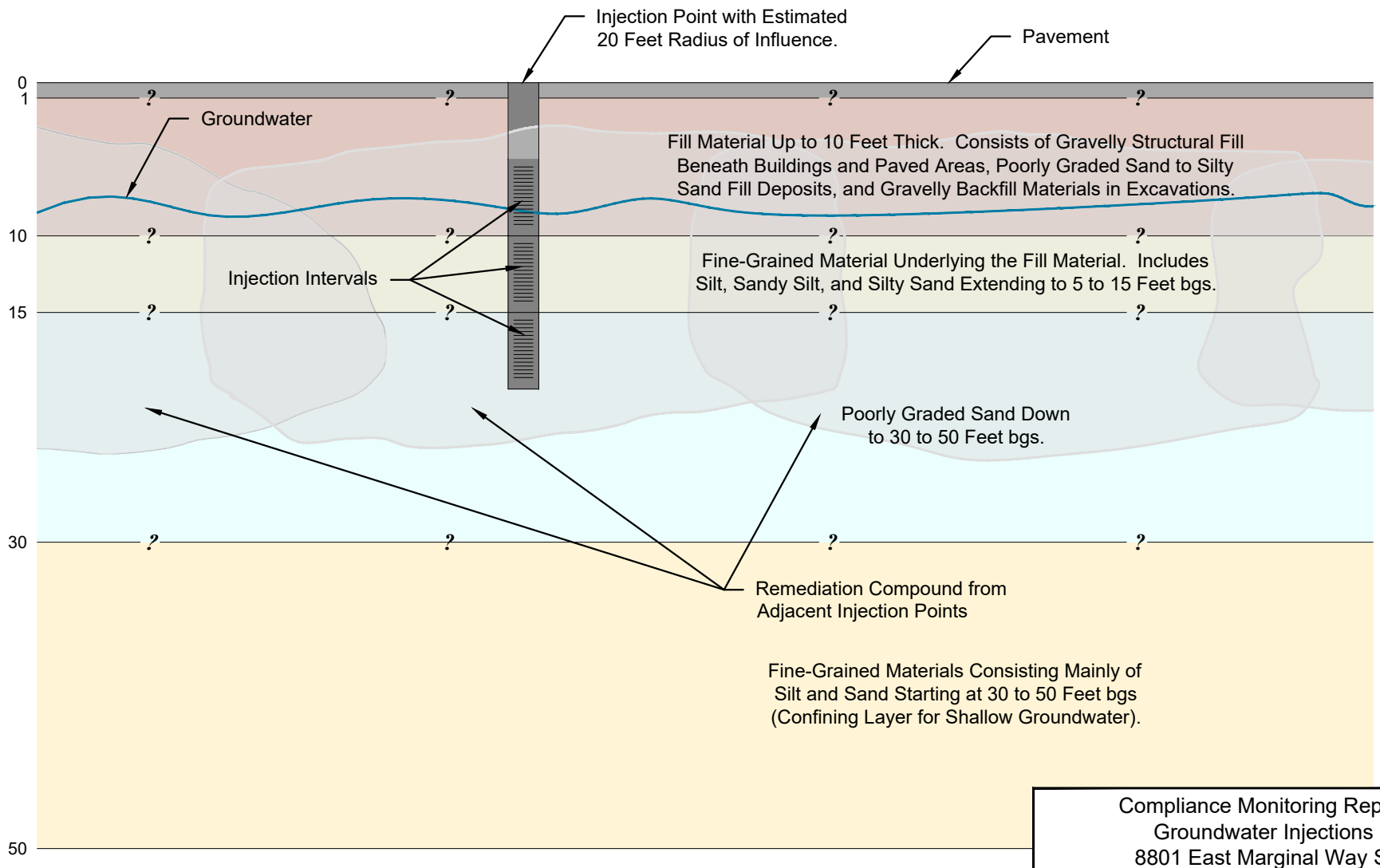
FIG. 5

Filename: C:\Users\jrs\CAD Group Dropbox\JDrivel_SEA\108056\001\108056-001 Drainage Map.dwg Layout: Figure 5 Date: 03-30-2023 Login: JRS

Filename: C:\Users\jrs\CAD Group Dropbox\JDrive_SEA\108056\001\108056-001 Injection Profile.dwg Layout: Figure 6 Date: 03-30-2023 Login: JRS



NOTE

Lithilogy is simplified and is shown for context. Actual conditions may vary.

Compliance Monitoring Report
Groundwater Injections
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Tukwila, Washington

SIMPLIFIED PROFILE VIEW OF INJECTION LOCATION

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FIG. 6

FIG. 6

APPENDIX A: REGENESIS 3DME® PRODUCT DATA SHEET

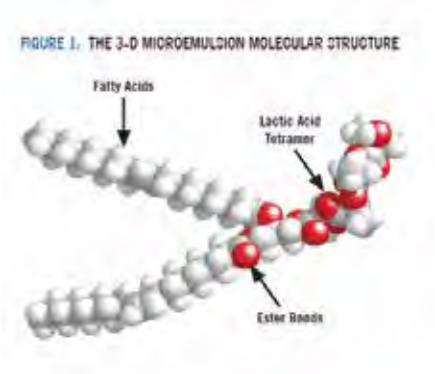
Appendix A

Regenesis 3DME® Product Data Sheet

3-D Microemulsion® Factory Emulsified Technical Description

3-D Microemulsion (3DME®) is comprised of a patented molecular structure containing oleic acids (i.e., oil component) and lactates/polylactates, which are molecularly bound to one another (figure 1). The 3DME molecule contains both a soluble (hydrophilic) and in-soluble (lipophilic) region. These two regions of the molecule are designed to be balanced in size and relative strength. The balanced hydrophilic/lipophilic regions of 3DME result in an electron donor with physical properties allowing it to initially adsorb to the aquifer material in the area of application, then slowly redistribute via very small 3DME "bundles" called micelles. These 3DME micelles spontaneously form within sections of the aquifer where concentrations of 3DME reach several hundred parts per million. The micelles' small size and mobility allow it to move with groundwater flow through the aquifer matrix, passing easily through the pore throats in between soil grains resulting in the further redistribution of 3DME within the aquifer. This allows for advective distribution of the oleic acids which are otherwise insoluble and unable to distribute in this manner, allowing for increased persistence of the lactate/polylactates component due to their initial attachment to the oleic acids.

Example of 3-D Microemulsion



Due to its patented molecular structure, 3DME offers far greater transport when compared to blended emulsified vegetable oil (EVO) products, which fail to distribute beyond the limits of pumping. 3DME also provides greater persistence when compared to soluble substrates such as lactates or simple sugars. The 3DME molecular structures capitalize on the best features of the two electron-donor types while at the same time, minimize their limitations. 3DME is delivered to the site as a ready-to-apply emulsion that is simply diluted with water to generate a large volume of a 3DME colloidal suspension.

Suspension of 3DME generated by this mixing range from micelles on the order of .02 microns to .05 microns in diameter, to "swollen" micelles, (termed "microemulsions") which are on the order of .05 to 5 microns in diameter. Once injected into the subsurface in high volumes, the colloidal suspension mixes and dilutes in existing pore waters. The micelles/microemulsions on the injection front will then begin to sorb onto the surfaces of soils as a result of zeta potential attraction and organic matter within the soils themselves. As the sorption continues, the 3DME will "coat" pore surfaces developing a layer of molecules and in some cases a bilayer. This sorption process continues as the micelles/microemulsion moves outward and disassociates into their hydrophilic/hydrophobic components. The specialized chemistry of 3DME results in a staged release of electron donors: free lactate (immediate); polylactate esters (mid-range) and free fatty acids & fatty acid esters (long-term). Material longevity of three years or greater has been seen at most sites as determined from biogeochemical analyses.

For a list of treatable contaminants with the use of 3DME, view the Range of Treatable Contaminants Guide

Chemical Composition

- Hydrogen Release Compound Partitioning Electron Donor – CAS #823190-10-9
- Sodium Lactate – CAS# 72-17-3
- Water – CAS# – 7732-18-5

3-D Microemulsion® Factory Emulsified Technical Description

Properties

- Density – Approximately 1.0 grams per cubic centimeter (relative to water)
- pH – Neutral (approximately 6.5 to 7.5 standard units)
- Solubility – Soluble in Water
- Appearance – White emulsion
- Odor – Not detectable
- Vapor Pressure – None
- Non-hazardous

Storage and Handling Guidelines

Storage
Store in original tightly closed container
Store in a cool, dry, well-ventilated place
Store away from incompatible materials
Recommended storage containers: plastic lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass

Handling
Avoid contact with eyes, skin, and clothing
Provide adequate ventilation
Wear appropriate personal protective equipment
Observe good industrial hygiene practices

Applications

- 3DME is diluted with water prior to application. Resulting emulsion has viscosity similar to water.
- Easily injects into formation through direct push injection points, injection wells or other injection delivery systems.

Application instructions for this product are contained here 3DME FE Application Instructions.

Health and Safety

Material is food grade and relatively safe to handle. We recommend avoiding contact with eyes and prolonged contact with skin. OSHA Level D personal protection equipment including vinyl or rubber gloves, and eye protection are recommended when handling this product. Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: SDS-3DME FE.

REGENESIS

www.regenesis.com
1011 Calle Sombra, San Clemente CA 92673
949.366.8000

APPENDIX B: MICRONA™ AQUACAL 70 PRODUCT DATA SHEET

Appendix B

Microna™ Aquacal 70 Product Data Sheet

COLUMBIA RIVER CARBONATES
300 North Pekin Road
Woodland, Washington 98674
(360) 225 – 6505
www.carbonates.com
e-mail: info@carbonates.com

MICRONA™ Aquacal 70 DATA SHEET

MICRONA™ Aquacal 70

Applications

MICRONA™ Aquacal 70 is a finely ground highly reactive calcium carbonate slurry that quickly neutralizes and buffers industrial wastewater to the 6.8-7.6 pH range. It is a natural, safe alternative in place of other caustic processes.

Benefits include:

- Ultra-safe handling
- Optimum pH buffering and acid neutralization capacity
- Stabilized bioflocs
- Alkalinity and inorganic carbon for nitrifying bacteria
- Provides ballast to flocs, improving settling
- No scale formation while protecting against corrosion

Typical Physical Characteristics

Solids Content (%)	70
Lbs/gallon (total slurry)	14.9
Lbs/gallon (dry)	10.5
Surface Area (m^2/g)	12
325 Mesh Residue (%)	0.0004
Top Cut (microns, 98% less than)	3

Typical Chemical Analysis

$CaCO_3$ (%)	98.0
$MgCO_3$ (%)	1.9
Acid Insoluble (%)	0.1

Shipping Information

Available in tank cars, totes and tank trucks shipped from Woodland, Washington.

Revised by Technical Service Department
May 2020

APPENDIX C: RNAS NEWMAN ZONE OS® PRODUCT DATA SHEET

Appendix C

RNAS Newman Zone OS® Product Data Sheet

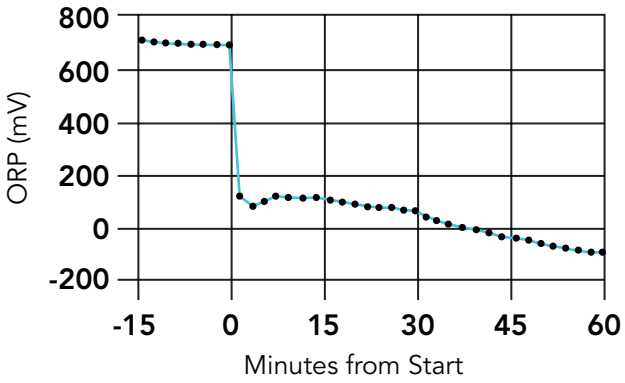
RNAS REMEDIATION PRODUCTS
6712 West River Road, Brooklyn Center, MN 55430
(763) 585.6191 www.RNASinc.com

Newman Zone OS™

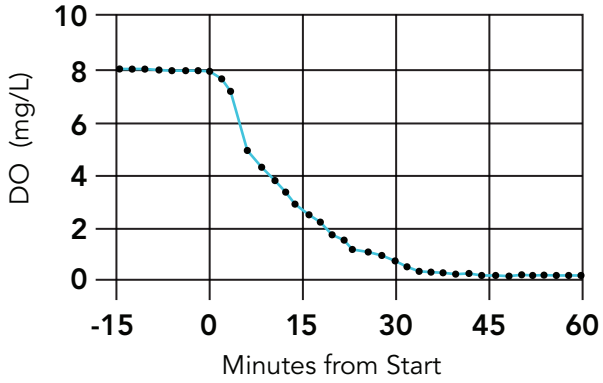
Oxygen Scavenger for Anaerobic Bioremediation

Newman Zone OS™ is a blend of food grade antioxidants, chelated ferrous iron catalyst and buffering agents used to prepare water for anaerobic injections. Newman Zone OS™ is specially formulated to quickly remove dissolved oxygen from water and create the reducing conditions necessary for successful anaerobic bioremediation. Newman Zone OS™ supports bioaugmentation cultures such as SDC-9™ and KB-1® by removing dissolved oxygen from injection water and allowing bacteria to thrive and grow.

ORP REDUCTION*



DISSOLVED OXYGEN REMOVAL*



*Tested in 1,000 Liter totes at 16° C

Application

Newman Zone OS™ comes in pre-measured pails and is added to tanks prior to filling with water. For optimal results, stirring tanks with pumps or mixers is recommended until Newman Zone OS™ is fully dissolved. Typical applications result in anoxic water within one hour and a negative ORP within two hours.

Benefits - Added Vitamin B12

Newman Zone OS™ contains 25 µg/liter of Vitamin B12 (as applied), a required corrinoid vitamin demonstrated to enhance growth and dechlorination performance of Dehalococcoides strains (He et al., May 2007).

Benefits - Rapid Oxygen Scavenging

Newman Zone OS™ is a cost effective way to quickly prepare anaerobic water. Due to its high concentration of antioxidants, chelated ferrous iron catalyst and buffering agents, Newman Zone OS™ is effective even in cold, highly oxidized water. Higher temperatures will result in faster oxygen removal rates.

Benefits - Supports Bioaugmentation Cultures

Laboratory microcosm studies have confirmed Newman Zone OS™ presents no toxicity or inhibition to the SDC-9™ bioaugmentation culture. Additionally, the antioxidants and chelating agents degrade to provide a rapidly available electron donor (700 mg/liter glucose equivalent).

RNAS REMEDIATION PRODUCTS
6712 West River Road, Brooklyn Center, MN 55430
(763) 585.6191 www.RNASinc.com

Newman Zone OS™

Oxygen Scavenger for Anaerobic Bioremediation

Product Content

Chemical Name	Composition
Food Grade Antioxidants	70%
Food Grade Catalysts, Chelating Agents and Buffers	30%

Product Characteristics

Parameter	Unit	Specification
Appearance, packaged		White to brown powder or granules
Appearance, in solution		Dark grey to brown or yellow
Density	g/cm^3	1.0 - 1.2
pH, in solution	Standard Units	7.0 - 8.0

Packaging

Newman Zone OS™ is packaged in 1 and 5 gallon pails premeasured for 1,000 gallon (3,785 L) and 5,000 gallon (18,925 L) batches, respectively.

Storage

Newman Zone OS™ may be stored under recommended conditions for months without activity loss. Keep containers tightly closed in a cool, well-ventilated area. Keep containers sealed to avoid exposure to oxygen or moisture.

Safety

Newman Zone OS™ is comprised of food grade, non-toxic ingredients. No known hazards are associated with exposure to this product when used as directed. Nevertheless, appropriate personal protective equipment is recommended when handling this product.

APPENDIX D: BDI PLUS ® PRODUCT DATA SHEET

Appendix D

BDI PLUS ® Product Data Sheet

BDI PLUS® Technical Description

Bio-Dechlor INOCULUM Plus (BDI PLUS®) is an enriched natural consortium containing species of Dehalococcoides sp. (DHC). BDI PLUS has been shown to simulate the rapid and complete dechlorination of chlorinated solvents such as tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE) and vinyl chloride (VC) to non-toxic end products, ethene, carbon dioxide and water.

The culture also contains microbes capable of dehalogenating halomethanes (e.g., carbon tetrachloride and chloroform) and haloethanes (e.g., 1,1,1-TCA and 1,1-DCA) as well as mixtures of these contaminants.

Species of Dehalococcoides sp. (DHC)

For a list of treatable contaminants with the use of BDI PLUS, view the Range of Treatable Contaminants Guide

Chemical Composition

- Non-hazardous, naturally-occurring, non-altered anaerobic microbes and enzymes in a water-based medium.

Properties

- Appearance – Murky, yellow to grey water
- Odor – Musty
- pH 6.0 to 8.0
- Density – Approximately 1.0 grams per cubic centimeter (0.9 to 1.1 g/cc)
- Solubility – Soluble in Water
- Vapor Pressure – None
- Non-hazardous

Storage and Handling Guidelines

Storage
Store in original tightly closed container
Store away from incompatible materials
Recommended storage containers: plastic lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass
Store in a cool, dry area at 4-5°C (39 - 41°F)
Material may be stored for up to 3 weeks at 2-4°C without aeration

Handling
Avoid prolonged exposure
Observe good industrial hygiene practices
Wear appropriate personal protective equipment

BDI PLUS® Technical Description

Applications

- BDI PLUS is delivered to the site in liquid form and is designed to be injected directly into the saturated zone requiring treatment.
- Most often diluted with de-oxygenated water prior to injection into either hydraulic push injection points or properly constructed injection wells.
- The typical dilution rate of the injected culture is 10 gallons of deoxygenated water to 1 liter of standard BDI PLUS culture.

Application instructions for this product are contained here BDI PLUS Application Instructions.

Health and Safety

Material is non-hazardous and relatively safe to handle; however avoid contact with eyes and prolonged contact with skin. OSHA Level D personal protection equipment including: vinyl or rubber gloves and safety goggles or a splash shield are recommended when handling this product. An eyewash station is recommended. Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: BDI PLUS SDS.

REGENESIS

www.regenesis.com
1011 Calle Sombra, San Clemente CA 92673
949.366.8000

APPENDIX E: REMEDIATION CONTRACTOR'S PROJECT SUMMARY AND FIELD

Appendix E

Remediation Contractor's Project Summary and Field Logs for August 2021

WEEKLY PROJECT SUMMARY

PROJECT NAME/NUMBER: Paccar 306-21-1088

Day	Date	On-site Time	Off-site Time	Wells Completed	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)
					3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)			
Monday	8/9/2021	7:00 AM	6:30 PM	-	-	-	-	-	-	-	-
Tuesday	8/10/2021	7:00 AM	6:30 PM	6.0	564.00	144.0	3.9	10,740.0	11,448.0	0.0	11,448.0
Wednesday	8/11/2021	7:00 AM	6:45 PM	11.0	1,319.44	336.9	10.9	25,125.7	26,782.0	0.0	26,782.0
Thursday	8/12/2021	7:00 AM	7:00 PM	16.0	1,576.36	407.12	7.4	30,382.5	32,366.0	0.0	32,366.0
Friday	8/13/2021	7:00 AM	4:15 PM	17.0	1,221.00	312.00	5.1	23,271.0	24,804.0	0.0	24,804.0
Monday	8/16/2021	7:00 AM	6:30 AM	11.0	1,034.00	264.00	3.1	19,690.5	20,988.0	0.0	20,988.0
Tuesday	8/17/2021	7:00 AM	5:30 PM	16.0	1,504.0	384.0	6.4	28,640.0	30,528.0	0.0	30,528.0
Wednesday	8/18/2021	7:00 AM	6:30 PM	14.0	1,316.0	336.0	5.6	25,060.0	26,712.0	0.0	26,712.0
Thursday	8/19/2021	7:00 AM	6:30 PM	20.0	1,880.0	480.0	8.0	35,800.0	38,160.0	0.0	38,160.0
Friday	8/20/2021	7:00 AM	3:30 PM	10.0	940.0	240.0	4.0	17,900.0	19,080.0	0.0	19,080.0
Monday	8/23/2021	10:00 AM	5:45 PM	11.0	1,034.0	264.0	3.1	19,690.0	20,988.0	0.0	20,988.0
Tuesday	8/24/2021	7:00 AM	6:30 PM	16.0	1,504.0	384.0	5.1	28,640.0	30,528.0	0.0	30,528.0
Wednesday	8/25/2021	7:00 AM	5:15 PM	11.0	1,190.5	304.0	5.0	22,673.5	24,168.0	0.0	24,168.0
Thursday	8/26/2021	7:00 AM	7:00 PM	19.0	1,629.3	416.0	10.1	31,026.0	33,072.0	0.0	33,072.0
Friday	8/27/2021	7:00 AM	4:15 PM	10.0	940.0	240.0	5.9	17,900.0	19,080.0	250.0	19,330.0
Monday	8/30/2021	10:15 AM	5:45 PM	6.0	564.0	144.0	8.8	10,740.6	11,448.0	150.0	11,598.0
			Totals	194	18,216.60	4,656.00	92.4	347,279.8	370,152.0	400.0	370,552.0

Notes:
PSI - pounds per square inch

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INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
1	8/19/2021	12:00 PM	8/19/2021	12:45 PM	15.0	to	20.0	140	132	14.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	1:23 PM	8/19/2021	2:53 PM	10.0	to	15.0	136	144	16.6	73.80	18.75	0.3	1,397.5	1,490.0	0.0	1,490.0		Split remaining volume of INJ-4 into last two intervals
	8/19/2021	3:02 PM	8/19/2021	4:30 PM	5.0	to	10.0	144	148	16.9	73.80	18.75	0.3	1,397.5	1,490.0	0.0	1,490.0		Split remaining volume of INJ-4 into last two intervals
										TOTALS	**178.90**	**45.50**	**0.8**	**3,391.6**	**3,616.0**	**0.0**	**3,616**		
2	8/19/2021	12:00 PM	8/19/2021	12:45 PM	15.0	to	20.0	140	132	14.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	1:23 PM	8/19/2021	2:00 PM	10.0	to	15.0	138	138	17.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	2:39 PM	8/19/2021	3:18 PM	5.0	to	10.0	130	140	16.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
3	8/18/2021	4:05 PM	8/18/2021	4:55 PM	15.0	to	20.0	145	156	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	5:00 PM	8/18/2021	5:38 PM	10.0	to	15.0	150	158	16.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	7:47 AM	8/19/2021	8:33 AM	5.0	to	10.0	124	124	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
4	8/19/2021	12:00 PM	8/19/2021	12:15 PM	15.0	to	20.0	159	159	13.3	9.00	2.50	0.0	188.5	200.0	0.0	200.0		Had permeation into catch basin, shut off and pump remaining volume of entire point into INJ-1 AS PER CLIENT
										TOTALS	**9.00**	**2.50**	**0.0**	**188.5**	**200.0**	**0.0**	**200**		
5	8/19/2021	12:00 PM	8/19/2021	12:45 PM	15.0	to	20.0	140	132	14.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	1:23 PM	8/19/2021	2:00 PM	10.0	to	15.0	138	138	17.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	2:39 PM	8/19/2021	3:18 PM	5.0	to	10.0	130	140	16.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
6	8/18/2021	4:05 PM	8/18/2021	4:55 PM	15.0	to	20.0	90	130	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	5:00 PM	8/18/2021	5:38 PM	10.0	to	15.0	135	132	16.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	7:47 AM	8/19/2021	8:33 AM	5.0	to	10.0	105	106	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
7	8/18/2021	4:05 PM	8/18/2021	4:55 PM	15.0	to	20.0	82	120	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	5:00 PM	8/18/2021	5:38 PM	10.0	to	15.0	125	120	16.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	7:47 AM	8/19/2021	8:33 AM	5.0	to	10.0	95	96	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
8	8/19/2021	12:00 PM	8/19/2021	12:45 PM	15.0	to	20.0	125	130	14.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	1:23 PM	8/19/2021	2:00 PM	10.0	to	15.0	130	130	17.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	2:39 PM	8/19/2021	3:18 PM	5.0	to	10.0	120	140	16.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
9	8/11/2021	4:04 PM	8/11/2021	4:54 PM	15.0	to	20.0	70	79	12.7	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	5:15 PM	8/11/2021	6:03 PM	10.0	to	15.0	95	50	13.3	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/12/2021	8:53 AM	8/12/2021	9:50 AM	5.0	to	10.0	25	55	11.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
10	8/11/2021	4:04 PM	8/11/2021	4:54 PM	15.0	to	20.0	80	67	12.7	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	5:15 PM	8/11/2021	6:03 PM	10.0	to	15.0	75	50	13.3	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/12/2021	8:53 AM	8/12/2021	9:50 AM	5.0	to	10.0	20	40	11.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
11	8/11/2021	4:04 PM	8/11/2021	4:54 PM	15.0	to	20.0	70	66	12.7	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	5:15 PM	8/11/2021	6:03 PM	10.0	to	15.0	70	40	13.3	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/12/2021	8:53 AM	8/12/2021	9:50 AM	5.0	to	10.0	15	37	11.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
12	8/12/2021	3:19 PM	8/12/2021	4:10 PM	15.0	to	20.0	90	78	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/12/2021	4:45 PM	8/12/2021	5:31 PM	10.0	to	15.0	75	70	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	7:45 AM	8/13/2021	8:36 AM	5.0	to	10.0	66	74	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
13	8/12/2021	3:19 PM	8/12/2021	4:10 PM	15.0	to	20.0	51	55	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/12/2021	4:45 PM	8/12/2021	5:31 PM	10.0	to	15.0	47	40	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	7:45 AM	8/13/2021	8:36 AM	5.0	to	10.0	45	48	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
14	8/12/2021	3:19 PM	8/12/2021	4:08 PM	15.0	to	20.0	60	56	13.0	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/12/2021	4:45 PM	8/12/2021	5:31 PM	10.0	to	15.0	52	50	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	7:45 AM	8/13/2021	8:36 AM	5.0	to	10.0	50	54	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
15	8/13/2021	9:30 AM	8/13/2021	10:19 AM	15.0	to	20.0	35	49	13.0	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	10:41 AM	8/13/2021	11:24 AM	10.0	to	15.0	49	55	14.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	12:04 PM	8/13/2021	12:54 PM	5.0	to	10.0	40	45	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
16	8/13/2021	9:30 AM	8/13/2021	10:19 AM	15.0	to	20.0	54	70	13.0	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	10:41 AM	8/13/2021	11:30 AM	10.0	to	15.0	70	70	13.0	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	12:29 PM	8/13/2021	1:10 PM	5.0	to	10.0	75	75	15.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
17	8/16/2021	2:08 PM	8/16/2021	2:56 PM	15.0	to	20.0	56	54	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	3:30 PM	8/16/2021	4:20 PM	10.0	to	15.0	45	45	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	4:47 PM	8/16/2021	5:30 PM	5.0	to	10.0	50	50	14.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
18	8/16/2021	2:08 PM	8/16/2021	2:56 PM	15.0	to	20.0	56	54	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	3:30 PM	8/16/2021	4:20 PM	10.0	to	15.0	55	55	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	4:47 PM	8/16/2021	5:30 PM	5.0	to	10.0	52	53	14.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
19	8/16/2021	2:08 PM	8/16/2021	2:56 PM	15.0	to	20.0	74	69	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	3:30 PM	8/16/2021	4:20 PM	10.0	to	15.0	62	62	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	4:47 PM	8/16/2021	5:30 PM	5.0	to	10.0	65	66	14.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
20	8/17/2021	9:54 AM	8/17/2021	10:45 AM	15.0	to	20.0	66	62	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/17/2021	11:38 AM	8/17/2021	12:23 PM	10.0	to	15.0	70	72	14.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/17/2021	12:53 PM	8/17/2021	1:43 PM	5.0	to	10.0	65	62	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
21	8/17/2021	9:54 AM	8/17/2021	10:46 AM	15.0	to	20.0	70	74	12.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/17/2021	11:38 AM	8/17/2021	12:23 PM	10.0	to	15.0	75	71	14.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/17/2021	12:53 PM	8/17/2021	1:43 PM	5.0	to	10.0	67	70	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
22	8/17/2021	9:54 AM	8/17/2021	10:44 AM	15.0	to	20.0	74	75	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/17/2021	11:38 AM	8/17/2021	12:23 PM	10.0	to	15.0	85	85	14.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/17/2021	12:53 PM	8/17/2021	1:44 PM	5.0	to	10.0	75	78	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
23	8/18/2021	10:37 AM	8/18/2021	11:21 AM	15.0	to	20.0	100	100	14.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	11:44 AM	8/18/2021	12:32 PM	10.0	to	15.0	100	75	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	12:57 PM	8/18/2021	1:45 PM	5.0	to	10.0	85	85	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
24	8/18/2021	10:37 AM	8/18/2021	11:21 AM	15.0	to	20.0	120	115	14.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	11:44 AM	8/18/2021	12:32 PM	10.0	to	15.0	105	76	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	12:57 PM	8/18/2021	1:45 PM	5.0	to	10.0	82	90	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
25	8/18/2021	10:37 AM	8/18/2021	11:21 AM	15.0	to	20.0	144	150	14.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	11:44 AM	8/18/2021	12:32 PM	10.0	to	15.0	121	75	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	12:57 PM	8/18/2021	1:45 PM	5.0	to	10.0	97	104	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
26	8/11/2021	4:04 PM	8/11/2021	4:54 PM	15.0	to	20.0	89	93	12.7	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	5:15 PM	8/11/2021	6:03 PM	10.0	to	15.0	95	57	13.3	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/12/2021	8:53 AM	8/12/2021	9:50 AM	5.0	to	10.0	24	71	11.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
27	8/13/2021	9:30 AM	8/13/2021	10:19 AM	15.0	to	20.0	54	78	13.0	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	10:41 AM	8/13/2021	11:26 AM	10.0	to	15.0	80	100	14.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	12:04 PM	8/13/2021	12:54 PM	5.0	to	10.0	70	90	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
28	8/11/2021	4:04 PM	8/11/2021	4:54 PM	15.0	to	20.0	60	59	12.7	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	5:15 PM	8/11/2021	5:21 PM	10.0	to	15.0	50	50	11.7	3.44	0.88	0.0	65.7	70.0	0.0	70.0	x	Stopped for major surfacing out of annulus, pull and repack in the AM
	8/12/2021	8:30 AM	8/12/2021	9:21 AM	10.0	to	15.0	35	33	11.1	27.86	7.12	0.3	531.0	566.0	0.0	566.0		Pulled and reset point to inject remaining volume
	8/12/2021	10:18 AM	8/12/2021	11:00 AM	5.0	to	10.0	50	50	15.1	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
29	8/12/2021	3:19 PM	8/12/2021	4:10 PM	15.0	to	20.0	90	83	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/12/2021	4:45 PM	8/12/2021	4:52 PM	10.0	to	15.0	70	70	12.9	4.43	1.13	0.1	84.4	90.0	0.0	90.0	x	Surfacing out of annulus, pulled and reset screen
	8/12/2021	5:13 PM	8/12/2021	5:58 PM	10.0	to	15.0	55	85	12.1	26.87	6.87	0.1	512.3	546.0	0.0	546.0		
	8/13/2021	7:45 AM	8/13/2021	8:36 AM	5.0	to	10.0	45	50	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.5**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
30	8/12/2021	3:19 PM	8/12/2021	4:09 PM	15.0	to	20.0	51	50	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/12/2021	4:45 PM	8/12/2021	5:31 PM	10.0	to	15.0	50	48	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	7:45 AM	8/13/2021	8:36 AM	5.0	to	10.0	50	40	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
31	8/12/2021	3:19 PM	8/12/2021	4:09 PM	15.0	to	20.0	57	65	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/12/2021	4:45 PM	8/12/2021	5:31 PM	10.0	to	15.0	57	50	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	7:45 AM	8/13/2021	8:36 AM	5.0	to	10.0	50	40	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
32	8/13/2021	9:30 AM	8/13/2021	10:19 AM	15.0	to	20.0	54	78	13.0	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	10:41 AM	8/13/2021	11:24 AM	10.0	to	15.0	80	100	14.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	12:04 PM	8/13/2021	12:54 PM	5.0	to	10.0	70	90	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
33	8/13/2021	9:30 AM	8/13/2021	10:19 AM	15.0	to	20.0	54	78	13.0	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	10:41 AM	8/13/2021	11:24 AM	10.0	to	15.0	80	100	14.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/13/2021	12:04 PM	8/13/2021	12:54 PM	5.0	to	10.0	70	90	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
34	8/16/2021	2:08 PM	8/16/2021	2:56 PM	15.0	to	20.0	70	60	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	3:30 PM	8/16/2021	4:20 PM	10.0	to	15.0	50	50	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	4:47 PM	8/16/2021	5:30 PM	5.0	to	10.0	55	50	14.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
35	8/16/2021	2:08 PM	8/16/2021	2:56 PM	15.0	to	20.0	49	45	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	3:30 PM	8/16/2021	4:20 PM	10.0	to	15.0	40	40	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	4:47 PM	8/16/2021	5:30 PM	5.0	to	10.0	43	45	14.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
36	8/16/2021	2:08 PM	8/16/2021	2:56 PM	15.0	to	20.0	74	86	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	3:30 PM	8/16/2021	4:20 PM	10.0	to	15.0	79	79	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/16/2021	4:47 PM	8/16/2021	5:30 PM	5.0	to	10.0	80	85	14.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
37	8/17/2021	9:54 AM	8/17/2021	10:44 AM	15.0	to	20.0	60	59	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/17/2021	11:38 AM	8/17/2021	12:23 PM	10.0	to	15.0	62	62	14.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/17/2021	12:53 PM	8/17/2021	1:43 PM	5.0	to	10.0	60	60	12.7	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
38	8/17/2021	9:54 AM	8/17/2021	10:45 AM	15.0	to	20.0	71	62	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/17/2021	11:38 AM	8/17/2021	12:23 PM	10.0	to	15.0	65	65	14.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/17/2021	12:53 PM	8/17/2021	1:44 PM	5.0	to	10.0	64	65	12.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
39	8/18/2021	10:37 AM	8/18/2021	11:21 AM	15.0	to	20.0	85	85	14.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	11:44 AM	8/18/2021	12:32 PM	10.0	to	15.0	75	55	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	12:57 PM	8/18/2021	1:45 PM	5.0	to	10.0	60	65	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
40	8/18/2021	2:12 PM	8/18/2021	2:54 PM	15.0	to	20.0	109	110	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	3:04 PM	8/18/2021	3:45 PM	10.0	to	15.0	100	110	15.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	3:54 PM	8/18/2021	4:42 PM	5.0	to	10.0	80	110	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
41	8/18/2021	2:12 PM	8/18/2021	2:54 PM	15.0	to	20.0	114	116	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	3:04 PM	8/18/2021	3:45 PM	10.0	to	15.0	113	113	15.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	3:54 PM	8/18/2021	4:42 PM	5.0	to	10.0	85	85	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
42	8/18/2021	10:37 AM	8/18/2021	11:21 AM	15.0	to	20.0	122	124	14.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	11:44 AM	8/18/2021	12:32 PM	10.0	to	15.0	110	70	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	12:57 PM	8/18/2021	1:45 PM	5.0	to	10.0	85	95	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
43	8/18/2021	10:37 AM	8/18/2021	11:21 AM	15.0	to	20.0	144	150	14.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/18/2021	11:44 AM	8/18/2021	12:32 PM	10.0	to	15.0	135	80	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0	X	Minor surfacing around location, manageable with vac
	8/18/2021	12:57 PM	8/18/2021	1:45 PM	5.0	to	10.0	85	110	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
44	8/19/2021	12:00 PM	8/19/2021	12:45 PM	15.0	to	20.0	120	130	14.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	1:23 PM	8/19/2021	2:00 PM	10.0	to	15.0	120	120	17.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/19/2021	2:39 PM	8/19/2021	3:18 PM	5.0	to	10.0	124	140	16.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
45	8/20/2021	7:40 AM	8/20/2021	8:22 AM	15.0	to	20.0	161	139	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/20/2021	8:48 AM	8/20/2021	9:30 AM	10.0	to	15.0	121	125	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/20/2021	9:55 AM	8/20/2021	10:32 AM	5.0	to	10.0	134	134	17.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
46	8/20/2021	7:40 AM	8/20/2021	8:22 AM	15.0	to	20.0	145	145	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/20/2021	8:48 AM	8/20/2021	9:30 AM	10.0	to	15.0	136	129	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/20/2021	9:55 AM	8/20/2021	10:32 AM	5.0	to	10.0	134	134	17.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
47	8/20/2021	7:40 AM	8/20/2021	8:22 AM	15.0	to	20.0	146	139	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/20/2021	8:48 AM	8/20/2021	9:30 AM	10.0	to	15.0	126	126	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/20/2021	9:55 AM	8/20/2021	10:32 AM	5.0	to	10.0	140	140	17.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
48	8/20/2021	7:40 AM	8/20/2021	8:22 AM	15.0	to	20.0	139	130	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/20/2021	8:48 AM	8/20/2021	9:30 AM	10.0	to	15.0	110	100	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/20/2021	9:55 AM	8/20/2021	10:32 AM	5.0	to	10.0	120	120	17.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
49	8/20/2021	7:40 AM	8/20/2021	8:22 AM	15.0	to	20.0	120	115	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/20/2021	8:48 AM	8/20/2021	9:30 AM	10.0	to	15.0	105	102	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/20/2021	9:55 AM	8/20/2021	10:32 AM	5.0	to	10.0	107	107	17.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
50	8/23/2021	1:35 PM	8/23/2021	2:17 PM	15.0	to	20.0	125	120	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	2:40 PM	8/23/2021	3:26 PM	10.0	to	15.0	98	100	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	3:48 PM	8/23/2021	4:34 PM	5.0	to	10.0	100	98	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
51	8/23/2021	1:35 PM	8/23/2021	2:17 PM	15.0	to	20.0	125	123	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	2:40 PM	8/23/2021	3:26 PM	10.0	to	15.0	100	105	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	3:48 PM	8/23/2021	4:34 PM	5.0	to	10.0	103	106	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
52	8/23/2021	1:35 PM	8/23/2021	2:17 PM	15.0	to	20.0	156	150	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	2:40 PM	8/23/2021	3:26 PM	10.0	to	15.0	123	125	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	3:48 PM	8/23/2021	4:34 PM	5.0	to	10.0	126	128	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
53	8/23/2021	1:35 PM	8/23/2021	2:17 PM	15.0	to	20.0	147	151	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	2:40 PM	8/23/2021	3:26 PM	10.0	to	15.0	116	115	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	3:48 PM	8/23/2021	4:34 PM	5.0	to	10.0	121	114	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
54	8/23/2021	1:35 PM	8/23/2021	2:17 PM	15.0	to	20.0	115	110	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	2:40 PM	8/23/2021	3:26 PM	10.0	to	15.0	97	98	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	3:48 PM	8/23/2021	4:34 PM	5.0	to	10.0	98	97	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
55	8/23/2021	1:35 PM	8/23/2021	2:17 PM	15.0	to	20.0	124	126	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	2:40 PM	8/23/2021	3:26 PM	10.0	to	15.0	104	109	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/23/2021	3:48 PM	8/23/2021	4:34 PM	5.0	to	10.0	109	115	13.8	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
56	8/25/2021	10:45 AM	8/25/2021	11:33 AM	15.0	to	20.0	95	150	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	12:21 PM	8/25/2021	1:08 PM	10.0	to	15.0	98	91	13.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	1:50 PM	8/25/2021	2:45 PM	5.0	to	10.0	92	81	11.6	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
57	8/25/2021	10:45 AM	8/25/2021	11:33 AM	15.0	to	20.0	107	150	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	12:21 PM	8/25/2021	1:08 PM	10.0	to	15.0	100	90	13.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	1:50 PM	8/25/2021	2:45 PM	5.0	to	10.0	94	85	11.6	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
58	8/24/2021	10:03 AM	8/24/2021	10:45 AM	15.0	to	20.0	120	95	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/24/2021	2:15 PM	8/24/2021	2:54 PM	10.0	to	15.0	120	120	16.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/24/2021	3:04 PM	8/24/2021	3:45 PM	5.0	to	10.0	120	120	15.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
59	8/24/2021	10:03 AM	8/24/2021	10:45 AM	15.0	to	20.0	178	129	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/24/2021	11:27 AM	8/24/2021	12:06 PM	10.0	to	15.0	154	152	16.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0	X	Surfacing out of annulus, Inject top interval into INJ-60
										TOTALS	**62.60**	**16.00**	**0.3**	**1,193.4**	**1,272.0**	**0.0**	**1,272**		
60	8/24/2021	10:03 AM	8/24/2021	10:45 AM	15.0	to	20.0	176	127	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/24/2021	11:27 AM	8/24/2021	12:06 PM	10.0	to	15.0	160	160	16.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/24/2021	12:30 PM	8/24/2021	1:47 PM	5.0	to	10.0	142	155	16.5	62.60	16.00	0.3	1,193.4	1,272.0	0.0	1,272.0		Injected two intervals into one, Top interval from INJ-59
										TOTALS	**125.20**	**32.00**	**0.5**	**2,386.8**	**2,544.0**	**0.0**	**2,544**		
61	8/24/2021	10:03 AM	8/24/2021	10:45 AM	15.0	to	20.0	148	99	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/24/2021	11:27 AM	8/24/2021	12:06 PM	10.0	to	15.0	95	97	16.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/24/2021	1:15 PM	8/24/2021	1:52 PM	5.0	to	10.0	94	95	17.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
62	8/24/2021	10:03 AM	8/24/2021	10:45 AM	15.0	to	20.0	151	106	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/24/2021	11:27 AM	8/24/2021	12:06 PM	10.0	to	15.0	130	130	16.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/24/2021	1:15 PM	8/24/2021	1:52 PM	5.0	to	10.0	130	130	17.2	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
63	8/25/2021	10:45 AM	8/25/2021	11:33 AM	15.0	to	20.0	36	53	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	12:21 PM	8/25/2021	1:08 PM	10.0	to	15.0	33	30	13.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	1:50 PM	8/25/2021	2:45 PM	5.0	to	10.0	27	25	11.6	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
64	8/25/2021	3:21 PM	8/25/2021	4:03 PM	15.0	to	20.0	47	50	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/26/2021	8:04 AM	8/26/2021	9:33 AM	10.0	to	15.0	54	49	7.1	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	9:49 AM	8/26/2021	10:30 AM	5.0	to	10.0	44	44	15.5	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.7**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
65	8/25/2021	3:21 PM	8/25/2021	4:03 PM	15.0	to	20.0	124	135	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/26/2021	8:04 AM	8/26/2021	9:33 AM	10.0	to	15.0	145	134	7.1	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	9:49 AM	8/26/2021	10:30 AM	5.0	to	10.0	114	114	15.5	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.7**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
66	8/26/2021	2:17 PM	8/26/2021	2:55 PM	15.0	to	20.0	54	53	16.7	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	3:11 PM	8/26/2021	3:52 PM	10.0	to	15.0	50	43	15.5	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	4:15 PM	8/26/2021	5:00 PM	5.0	to	10.0	39	39	14.1	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.99**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
67	8/26/2021	2:17 PM	8/26/2021	2:55 PM	15.0	to	20.0	79	85	16.7	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	3:11 PM	8/26/2021	3:52 PM	10.0	to	15.0	80	66	15.5	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	4:15 PM	8/26/2021	5:00 PM	5.0	to	10.0	65	65	14.1	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.99**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
68	8/26/2021	2:17 PM	8/26/2021	2:55 PM	15.0	to	20.0	70	70	16.7	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	3:11 PM	8/26/2021	3:52 PM	10.0	to	15.0	75	85	15.5	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	4:15 PM	8/26/2021	5:00 PM	5.0	to	10.0	90	90	14.1	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.99**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
69	8/26/2021	1:38 PM	8/26/2021	2:16 PM	15.0	to	20.0	89	86	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	2:28 PM	8/26/2021	3:05 PM	10.0	to	15.0	86	86	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	3:28 PM	8/26/2021	4:04 PM	5.0	to	10.0	86	88	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
70	8/26/2021	1:38 PM	8/26/2021	2:16 PM	15.0	to	20.0	126	131	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	2:28 PM	8/26/2021	3:05 PM	10.0	to	15.0	128	128	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	3:28 PM	8/26/2021	4:04 PM	5.0	to	10.0	132	142	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
71	8/26/2021	1:38 PM	8/26/2021	2:16 PM	15.0	to	20.0	137	137	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	2:28 PM	8/26/2021	3:05 PM	10.0	to	15.0	135	139	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	3:28 PM	8/26/2021	4:04 PM	5.0	to	10.0	137	157	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
72	8/26/2021	9:42 AM	8/26/2021	10:20 AM	15.0	to	20.0	150	149	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	10:47 AM	8/26/2021	11:25 AM	10.0	to	15.0	145	144	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	11:57 AM	8/26/2021	12:35 PM	5.0	to	10.0	142	145	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval	Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution 3DME (Gallons)	% Solution Calcium (Gallons)	% Solution Bugs (Liters)	% Solution Water (Gallons)	% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
73	8/26/2021	9:42 AM	8/26/2021	10:20 AM	15.0 to 20.0	143	147	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	10:47 AM	8/26/2021	11:25 AM	10.0 to 15.0	141	139	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	11:57 AM	8/26/2021	12:35 PM	5.0 to 10.0	136	144	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
74	8/25/2021	10:45 AM	8/25/2021	11:33 AM	15.0 to 20.0	89	154	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	12:21 PM	8/25/2021	1:08 PM	10.0 to 15.0	98	92	13.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	1:50 PM	8/25/2021	2:45 PM	5.0 to 10.0	94	84	11.6	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
75	8/25/2021	10:45 AM	8/25/2021	11:33 AM	15.0 to 20.0	115	190	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	12:21 PM	8/25/2021	1:08 PM	10.0 to 15.0	113	105	13.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	1:50 PM	8/25/2021	2:45 PM	5.0 to 10.0	107	5	11.6	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
76	8/11/2021	9:27 AM	8/11/2021	10:19 AM	15.0 to 20.0	40	60	12.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	11:08 AM	8/11/2021	12:01 PM	10.0 to 15.0	50	34	12.0	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	12:34 PM	8/11/2021	1:26 PM	5.0 to 10.0	52	55	12.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
77	8/11/2021	9:27 AM	8/11/2021	10:19 AM	15.0 to 20.0	65	60	12.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	11:08 AM	8/11/2021	12:01 PM	10.0 to 15.0	48	32	12.0	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	12:34 PM	8/11/2021	1:26 PM	5.0 to 10.0	50	55	12.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
78	8/25/2021	10:45 AM	8/25/2021	11:33 AM	15.0 to 20.0	79	120	13.3	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	12:21 PM	8/25/2021	1:08 PM	10.0 to 15.0	77	69	13.5	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/25/2021	1:50 PM	8/25/2021	2:45 PM	5.0 to 10.0	66	60	11.6	31.30	8.00	0.1	596.7	636.0	0.0	636.0	x	Minor surfacing at the end of interval, less than 5 gallons
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
79	8/25/2021	3:21 PM	8/25/2021	4:03 PM	15.0 to 20.0	86	95	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/26/2021	8:04 AM	8/26/2021	9:33 AM	10.0 to 15.0	98	95	7.1	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	9:49 AM	8/26/2021	10:30 AM	5.0 to 10.0	79	79	15.5	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.7**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
80	8/25/2021	3:21 PM	8/25/2021	4:03 PM	15.0 to 20.0	120	91	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/26/2021	8:04 AM	8/26/2021	8:48 AM	10.0 to 15.0	102	100	14.5	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	9:49 AM	8/26/2021	10:30 AM	5.0 to 10.0	79	79	15.5	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.7**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
81	8/25/2021	3:21 PM	8/25/2021	4:03 PM	15.0	to	20.0	126	141	15.1	31.30	8.00	0.1	596.7	636.0	0.0	636.0		
	8/26/2021	8:04 AM	8/26/2021	8:48 AM	10.0	to	15.0	144	139	14.5	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	9:49 AM	8/26/2021	10:30 AM	5.0	to	10.0	116	116	15.5	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.7**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
82	8/26/2021	2:17 PM	8/26/2021	2:55 PM	15.0	to	20.0	60	56	16.7	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	3:11 PM	8/26/2021	3:52 PM	10.0	to	15.0	50	44	15.5	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	4:15 PM	8/26/2021	5:00 PM	5.0	to	10.0	40	40	14.1	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.99**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
83	8/26/2021	2:17 PM	8/26/2021	2:55 PM	15.0	to	20.0	72	64	16.7	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	3:11 PM	8/26/2021	3:52 PM	10.0	to	15.0	56	53	15.5	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/26/2021	4:15 PM	8/26/2021	5:00 PM	5.0	to	10.0	50	50	14.1	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.99**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
84	8/26/2021	9:42 AM	8/26/2021	10:20 AM	15.0	to	20.0	135	127	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	10:47 AM	8/26/2021	11:25 AM	10.0	to	15.0	126	122	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	11:57 AM	8/26/2021	12:35 PM	5.0	to	10.0	125	122	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
85	8/24/2021	3:40 PM	8/24/2021	4:16 PM	15.0	to	20.0	110	119	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	4:28 PM	8/24/2021	5:05 PM	10.0	to	15.0	120	132	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	5:22 PM	8/24/2021	5:58 PM	5.0	to	10.0	116	115	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
86	8/26/2021	1:38 PM	8/26/2021	2:16 PM	15.0	to	20.0	98	99	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	2:28 PM	8/26/2021	3:05 PM	10.0	to	15.0	95	96	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	3:28 PM	8/26/2021	4:04 PM	5.0	to	10.0	95	104	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
87	8/24/2021	3:40 PM	8/24/2021	4:16 PM	15.0	to	20.0	119	120	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	4:28 PM	8/24/2021	5:05 PM	10.0	to	15.0	116	124	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	5:22 PM	8/24/2021	5:58 PM	5.0	to	10.0	121	128	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
88	8/25/2021	11:17 AM	8/25/2021	11:53 AM	15.0	to	20.0	107	133	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/25/2021	12:22 PM	8/25/2021	12:59 PM	10.0	to	15.0	128	129	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/25/2021	1:27 PM	8/25/2021	2:04 PM	5.0	to	10.0	127	125	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution 3DME (Gallons)	% Solution Calcium (Gallons)	% Solution Bugs (Liters)	% Solution Water (Gallons)	% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
89	8/25/2021	11:17 AM	8/25/2021	11:53 AM	15.0	to	20.0	126	144	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/25/2021	12:22 PM	8/25/2021	12:59 PM	10.0	to	15.0	136	136	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/25/2021	1:27 PM	8/25/2021	2:04 PM	5.0	to	10.0	130	134	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
90	8/26/2021	9:42 AM	8/26/2021	10:20 AM	15.0	to	20.0	106	100	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	10:47 AM	8/26/2021	11:25 AM	10.0	to	15.0	89	90	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	11:57 AM	8/26/2021	12:35 PM	5.0	to	10.0	87	89	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
91	8/11/2021	9:27 AM	8/11/2021	10:21 AM	15.0	to	20.0	50	65	11.8	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	11:08 AM	8/11/2021	12:01 PM	10.0	to	15.0	45	33	12.0	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	12:34 PM	8/11/2021	1:26 PM	5.0	to	10.0	45	35	12.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
92	8/11/2021	9:40 AM	8/11/2021	10:30 AM	15.0	to	20.0	60	60	12.7	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	11:08 AM	8/11/2021	12:01 PM	10.0	to	15.0	55	46	12.0	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	12:34 PM	8/11/2021	1:26 PM	5.0	to	10.0	55	40	12.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
93	8/17/2021	1:27 PM	8/17/2021	2:05 PM	15.0	to	20.0	112	109	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	2:22 PM	8/17/2021	2:57 PM	10.0	to	15.0	110	110	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	3:21 PM	8/17/2021	3:57 PM	5.0	to	10.0	106	116	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
94	8/17/2021	1:27 PM	8/17/2021	2:05 PM	15.0	to	20.0	75	70	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	2:22 PM	8/17/2021	2:57 PM	10.0	to	15.0	69	69	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	3:21 PM	8/17/2021	3:57 PM	5.0	to	10.0	66	66	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
95	8/17/2021	1:27 PM	8/17/2021	2:05 PM	15.0	to	20.0	95	95	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	2:22 PM	8/17/2021	2:57 PM	10.0	to	15.0	108	109	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	3:21 PM	8/17/2021	3:57 PM	5.0	to	10.0	106	115	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
96	8/17/2021	1:27 PM	8/17/2021	2:05 PM	15.0	to	20.0	93	89	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	2:22 PM	8/17/2021	2:57 PM	10.0	to	15.0	106	107	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	3:21 PM	8/17/2021	3:57 PM	5.0	to	10.0	103	110	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
97	8/17/2021	1:27 PM	8/17/2021	2:05 PM	15.0	to	20.0	89	88	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	2:22 PM	8/17/2021	2:57 PM	10.0	to	15.0	99	99	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	3:21 PM	8/17/2021	3:57 PM	5.0	to	10.0	96	105	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
98	8/26/2021	9:42 AM	8/26/2021	10:20 AM	15.0	to	20.0	115	106	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	10:47 AM	8/26/2021	11:25 AM	10.0	to	15.0	109	108	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/26/2021	11:57 AM	8/26/2021	12:35 PM	5.0	to	10.0	96	92	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
99	8/24/2021	9:08 AM	8/24/2021	9:45 AM	15.0	to	20.0	109	104	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	10:05 AM	8/24/2021	10:43 AM	10.0	to	15.0	104	97	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	11:07 AM	8/24/2021	11:46 AM	5.0	to	10.0	93	90	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
100	8/24/2021	9:08 AM	8/24/2021	9:45 AM	15.0	to	20.0	92	99	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	10:05 AM	8/24/2021	10:43 AM	10.0	to	15.0	94	90	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	11:07 AM	8/24/2021	11:46 AM	5.0	to	10.0	88	81	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
101	8/24/2021	3:40 PM	8/24/2021	4:16 PM	15.0	to	20.0	113	120	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	4:28 PM	8/24/2021	5:05 PM	10.0	to	15.0	115	126	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	5:22 PM	8/24/2021	5:58 PM	5.0	to	10.0	123	127	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
102	8/24/2021	3:40 PM	8/24/2021	4:16 PM	15.0	to	20.0	106	110	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	4:28 PM	8/24/2021	5:05 PM	10.0	to	15.0	106	115	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	5:22 PM	8/24/2021	5:58 PM	5.0	to	10.0	116	114	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
103	8/24/2021	3:40 PM	8/24/2021	4:16 PM	15.0	to	20.0	80	78	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	4:28 PM	8/24/2021	5:05 PM	10.0	to	15.0	81	81	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	5:22 PM	8/24/2021	5:58 PM	5.0	to	10.0	107	80	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
104	8/25/2021	11:17 AM	8/25/2021	11:53 AM	15.0	to	20.0	83	85	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/25/2021	12:22 PM	8/25/2021	12:59 PM	10.0	to	15.0	86	89	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/25/2021	1:27 PM	8/25/2021	2:04 PM	5.0	to	10.0	83	79	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
105	8/11/2021	9:27 AM	8/11/2021	10:20 AM	15.0	to	20.0	50	40	12.0	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	11:08 AM	8/11/2021	12:01 PM	10.0	to	15.0	52	38	12.0	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	12:34 PM	8/11/2021	1:26 PM	5.0	to	10.0	50	50	12.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
106	8/11/2021	9:27 AM	8/11/2021	10:21 AM	15.0	to	20.0	55	66	11.8	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	11:08 AM	8/11/2021	12:01 PM	10.0	to	15.0	67	40	12.0	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/11/2021	12:34 PM	8/11/2021	1:26 PM	5.0	to	10.0	56	60	12.2	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
107	8/17/2021	9:36 AM	8/17/2021	10:16 AM	15.0	to	20.0	103	101	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	10:40 AM	8/17/2021	11:21 AM	10.0	to	15.0	94	95	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	11:57 AM	8/17/2021	12:38 PM	5.0	to	10.0	99	99	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
108	8/17/2021	9:36 AM	8/17/2021	10:16 AM	15.0	to	20.0	54	49	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	10:40 AM	8/17/2021	11:21 AM	10.0	to	15.0	45	45	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	11:57 AM	8/17/2021	12:38 PM	5.0	to	10.0	43	43	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
109	8/17/2021	9:36 AM	8/17/2021	10:16 AM	15.0	to	20.0	73	66	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	10:40 AM	8/17/2021	11:21 AM	10.0	to	15.0	63	63	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	11:57 AM	8/17/2021	12:38 PM	5.0	to	10.0	72	70	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
110	8/17/2021	9:36 AM	8/17/2021	10:16 AM	15.0	to	20.0	93	87	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	10:40 AM	8/17/2021	11:21 AM	10.0	to	15.0	86	82	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	11:57 AM	8/17/2021	12:38 PM	5.0	to	10.0	88	88	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
111	8/17/2021	9:36 AM	8/17/2021	10:16 AM	15.0	to	20.0	91	86	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	10:40 AM	8/17/2021	11:21 AM	10.0	to	15.0	83	82	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	11:57 AM	8/17/2021	12:38 PM	5.0	to	10.0	87	87	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
112	8/17/2021	9:36 AM	8/17/2021	10:16 AM	15.0	to	20.0	94	83	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	10:40 AM	8/17/2021	11:21 AM	10.0	to	15.0	81	76	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/17/2021	11:57 AM	8/17/2021	12:38 PM	5.0	to	10.0	83	81	15.5	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval	Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
									3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
113	8/24/2021	9:08 AM	8/24/2021	9:45 AM	15.0 to 20.0	105	96	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	10:05 AM	8/24/2021	10:43 AM	10.0 to 15.0	88	86	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	11:07 AM	8/24/2021	11:46 AM	5.0 to 10.0	81	79	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
114	8/24/2021	9:08 AM	8/24/2021	9:45 AM	15.0 to 20.0	71	70	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	10:05 AM	8/24/2021	10:43 AM	10.0 to 15.0	70	70	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	11:07 AM	8/24/2021	11:46 AM	5.0 to 10.0	69	69	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
115	8/24/2021	9:08 AM	8/24/2021	9:45 AM	15.0 to 20.0	105	99	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	10:05 AM	8/24/2021	10:43 AM	10.0 to 15.0	100	95	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	11:07 AM	8/24/2021	11:46 AM	5.0 to 10.0	88	89	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
116	8/25/2021	11:17 AM	8/25/2021	11:53 AM	15.0 to 20.0	87	106	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/25/2021	12:22 PM	8/25/2021	12:59 PM	10.0 to 15.0	95	96	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/25/2021	1:27 PM	8/25/2021	2:04 PM	5.0 to 10.0	95	95	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
117	8/25/2021	11:17 AM	8/25/2021	11:53 AM	15.0 to 20.0	125	146	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/25/2021	12:22 PM	8/25/2021	12:59 PM	10.0 to 15.0	140	145	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/25/2021	1:27 PM	8/25/2021	2:04 PM	5.0 to 10.0	137	141	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
118	8/10/2021	11:08 AM	8/10/2021	12:10 PM	15.0 to 20.0	47	44	10.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/10/2021	12:25 PM	8/10/2021	1:25 PM	10.0 to 15.0	62	60	10.6	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/10/2021	1:55 PM	8/10/2021	2:56 PM	5.0 to 10.0	55	61	10.4	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.7**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
119	8/10/2021	11:08 AM	8/10/2021	12:10 PM	15.0 to 20.0	47	44	10.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/10/2021	12:25 PM	8/10/2021	1:25 PM	10.0 to 15.0	62	60	10.6	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/10/2021	1:55 PM	8/10/2021	2:56 PM	5.0 to 10.0	55	61	10.4	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.7**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
120	8/10/2021	11:08 AM	8/10/2021	12:10 PM	15.0 to 20.0	47	44	10.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/10/2021	12:25 PM	8/10/2021	1:25 PM	10.0 to 15.0	62	60	10.6	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/10/2021	1:55 PM	8/10/2021	2:56 PM	5.0 to 10.0	55	61	10.4	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.7**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
121	8/11/2021	10:55 AM	8/11/2021	11:43 AM	15.0	to	20.0	46	57	13.3	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/11/2021	12:05 PM	8/11/2021	12:46 PM	10.0	to	15.0	77	68	15.5	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/11/2021	1:27 PM	8/11/2021	2:10 PM	5.0	to	10.0	78	73	14.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
122	8/11/2021	10:55 AM	8/11/2021	11:43 AM	15.0	to	20.0	45	55	13.3	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/11/2021	12:05 PM	8/11/2021	12:46 PM	10.0	to	15.0	72	65	15.5	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/11/2021	1:27 PM	8/11/2021	2:10 PM	5.0	to	10.0	74	68	14.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
123	8/11/2021	10:55 AM	8/11/2021	11:43 AM	15.0	to	20.0	46	55	13.3	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/11/2021	12:05 PM	8/11/2021	12:46 PM	10.0	to	15.0	70	60	15.5	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/11/2021	1:27 PM	8/11/2021	2:10 PM	5.0	to	10.0	70	65	14.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
124	8/18/2021	2:17 PM	8/18/2021	2:56 PM	15.0	to	20.0	98	100	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	3:27 PM	8/18/2021	4:09 PM	10.0	to	15.0	84	91	15.1	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	4:40 PM	8/18/2021	5:20 PM	5.0	to	10.0	86	89	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
125	8/18/2021	2:17 PM	8/18/2021	2:56 PM	15.0	to	20.0	89	92	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	3:27 PM	8/18/2021	4:09 PM	10.0	to	15.0	78	86	15.1	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	4:40 PM	8/18/2021	5:20 PM	5.0	to	10.0	84	84	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
126	8/24/2021	9:08 AM	8/24/2021	9:45 AM	15.0	to	20.0	95	84	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	10:05 AM	8/24/2021	10:43 AM	10.0	to	15.0	86	84	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/24/2021	11:07 AM	8/24/2021	11:46 AM	5.0	to	10.0	82	76	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
127	8/18/2021	2:17 PM	8/18/2021	2:56 PM	15.0	to	20.0	101	75	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	3:27 PM	8/18/2021	4:09 PM	10.0	to	15.0	65	65	15.1	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	4:40 PM	8/18/2021	5:20 PM	5.0	to	10.0	68	70	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
128	8/19/2021	9:20 AM	8/19/2021	9:55 AM	15.0	to	20.0	114	109	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	10:47 AM	8/19/2021	11:22 AM	10.0	to	15.0	119	115	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	11:53 AM	8/19/2021	12:28 PM	5.0	to	10.0	120	120	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
129	8/19/2021	9:20 AM	8/19/2021	9:55 AM	15.0	to	20.0	74	72	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	10:47 AM	8/19/2021	11:22 AM	10.0	to	15.0	70	70	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	11:53 AM	8/19/2021	12:28 PM	5.0	to	10.0	68	67	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
130	8/10/2021	11:08 AM	8/10/2021	12:10 PM	15.0	to	20.0	47	44	10.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/10/2021	12:25 PM	8/10/2021	1:25 PM	10.0	to	15.0	62	60	10.6	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/10/2021	1:55 PM	8/10/2021	2:56 PM	5.0	to	10.0	55	61	10.4	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.7**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
131	8/10/2021	11:08 AM	8/10/2021	12:10 PM	15.0	to	20.0	47	44	10.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/10/2021	12:25 PM	8/10/2021	1:25 PM	10.0	to	15.0	62	60	10.6	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/10/2021	1:55 PM	8/10/2021	2:56 PM	5.0	to	10.0	55	61	10.4	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.7**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
132	8/10/2021	11:08 AM	8/10/2021	12:10 PM	15.0	to	20.0	47	44	10.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/10/2021	12:25 PM	8/10/2021	1:25 PM	10.0	to	15.0	62	60	10.6	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/10/2021	1:55 PM	8/10/2021	2:56 PM	5.0	to	10.0	55	61	10.4	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.7**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
133	8/11/2021	10:55 AM	8/11/2021	11:43 AM	15.0	to	20.0	42	45	13.3	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/11/2021	12:05 PM	8/11/2021	12:46 PM	10.0	to	15.0	43	43	15.5	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/11/2021	1:27 PM	8/11/2021	2:10 PM	5.0	to	10.0	43	43	14.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
134	8/11/2021	10:55 AM	8/11/2021	11:43 AM	15.0	to	20.0	42	51	13.3	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/11/2021	12:05 PM	8/11/2021	12:46 PM	10.0	to	15.0	61	55	15.5	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/11/2021	1:27 PM	8/11/2021	2:10 PM	5.0	to	10.0	61	54	14.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
135	8/18/2021	2:17 PM	8/18/2021	2:56 PM	15.0	to	20.0	81	84	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	3:27 PM	8/18/2021	4:09 PM	10.0	to	15.0	74	78	15.1	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	4:40 PM	8/18/2021	5:20 PM	5.0	to	10.0	76	74	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
136	8/18/2021	2:17 PM	8/18/2021	2:56 PM	15.0	to	20.0	88	94	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	3:27 PM	8/18/2021	4:09 PM	10.0	to	15.0	78	84	15.1	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	4:40 PM	8/18/2021	5:20 PM	5.0	to	10.0	81	80	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
137	8/18/2021	2:17 PM	8/18/2021	2:56 PM	15.0	to	20.0	96	81	16.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	3:27 PM	8/18/2021	4:09 PM	10.0	to	15.0	76	80	15.1	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/18/2021	4:40 PM	8/18/2021	5:20 PM	5.0	to	10.0	76	75	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
138	8/19/2021	9:20 AM	8/19/2021	9:55 AM	15.0	to	20.0	101	89	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	10:47 AM	8/19/2021	11:22 AM	10.0	to	15.0	105	101	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	11:53 AM	8/19/2021	12:28 PM	5.0	to	10.0	105	106	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
139	8/19/2021	9:20 AM	8/19/2021	9:55 AM	15.0	to	20.0	88	95	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	10:47 AM	8/19/2021	11:22 AM	10.0	to	15.0	105	104	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	11:53 AM	8/19/2021	12:28 PM	5.0	to	10.0	107	107	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
140	8/19/2021	9:20 AM	8/19/2021	9:55 AM	15.0	to	20.0	96	102	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	10:47 AM	8/19/2021	11:22 AM	10.0	to	15.0	113	110	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	11:53 AM	8/19/2021	12:28 PM	5.0	to	10.0	114	115	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
141	8/12/2021	9:40 AM	8/12/2021	10:45 AM	15.0	to	20.0	57	70	9.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	11:33 AM	8/12/2021	12:19 PM	10.0	to	15.0	63	72	13.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	12:47 PM	8/12/2021	1:37 PM	5.0	to	10.0	65	68	12.7	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
142	8/12/2021	9:40 AM	8/12/2021	10:45 AM	15.0	to	20.0	42	48	9.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	11:33 AM	8/12/2021	12:19 PM	10.0	to	15.0	45	45	13.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	12:47 PM	8/12/2021	1:37 PM	5.0	to	10.0	45	45	12.7	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
143	8/12/2021	9:40 AM	8/12/2021	10:45 AM	15.0	to	20.0	82	97	9.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	11:33 AM	8/12/2021	12:19 PM	10.0	to	15.0	115	122	13.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	12:47 PM	8/12/2021	1:37 PM	5.0	to	10.0	108	111	12.7	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
144	8/23/2021	1:08 PM	8/23/2021	1:44 PM	15.0	to	20.0	95	117	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/23/2021	2:04 PM	8/23/2021	2:40 PM	10.0	to	15.0	110	110	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/23/2021	3:10 PM	8/23/2021	3:45 PM	5.0	to	10.0	111	111	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
145	8/23/2021	1:08 PM	8/23/2021	1:44 PM	15.0	to	20.0	126	111	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/23/2021	2:04 PM	8/23/2021	2:40 PM	10.0	to	15.0	105	105	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/23/2021	3:10 PM	8/23/2021	3:45 PM	5.0	to	10.0	109	111	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
146	8/23/2021	1:08 PM	8/23/2021	1:44 PM	15.0	to	20.0	106	104	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/23/2021	2:04 PM	8/23/2021	2:40 PM	10.0	to	15.0	96	105	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/23/2021	3:10 PM	8/23/2021	3:45 PM	5.0	to	10.0	106	105	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
147	8/19/2021	3:45 PM	8/19/2021	4:23 PM	15.0	to	20.0	94	90	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	4:44 PM	8/19/2021	5:22 PM	10.0	to	15.0	90	91	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	5:38 PM	8/19/2021	6:15 PM	5.0	to	10.0	90	85	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
148	8/19/2021	3:45 PM	8/19/2021	4:23 PM	15.0	to	20.0	106	100	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	4:44 PM	8/19/2021	5:22 PM	10.0	to	15.0	105	105	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	5:38 PM	8/19/2021	6:15 PM	5.0	to	10.0	105	102	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
149	8/19/2021	3:45 PM	8/19/2021	4:23 PM	15.0	to	20.0	110	99	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	4:44 PM	8/19/2021	5:22 PM	10.0	to	15.0	101	103	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	5:38 PM	8/19/2021	6:15 PM	5.0	to	10.0	100	97	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
150	8/12/2021	9:40 AM	8/12/2021	10:45 AM	15.0	to	20.0	53	76	9.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	11:33 AM	8/12/2021	12:19 PM	10.0	to	15.0	70	77	13.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	12:47 PM	8/12/2021	1:37 PM	5.0	to	10.0	71	71	12.7	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
151	8/12/2021	9:40 AM	8/12/2021	10:45 AM	15.0	to	20.0	54	76	9.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	11:33 AM	8/12/2021	12:19 PM	10.0	to	15.0	75	82	13.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	12:47 PM	8/12/2021	1:37 PM	5.0	to	10.0	73	74	12.7	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
152	8/12/2021	9:40 AM	8/12/2021	10:45 AM	15.0	to	20.0	65	65	9.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	11:33 AM	8/12/2021	12:19 PM	10.0	to	15.0	56	60	13.8	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/12/2021	12:47 PM	8/12/2021	1:37 PM	5.0	to	10.0	55	56	12.7	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
153	8/16/2021	12:50 PM	8/16/2021	1:29 PM	15.0	to	20.0	74	94	16.3	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/16/2021	1:49 PM	8/16/2021	2:26 PM	10.0	to	15.0	93	88	17.2	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/16/2021	2:46 PM	8/16/2021	3:22 PM	5.0	to	10.0	91	86	17.7	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
154	8/16/2021	12:50 PM	8/16/2021	1:29 PM	15.0	to	20.0	93	91	16.3	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/16/2021	1:49 PM	8/16/2021	2:26 PM	10.0	to	15.0	98	92	17.2	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/16/2021	2:46 PM	8/16/2021	3:22 PM	5.0	to	10.0	94	89	17.7	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
155	8/20/2021	9:15 AM	8/20/2021	9:51 AM	15.0	to	20.0	115	105	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/20/2021	10:12 AM	8/20/2021	10:49 AM	10.0	to	15.0	105	105	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/20/2021	11:17 AM	8/20/2021	11:51 AM	5.0	to	10.0	107	107	18.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
156	8/19/2021	3:45 PM	8/19/2021	4:23 PM	15.0	to	20.0	99	94	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	4:44 PM	8/19/2021	5:22 PM	10.0	to	15.0	96	95	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	5:38 PM	8/19/2021	6:15 PM	5.0	to	10.0	95	91	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
157	8/19/2021	3:45 PM	8/19/2021	4:23 PM	15.0	to	20.0	111	87	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	4:44 PM	8/19/2021	5:22 PM	10.0	to	15.0	96	96	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	5:38 PM	8/19/2021	6:15 PM	5.0	to	10.0	95	90	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
158	8/19/2021	3:45 PM	8/19/2021	4:23 PM	15.0	to	20.0	87	79	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	4:44 PM	8/19/2021	5:22 PM	10.0	to	15.0	71	68	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/19/2021	5:38 PM	8/19/2021	6:15 PM	5.0	to	10.0	65	64	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
159	8/20/2021	9:15 AM	8/20/2021	9:51 AM	15.0	to	20.0	125	116	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/20/2021	10:12 AM	8/20/2021	10:49 AM	10.0	to	15.0	108	111	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/20/2021	11:17 AM	8/20/2021	11:51 AM	5.0	to	10.0	114	110	18.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
160	8/12/2021	3:20 PM	8/12/2021	4:15 PM	15.0	to	20.0	42	39	11.6	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/12/2021	4:25 PM	8/12/2021	5:10 PM	10.0	to	15.0	40	44	14.1	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/12/2021	5:30 PM	8/12/2021	6:10 PM	5.0	to	10.0	40	46	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
161	8/16/2021	12:50 PM	8/16/2021	1:29 PM	15.0	to	20.0	92	78	16.3	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/16/2021	1:49 PM	8/16/2021	2:26 PM	10.0	to	15.0	75	68	17.2	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/16/2021	2:46 PM	8/16/2021	3:22 PM	5.0	to	10.0	71	66	17.7	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
162	8/16/2021	12:50 PM	8/16/2021	1:29 PM	15.0	to	20.0	90	100	16.3	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/16/2021	1:49 PM	8/16/2021	2:26 PM	10.0	to	15.0	103	96	17.2	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/16/2021	2:46 PM	8/16/2021	3:22 PM	5.0	to	10.0	101	99	17.7	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
163	8/16/2021	12:50 PM	8/16/2021	1:29 PM	15.0	to	20.0	93	94	16.3	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/16/2021	1:49 PM	8/16/2021	2:26 PM	10.0	to	15.0	100	93	17.2	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
	8/16/2021	2:46 PM	8/16/2021	3:22 PM	5.0	to	10.0	93	88	17.7	31.30	8.00	0.26	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
164	8/20/2021	9:15 AM	8/20/2021	9:51 AM	15.0	to	20.0	111	110	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/20/2021	10:12 AM	8/20/2021	10:49 AM	10.0	to	15.0	99	103	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/20/2021	11:17 AM	8/20/2021	11:51 AM	5.0	to	10.0	105	105	18.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
165	8/20/2021	9:15 AM	8/20/2021	9:51 AM	15.0	to	20.0	110	104	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/20/2021	10:12 AM	8/20/2021	10:49 AM	10.0	to	15.0	97	99	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/20/2021	11:17 AM	8/20/2021	11:51 AM	5.0	to	10.0	100	102	18.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
166	8/12/2021	3:20 PM	8/12/2021	4:15 PM	15.0	to	20.0	80	90	11.6	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/12/2021	4:25 PM	8/12/2021	5:10 PM	10.0	to	15.0	79	82	14.1	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/12/2021	5:30 PM	8/12/2021	6:10 PM	5.0	to	10.0	95	95	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
167	8/20/2021	9:15 AM	8/20/2021	9:51 AM	15.0	to	20.0	80	76	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/20/2021	10:12 AM	8/20/2021	10:49 AM	10.0	to	15.0	66	66	17.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/20/2021	11:17 AM	8/20/2021	11:51 AM	5.0	to	10.0	65	65	18.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
168	8/13/2021	11:57 AM	8/13/2021	12:45 PM	15.0	to	20.0	55	60	13.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	1:00 PM	8/13/2021	1:40 PM	10.0	to	15.0	55	56	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	2:05 PM	8/13/2021	2:48 PM	5.0	to	10.0	59	64	14.8	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
169	8/23/2021	1:08 PM	8/23/2021	1:44 PM	15.0	to	20.0	95	116	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/23/2021	2:04 PM	8/23/2021	2:40 PM	10.0	to	15.0	117	117	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/23/2021	3:10 PM	8/23/2021	3:45 PM	5.0	to	10.0	112	111	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
170	8/13/2021	11:57 AM	8/13/2021	12:45 PM	15.0	to	20.0	45	40	13.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	1:00 PM	8/13/2021	1:40 PM	10.0	to	15.0	47	47	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	2:05 PM	8/13/2021	2:48 PM	5.0	to	10.0	45	46	14.8	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
171	8/13/2021	11:57 AM	8/13/2021	12:45 PM	15.0	to	20.0	90	95	13.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	1:00 PM	8/13/2021	1:40 PM	10.0	to	15.0	76	80	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	2:05 PM	8/13/2021	2:48 PM	5.0	to	10.0	79	82	14.8	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
172	8/13/2021	11:57 AM	8/13/2021	12:45 PM	15.0	to	20.0	70	97	13.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	1:00 PM	8/13/2021	1:40 PM	10.0	to	15.0	90	96	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	2:05 PM	8/13/2021	2:48 PM	5.0	to	10.0	90	91	14.8	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
173	8/12/2021	3:20 PM	8/12/2021	4:15 PM	15.0	to	20.0	76	78	11.6	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/12/2021	4:25 PM	8/12/2021	5:10 PM	10.0	to	15.0	69	71	14.1	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/12/2021	5:30 PM	8/12/2021	6:10 PM	5.0	to	10.0	88	87	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
174	8/12/2021	3:20 PM	8/12/2021	4:15 PM	15.0	to	20.0	75	83	11.6	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/12/2021	4:25 PM	8/12/2021	5:10 PM	10.0	to	15.0	70	74	14.1	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/12/2021	5:30 PM	8/12/2021	6:10 PM	5.0	to	10.0	85	84	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
175	8/12/2021	3:20 PM	8/12/2021	4:15 PM	15.0	to	20.0	80	71	11.6	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/12/2021	4:25 PM	8/12/2021	5:10 PM	10.0	to	15.0	68	72	14.1	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/12/2021	5:30 PM	8/12/2021	6:10 PM	5.0	to	10.0	86	85	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
176	8/23/2021	1:08 PM	8/23/2021	1:44 PM	15.0	to	20.0	84	74	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/23/2021	2:04 PM	8/23/2021	2:40 PM	10.0	to	15.0	68	65	17.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/23/2021	3:10 PM	8/23/2021	3:45 PM	5.0	to	10.0	66	65	18.2	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
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INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval	Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
									3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
177	8/13/2021	11:57 AM	8/13/2021	12:45 PM	15.0 to 20.0	70	73	13.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	1:00 PM	8/13/2021	1:40 PM	10.0 to 15.0	75	80	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	2:05 PM	8/13/2021	2:48 PM	5.0 to 10.0	73	78	14.8	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
178	8/13/2021	11:57 AM	8/13/2021	12:45 PM	15.0 to 20.0	60	77	13.3	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	1:00 PM	8/13/2021	1:40 PM	10.0 to 15.0	79	85	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/13/2021	2:05 PM	8/13/2021	2:48 PM	5.0 to 10.0	80	83	14.8	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
179	8/27/2021	10:30 AM	8/27/2021	11:15 AM	15.0 to 20.0	94	91	14.1	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/27/2021	11:32 AM	8/27/2021	12:15 PM	10.0 to 15.0	114	110	14.8	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/27/2021	12:36 PM	8/27/2021	1:21 PM	5.0 to 10.0	97	110	14.1	31.33	8.00	0.3	596.7	636.0	50.0	686.0		
								TOTALS	**93.99**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**50.0**	**1,958**		
180	8/27/2021	10:30 AM	8/27/2021	11:15 AM	15.0 to 20.0	99	99	14.1	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/27/2021	11:32 AM	8/27/2021	12:15 PM	10.0 to 15.0	113	110	14.8	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/27/2021	12:36 PM	8/27/2021	1:21 PM	5.0 to 10.0	101	116	14.1	31.33	8.00	0.3	596.7	636.0	50.0	686.0		
								TOTALS	**93.99**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**50.0**	**1,958**		
181	8/27/2021	10:30 AM	8/27/2021	11:15 AM	15.0 to 20.0	114	111	14.1	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/27/2021	11:32 AM	8/27/2021	12:15 PM	10.0 to 15.0	129	129	14.8	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/27/2021	12:36 PM	8/27/2021	1:21 PM	5.0 to 10.0	104	113	14.1	31.33	8.00	0.3	596.7	636.0	50.0	686.0		
								TOTALS	**93.99**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**50.0**	**1,958**		
182	8/27/2021	10:30 AM	8/27/2021	11:15 AM	15.0 to 20.0	140	140	14.1	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/27/2021	11:32 AM	8/27/2021	12:15 PM	10.0 to 15.0	150	148	14.8	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/27/2021	12:36 PM	8/27/2021	1:21 PM	5.0 to 10.0	150	160	14.1	31.33	8.00	0.3	596.7	636.0	50.0	686.0		
								TOTALS	**93.99**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**50.0**	**1,958**		
183	8/27/2021	10:30 AM	8/27/2021	11:15 AM	15.0 to 20.0	100	99	14.1	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/27/2021	11:32 AM	8/27/2021	12:15 PM	10.0 to 15.0	111	113	14.8	31.33	8.00	0.3	596.7	636.0	0.0	636.0		
	8/27/2021	12:36 PM	8/27/2021	1:21 PM	5.0 to 10.0	100	109	14.1	31.33	8.00	0.3	596.7	636.0	50.0	686.0		
								TOTALS	**93.99**	**24.00**	**0.8**	**1,790.1**	**1,908.0**	**50.0**	**1,958**		
184	8/27/2021	11:18 AM	8/27/2021	11:58 AM	15.0 to 20.0	136	135	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/27/2021	12:40 PM	8/27/2021	1:18 PM	10.0 to 15.0	132	134	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/27/2021	1:44 PM	8/27/2021	2:22 PM	5.0 to 10.0	127	130	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
								TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
185	8/27/2021	11:18 AM	8/27/2021	11:58 AM	15.0	to	20.0	134	141	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/27/2021	12:40 PM	8/27/2021	1:18 PM	10.0	to	15.0	143	140	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/27/2021	1:44 PM	8/27/2021	2:22 PM	5.0	to	10.0	134	136	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
186	8/30/2021	1:45 PM	8/30/2021	2:45 PM	15.0	to	20.0	110	46	11.0	31.30	8.00	0.3	596.7	636.0	25.0	661.0	X	Surfacing out of cracks in the asphalt, Put remaining two intervals into INJ-187
										TOTALS	**31.30**	**8.00**	**0.3**	**596.7**	**636.0**	**25.0**	**661**		
187	8/30/2021	1:45 PM	8/30/2021	2:30 PM	15.0	to	20.0	122	88	14.1	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/30/2021	3:00 PM	8/30/2021	4:15 PM	10.0	to	15.0	120	120	17.0	62.60	16.00	0.5	1,193.4	1,272.0	0.0	1,272.0		Put INJ-186 2nd interval into point as per client
	8/30/2021	4:20 PM	8/30/2021	5:30 PM	5.0	to	10.0	134	130	18.2	62.60	16.00	2.1	1,193.4	1,272.0	25.0	1,297.0		Put INJ-186 3rd interval into point as per client
										TOTALS	**156.50**	**40.00**	**2.9**	**2,983.5**	**3,180.0**	**25.0**	**3,205**		
188	8/27/2021	11:18 AM	8/27/2021	11:58 AM	15.0	to	20.0	140	145	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/27/2021	12:40 PM	8/27/2021	1:18 PM	10.0	to	15.0	145	142	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/27/2021	1:44 PM	8/27/2021	2:22 PM	5.0	to	10.0	138	137	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
189	8/30/2021	1:45 PM	8/30/2021	2:30 PM	15.0	to	20.0	92	62	14.1	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/30/2021	3:00 PM	8/30/2021	3:50 PM	10.0	to	15.0	80	80	12.7	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/30/2021	4:18 PM	8/30/2021	5:11 PM	5.0	to	10.0	65	75	12.0	31.30	8.00	0.9	596.7	636.0	25.0	661.0		split remaining BDI into top intervals on all locations, AS PER CLIENT
										TOTALS	**93.90**	**24.00**	**1.4**	**1,790.1**	**1,908.0**	**25.0**	**1,933**		
190	8/27/2021	11:18 AM	8/27/2021	11:58 AM	15.0	to	20.0	101	115	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/27/2021	12:40 PM	8/27/2021	1:18 PM	10.0	to	15.0	104	100	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/27/2021	1:44 PM	8/27/2021	2:22 PM	5.0	to	10.0	103	105	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
191	8/27/2021	11:18 AM	8/27/2021	11:58 AM	15.0	to	20.0	107	90	15.9	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/27/2021	12:40 PM	8/27/2021	1:18 PM	10.0	to	15.0	86	89	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
	8/27/2021	1:44 PM	8/27/2021	2:22 PM	5.0	to	10.0	88	88	16.7	31.30	8.00	0.13	596.7	636.0	0.0	636.0		
										TOTALS	**93.90**	**24.00**	**0.4**	**1,790.1**	**1,908.0**	**0.0**	**1,908**		
192	8/30/2021	1:34 PM	8/30/2021	2:30 PM	15.0	to	20.0	110	64	11.4	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/30/2021	3:00 PM	8/30/2021	3:50 PM	10.0	to	15.0	76	76	12.7	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/30/2021	4:18 PM	8/30/2021	5:09 PM	5.0	to	10.0	66	74	12.5	31.30	8.00	0.9	596.7	636.0	25.0	661.0		split remaining BDI into top intervals on all locations, AS PER CLIENT
										TOTALS	**93.90**	**24.00**	**1.4**	**1,790.1**	**1,908.0**	**25.0**	**1,933**		
193	8/30/2021	1:45 PM	8/30/2021	2:30 PM	15.0	to	20.0	95	75	14.1	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/30/2021	3:00 PM	8/30/2021	3:50 PM	10.0	to	15.0	80	80	12.7	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/30/2021	4:18 PM	8/30/2021	5:15 PM	5.0	to	10.0	76	81	11.2	31.30	8.00	0.9	596.7	636.0	25.0	661.0		split remaining BDI into top intervals on all locations, AS PER CLIENT
										TOTALS	**93.90**	**24.00**	**1.4**	**1,790.1**	**1,908.0**	**25.0**	**1,933**		

CASCADE
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INJECTION FIELD LOG

PROJECT NUMBER/NAME: Paccar 306-21-1088

LEAD OPERATOR: K. King
SCOPE OF WORK: Complete 194 temporary injection points

INJECTION APPROACH: 5 foot perforated injection tooling, bottom up

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											3DME (Gallons)	Calcium (Gallons)	Bugs (Liters)	Water (Gallons)					
194	8/30/2021	1:45 PM	8/30/2021	2:30 PM	15.0	to	20.0	132	77	14.1	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/30/2021	3:00 PM	8/30/2021	3:50 PM	10.0	to	15.0	115	115	12.7	31.30	8.00	0.3	596.7	636.0	0.0	636.0		
	8/30/2021	4:18 PM	8/30/2021	5:12 PM	5.0	to	10.0	97	107	11.8	31.30	8.00	0.9	596.7	636.0	25.0	661.0		split remaining BDI into top intervals on all locations, AS PER CLIENT
										TOTALS	**93.90**	**24.00**	**1.4**	**1,790.1**	**1,908.0**	**25.0**	**1,933**		

CASCADE
DRILLING | TECHNICAL SERVICES

APPENDIX F: REMEDIATION CONTRACTOR'S PROJECT SUMMARY AND FIELD

Appendix F

Remediation Contractor's Project Summary and Field Logs for December 2022

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INJECTION FIELD LOG

PROJECT NUMBER/NAME: Shannon Wilson (Boeing)

LEAD OPERATOR: Kyle King
SCOPE OF WORK: Cascade will mob to site, setup equipment and perform a site walk. A custom injection platform equipped with mixing tanks and manifolds will be utilized. Cascade will record pressures, flows, and volumes. Surfaced material will be captured using portable shop vacs and stored in 55 gallon poly drums. Cascade will install plugs and pumps as needed to protect storm sewer.
INJECTION APPROACH: 5' perforated screen.

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval	Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
									3DME (Gallons)	Calcium Bicarbonate (Gallons)	Bugs (ML)	Anaerobic Water (Gallons)					
195	12/1/2022	11:03 AM	12/1/2022	12:28 PM	21.0 to 26.0	33	30	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		Bugs added (in-line) mid way through injected volume at each location
	12/1/2022	1:17 PM	12/1/2022	2:42 PM	16.0 to 21.0	35	38	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/1/2022	3:17 PM	12/1/2022	4:43 PM	11.0 to 16.0	33	33	7.2	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**93.9**	**31.2**	**780.0**	**1,737.0**	**1,860.0**	**0.0**	**1,860**		
196	12/2/2022	11:43 AM	12/2/2022	12:47 PM	21.0 to 26.0	34	40	9.7	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/2/2022	12:59 PM	12/2/2022	2:00 PM	16.0 to 21.0	20	34	10.2	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/5/2022	9:11 AM	12/5/2022	10:29 AM	11.0 to 16.0	21	28	7.9	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**93.9**	**31.2**	**780.0**	**1,737.0**	**1,860.0**	**0.0**	**1,860**		
197	12/1/2022	11:03 AM	12/1/2022	12:28 PM	21.0 to 26.0	40	34	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/1/2022	1:17 PM	12/1/2022	2:42 PM	16.0 to 21.0	34	37	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/1/2022	3:17 PM	12/1/2022	4:43 PM	11.0 to 16.0	38	37	7.2	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**93.9**	**31.2**	**780.0**	**1,737.0**	**1,860.0**	**0.0**	**1,860**		
198	12/1/2022	11:03 AM	12/1/2022	12:28 PM	21.0 to 26.0	34	20	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/1/2022	1:17 PM	12/1/2022	2:42 PM	16.0 to 21.0	25	24	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/1/2022	3:17 PM	12/1/2022	4:43 PM	11.0 to 16.0	24	24	7.2	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**93.9**	**31.2**	**780.0**	**1,737.0**	**1,860.0**	**0.0**	**1,860**		
199	12/1/2022	11:03 AM	12/1/2022	12:28 PM	21.0 to 26.0	36	29	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/1/2022	1:17 PM	12/1/2022	2:42 PM	16.0 to 21.0	14	14	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/1/2022	3:17 PM	12/1/2022	4:43 PM	11.0 to 16.0	14	14	7.2	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**93.9**	**31.2**	**780.0**	**1,737.0**	**1,860.0**	**0.0**	**1,860**		
200	12/1/2022	11:03 AM	12/1/2022	12:28 PM	21.0 to 26.0	35	26	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/1/2022	1:17 PM	12/1/2022	2:42 PM	16.0 to 21.0	14	12	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/1/2022	3:17 PM	12/1/2022	4:43 PM	11.0 to 16.0	13	17	7.2	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/2/2022	10:44 AM	12/2/2022	12:08 PM	11.0 to 16.0	15	19	7.4	31.3	10.4	260.0	579.0	620.0	0.0	620.0		Encountered drilling refusal at several locations. Surplus volume dispersed into next closest injection locations.
	12/2/2022	12:35 PM	12/2/2022	1:54 PM	16.0 to 21.0	21	18	7.8	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/5/2022	9:11 AM	12/5/2022	10:29 AM	21.0 to 26.0	20	19	7.9	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**187.8**	**62.4**	**1,560.0**	**3,474.0**	**3,720.0**	**0.0**	**3,720**		
204	12/5/2022	12:05 PM	12/5/2022	1:20 PM	21.0 to 26.0	33	31	8.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/5/2022	1:49 PM	12/5/2022	3:06 PM	16.0 to 21.0	28	27	8.1	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/5/2022	3:33 PM	12/5/2022	4:41 PM	11.0 to 16.0	26	29	9.1	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**93.9**	**31.2**	**780.0**	**1,737.0**	**1,860.0**	**0.0**	**1,860**		

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INJECTION FIELD LOG

PROJECT NUMBER/NAME: Shannon Wilson (Boeing)

LEAD OPERATOR: Kyle King

SCOPE OF WORK: Cascade will mob to site, setup equipment and perform a site walk. A custom injection platform equipped with mixing tanks and manifolds will be utilized. Cascade will record pressures, flows, and volumes. Surfaced material will be captured using portable shop vacs and stored in 55 gallon poly drums. Cascade will install plugs and pumps as needed to protect storm sewer.

INJECTION APPROACH: 5' perforated screen.

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval	Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution				% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
									3DME (Gallons)	Calcium Bicarbonate (Gallons)	Bugs (ML)	Anaerobic Water (Gallons)					
205	12/2/2022	10:44 AM	12/2/2022	12:08 PM	21.0 to 26.0	31	35	7.4	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/2/2022	12:35 PM	12/2/2022	1:54 PM	16.0 to 21.0	25	23	7.8	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/5/2022	9:11 AM	12/5/2022	10:29 AM	11.0 to 16.0	19	29	7.9	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/6/2022	1:22 PM	12/6/2022	2:47 PM	21.0 to 26.0	26	16	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		Encountered drilling refusal at several locations. Surplus volume dispersed into next closest injection locations.
	12/6/2022	3:16 PM	12/6/2022	4:44 PM	16.0 to 21.0	39	38	7.0	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/7/2022	8:27 AM	12/7/2022	9:59 AM	11.0 to 16.0	52	53	6.7	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**187.8**	**62.4**	**1,560.0**	**3,474.0**	**3,720.0**	**0.0**	**3,720**		
206	12/5/2022	12:05 PM	12/5/2022	1:20 PM	21.0 to 26.0	48	47	8.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/5/2022	1:49 PM	12/5/2022	3:06 PM	16.0 to 21.0	43	42	8.1	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/5/2022	3:33 PM	12/5/2022	4:41 PM	11.0 to 16.0	45	51	9.1	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/6/2022	1:22 PM	12/6/2022	2:47 PM	21.0 to 26.0	26	18	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		Encountered drilling refusal at several locations. Surplus volume dispersed into next closest injection locations.
	12/6/2022	3:16 PM	12/6/2022	4:44 PM	16.0 to 21.0	30	24	7.0	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/7/2022	8:27 AM	12/7/2022	9:59 AM	11.0 to 16.0	30	29	6.7	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**187.8**	**62.4**	**1,560.0**	**3,474.0**	**3,720.0**	**0.0**	**3,720**		
207	12/5/2022	12:05 PM	12/5/2022	1:20 PM	21.0 to 26.0	43	43	8.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/5/2022	1:49 PM	12/5/2022	3:06 PM	16.0 to 21.0	45	47	8.1	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/5/2022	3:33 PM	12/5/2022	4:41 PM	11.0 to 16.0	42	45	9.1	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**93.9**	**31.2**	**780.0**	**1,737.0**	**1,860.0**	**0.0**	**1,860**		
208	12/6/2022	1:22 PM	12/6/2022	2:47 PM	21.0 to 26.0	40	34	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/6/2022	3:16 PM	12/6/2022	4:44 PM	16.0 to 21.0	33	29	7.0	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/7/2022	8:27 AM	12/7/2022	9:59 AM	11.0 to 16.0	20	22	6.7	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**93.9**	**31.2**	**780.0**	**1,737.0**	**1,860.0**	**0.0**	**1,860**		
209	12/6/2022	1:22 PM	12/6/2022	2:47 PM	21.0 to 26.0	37	36	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/6/2022	3:16 PM	12/6/2022	4:44 PM	16.0 to 21.0	35	34	7.0	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/7/2022	8:27 AM	12/7/2022	9:59 AM	11.0 to 16.0	26	27	6.7	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**93.9**	**31.2**	**780.0**	**1,737.0**	**1,860.0**	**0.0**	**1,860**		
210	12/6/2022	1:22 PM	12/6/2022	2:47 PM	21.0 to 26.0	51	51	7.3	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/6/2022	3:16 PM	12/6/2022	4:44 PM	16.0 to 21.0	52	52	7.0	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
	12/7/2022	8:27 AM	12/7/2022	9:59 AM	11.0 to 16.0	44	46	6.7	31.3	10.4	260.0	579.0	620.0	0.0	620.0		
					TOTALS				**93.9**	**31.2**	**780.0**	**1,737.0**	**1,860.0**	**0.0**	**1,860**		

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